Disability, Aging and Technology (DAT) Cluster

**Cluster Leads:** Aman Behal (CECS/ECE & NSTC), Norma Conner (CON), Denise Gammonley (COHPA)

**Participating Units:** College of Health & Public Affairs (COHPA), College of Nursing (CON), College of Sciences (COS), College of Engineering and Computer Science (CECS), Rosen College of Hospitality Management (Rosen), NanoScience Technology Center (NSTC)

**Participating Core UCF Faculty:**
- Aman Behal (CECS/ECE & NSTC)
- Lotzi Bölöni (CECS/CS)
- Norma Conner (CON)
- Nicole Dawson (COHPA/Health Professions)
- Denise Gammonley (COHPA/Social Work)
- Megan Hufstader Gabriel (COHPA/Health Management and Informatics)
- Victoria Loezel (CON)
- Patrick Pabian (COHPA/Health Professions)
- Daniel Paulson (COS/Psychology)
- Denver Severt (Rosen)
- Janan Smither (COS/Psychology)
- Gita Sukthankar (CECS/CS)
- Pamela Wisniewski (CECS/CS)
- Yunjun Xu (CECS/MAE)

**Lay Summary**
Due to population aging and phenomenal advances in life saving and sustaining interventions and its timely delivery to trauma-stricken civilians/soldiers and older adults, there is a surge in the number of people that require rehabilitation and longtime caregiver services. Advances in assistive technology (AT) are making it possible to address societal reintegration needs and promote independence in later life; however, effective partnering with practitioners and local communities is imperative for effective user engagement, adoption, and delivery of the emerging solutions. Community needs must guide federal and state healthcare policy making and in turn, AT must emphasize solutions that are cognizant of policy and economic constraints. The Disability, Aging and Technology (DAT) cluster will engage in applied collaborative research at the intersections of medical and behavioral health care, social determinants of health, and assistive technology. To achieve the ambitious goal of performing cutting edge research in disability and aging, the cluster will bring together expertise in healthcare policy, healthcare economics, science (human, computational, and community), engineering (mechanics, design, sensing, signals, and controls), and clinical practice (nursing, physical therapy, psychology, social work) in the Colleges of Science (COS), Nursing (CON), Hospitality Management (Rosen), Heath and Public Affairs (COHPA), and Engineering and Computer Science (CECS). The cluster will generate curricular offerings at the undergraduate and graduate level, thereby, creating significant economic impact in our community, state, and the nation. Partnerships between the health, hospitality, long-term care industry, government, and the university will enhance education of the workforce who serve older and disabled populations.

**Expert Summary**
This cluster is being proposed to promote independence and improve quality of life for people with disabilities ranging from traumatic spinal cord injury to early-onset MS to the disabilities associated with advanced age such as dementia. Many chronic conditions lack effective
preventative medical treatment or cure, and strain our healthcare systems which have responded by emphasizing self-management of conditions and behavioral health strategies to support informal caregivers. An increasing array of technological innovations are available to support self-management and social engagement, maintenance of functional abilities, and care delivery, but their practical application with diverse groups impacted by social remain critical targets for research, education, and service. While UCF has strengths in some disciplines underlying the physical, psycho-social, and technology determinants of elder/disabled care, the scattered nature of these efforts across campus as well as weaknesses in (a) the foundational sciences, (b) healthcare policy/economics, and (c) translational research prevent us from working on large scale projects that comprehensively address the multi-faceted nature of the problem. Florida’s diverse population creates an ideal living laboratory to design, develop, and disseminate practical and affordable interventions that can reintege our target populations while promoting health and well-being. Agencies that can support the research goals of the proposed cluster include NIDILRR, ARPA-E, DARPA, NSF, DoD, DoE, DoT, NIH, etc. The proposed curriculum will train the workforce who contribute to industries such as healthcare, long-term care, manufacturing, automotive, rescue/recovery, and defense among others. The service learning concept of the cluster will foster community engagement and outreach.

**Cluster Objectives**

The aim of the DAT Cluster is to enhance positive physical and psycho-social determinants of health, inform and be informed by policy, and develop technological innovations through interdisciplinary research, education, and service partnerships. An overview of the cluster can be seen in Figure 1. Specifically, our objectives will be as follows:

1. Expand funded research emphasizing the very important area of healthcare and the application of assistive technology (AT) to empower older adults and reduce societal and caregiver burdens arising from increases in the numbers of aging individuals as well as those with disabilities.

2. Facilitate convergence of diverse areas such as human factors, nursing, social work, hospitality, physical therapy, engineering, and computation for effective exchange of ideas toward usable AT in the short and medium-term. Fill in expertise gaps, especially in clinical and translational research in AT, that prevent UCF from working on larger scale elder care AT projects.

3. Partner with key stakeholders to conduct community assets/needs assessments, and disseminate as well as clinically validate emerging research interventions and technological devices.

4. Deliver depth of education through (a) a new Rehabilitation Sciences PhD program (b) a new undergraduate degree in Senior Active Living Management, and (b) curriculum enhancements in AT, rehabilitation robotics, health disparities, hospitality, human-robot interaction related

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![Figure 1: Disability, Aging, and Technology Cluster Overview](image-url)
tracks (minors) at the undergraduate and graduate. Deliver breadth of education via service learning and interprofessional education including development of continuing education.

5. Develop a business plan for a Center on Disability, Aging and Technology that includes a strategy to deliver scalable, sustainable, innovative assistive technologies and interventions to the community through partnerships with industry and non-profit organizations.

**Addressing Emerging Societal Problems via Scholarly and Creative Work**

The major scholarly focus for the DAT cluster will be to link health and wellness interventions with technology applications so that effective and feasible health, behavioral, and assistive technologies can be used with diverse populations. A recent *National Academy of Sciences* workshop report on the promises of technologies to support elder community living, engagement, and the eldercare workforce highlighted the critical need for new research to move the field forward. The DAT Cluster directly addresses this need and goes beyond that focus to consider how these innovations can be made more accessible in diverse communities affected by disparities in the social determinants of health. The broader interdisciplinary focus afforded by the new hires proposed for the DAT team will expand and deepen opportunities for community impact by engaging researchers with the expertise necessary to create truly transformative technologies and interventions that can be brought to a large community scale. Possible new innovations include robotic devices, environmental modifications, workplace adaptations, creating new mechanisms to finance retirement and long-term care, promoting intergenerational solidarity through policy innovations, and new strategies to deliver person-centered care in long-term care settings.

**Partnerships**

Partnerships with business and nonprofit organizations are central to achieving the vision for this cluster and the established team already has a significant record engaging with the community. The Disability, Aging and Technology Cluster is also uniquely positioned to create a vibrant living laboratory for intervention development and dissemination due to the support of members of *LIFE@UCF* and the new UCF Foundation sponsored *Legacy Pointe at UCF* continuing-care retirement community in development. Members of the cluster team are represented on the Legacy Pointe Health and Wellness Task Force that has established a set of core goals to guide the UCF affiliation with Legacy Pointe. Appendix B shows a sample of established
community partnerships of the DAT cluster.

**Achieving National and International Prominence**

UCF’s location in the state with the oldest population and high poverty rates among elders provides a special opportunity for UCF to deploy its distinctive assets to solve the challenges of an aging population by becoming a living laboratory for interventions and technologies to reduce disparities and promote vital aging. The DAT cluster is being proposed to make UCF a unique institution in the nation with collocated human resources and infrastructure in order to contribute to each stage in the lifecycle of technology development, deployment, and successful adoption as either rehabilitative or assistive aids. Collaboration of the professional faculty with the science/technology faculty will create synergy that significantly strengthens the innovations; this will lead to increased success rate at competitive federal funding and patents as well as afford opportunities for more UCF faculty to achieve national and international research prominence. As seen in Appendix A, the DAT cluster creates a unique focus that is different from centers on aging in other universities. While most centers emphasize clinical health and policy, none has the distinct emphasis on the linkages between health, assistive technology, and addressing social determinants of health through community partnerships. Since this cluster will involve community partners engaged with students and researchers at multiple levels, it will promote student success and prominence for professional disciplines to reduce severe shortages in the available workforce to serve an aging population.

**Alignment with UCF Mission**

**University Strategic Plan:** The cluster directly aligns with the new UCF Collective Impact Strategic Plan. By addressing quality of life and promotion of independence, the cluster will create broad national impact because of the rapid aging of the population. DAT is also regionally relevant because of a higher concentration of the elderly (>17%) in Florida. Since higher levels of disability are observed among veterans, African Americans and Native American Indians, addressing societal reintegration will have significant impact among these groups. Community engagement will be fostered because of the synergistic benefit of local dissemination of cutting-edge research which will promote participation in testing and validation activities that are critical to AT research. We expect to generate new partnerships between the university and multiple groups including for-profit and not-for-profit aging service providers, manufacturers, health systems, and grassroots community groups. In addition to the patents, the focus on translational research will allow the cluster to develop evidence-based service intervention protocols for delivering assistive technology which can be disseminated under a business model.

Our educational programs will emphasize creativity, critical thinking and problem-solving skills ensuring that UCF achieves its aim to transform lives and livelihoods. Students will take part in cutting edge research projects that develop new intervention models, test them out in the community, and determine the best ways to make them viable and sustainable over the long-term. The close interaction of engineering and science students, who are research/development focused, with the health profession students, who are mainly community focused, will contribute to the goal of engaging all students in a service learning activity annually. The allocation of a contiguous block of space for the cluster will allow for capstone projects for DPT students and senior design projects for CECS students to be collocated and collaborative, thereby, optimizing the use of space and avoiding the pitfalls of blinkered thinking. The development of a PhD program in Rehabilitation Sciences will contribute to the university’s mission of having 25% of its graduate degrees with a research focus.

**Departments/Colleges Strategic Plans:** The DAT Cluster aligns with the strategic goals of the
CON to align curriculum with the emerging healthcare landscape, build research enterprise, and expand/optimize partnerships to best prepare nurse leaders. Similarly, the cluster objectives dovetail with the COS strategic goals to focus on student learning, pursue research that matters, shape programs to be nationally competitive, and professionally useful and conduct research that is internationally recognized. The proposed cluster aligns with the CECS mission to address pressing issues in support of the community. COHPA has a longstanding commitment to improving the health and welfare of the community through community partnerships. Locating some members of the cluster within the new UCF Downtown will significantly expand the range of settings where the innovative interventions and technologies developed by the cluster can be implemented. Caring for vulnerable populations aligns with the Rosen College of Hospitality’s strategic goals for equipping students and conducting research to help promote effective management and design of senior living communities.

**Undergraduate and Graduate Curriculum Enhancements**

The DAT Cluster will enrich and expand the current undergraduate curriculum for baccalaureate students across the disciplines. The cluster will facilitate the development of a new undergraduate degree program in Life Care Management at Rosen College of Hospitality, which has partnered with the CON in this endeavor. This newly proposed degree program directly supports the cluster vision to support health and well-being in intergenerational communities. Within CECS, our plan calls for revitalizing the Robotics Minor by developing junior/senior level courses in rehabilitation robotics focusing on both physical and societal rehabilitation. These interdisciplinary courses, designed to be suitable for all engineering majors, would increase the short list of technical elective options currently available for students in the minor. Possible application areas will include exoskeleton robots, Wheelchair Mounted Robotic Arms, manipulators on mobile platforms, feeding and grooming aids, desktop robots, passive and active assist rehabilitation robot design and control, etc. Current successful UCF educational models (e.g., Aging Studies Certificate and Minor, service learning and Honors in the Major) would be expanded by the real-time problem solving in living laboratories created by this cluster. Through strengthened partnerships, the cluster would provide additional undergraduate educational and service-learning experiences in linking technology to person-centered care, human-computer interaction, economics of aging, and home and work environment modification development. The addition of faculty experts in cooperative co-robotics, senior living design, human-computer interaction, economics, and health policy will support the creation of new courses for the undergraduate minor and certificate programs in Aging Studies.

Graduate curriculum enhancements will include reintroduction and revision of the interdisciplinary graduate certificate in gerontology with a curricular emphasis on addressing physical and social determinants of health and use of innovative technologies to support vital aging. Cluster faculty from CECS will develop a graduate level courses in algorithmic foundations of robotics (CS), signal processing and control theory (ECE), and mechanics (MAE) to impart the foundational knowledge essential to an AT graduate track. To emphasize the strong multi-disciplinary nature of AT, team-taught courses available to students from across the constituent colleges will focus on issues such as design of socially interacting robots, human-robot negotiation, human-robot trust, human-robot learning communities, as well as human factors assessment and evaluation of prostheses and assistive robots. These courses will prepare students across disciplines to work together to develop functional, usable, adoptable, and useful technologies for their target populations. Collaboration with scientists and engineers will enable the Doctor of Physical Therapy (DPT) program within the Department of Health Professions in COHPA to start a PhD
program in Rehabilitation Sciences. Interprofessional education opportunities generated through the cluster will benefit students in the newly offered MSN in Nursing and Health Care Simulation program and professional doctoral students in PT for their clinical research capstone projects. The cluster would provide PhD students across disciplines expanded dissertation options and a greater competitive edge when seeking training grants. A newly minted joint UCF-Orlando Health Neurologic Physical Therapy Residency Program has extensive research requirements which will be fulfilled via collaboration with neurologic rehabilitation and assistive technology research in the cluster.

Curricular enhancements will be aligned with the research projects of cluster members. Graduate students, particularly doctoral students, will be afforded the opportunity to access public databases warehoused by the cluster, providing expanded opportunities for theses and dissertations. Through new cluster hires, curricular enhancements would include health policy on aging and the health economics of aging across curricula. Additionally, under a business model, a cadre of continuing education and community training programs for older adults, businesses, caregivers and service providers will be developed. Some of the anticipated topics would include retirement planning, exercise for health promotion and wellness, self-management of chronic conditions using technology applications, effective use of technology to promote care in senior living communities, and using oral history methods to promote person-centered care.

**Proposed Hiring Plan**

As previously stated, UCF has some great strengths in the physical, psycho-social, and AT determinants of empowered living for seniors and individuals with disabilities. However, some gaps in science and engineering (e.g., locomotion, networked robotics, and rehabilitation science), healthcare policy/economics, and translational research exist that hamper optimal collaborative utilization of our existing resources to tackle emergent problems. As an example, a faculty position in Health Technology Interaction is required to ensure that human-centered design principles are incorporated into disease self-management end user applications involving human-computer interaction. Similarly, collaboration between a Health Economist and Hospitality Health Care expert requires a broader engagement with health and behavioral health experts to ensure interventions and new senior living environment designs have a positive impact on health outcomes, meet regulatory requirements, and are financially feasible and sustainable models for communities. Figure 2 shows the research scope of the DAT cluster. The new hires listed below will address our previously identified gaps and help the cluster achieve prominence by fostering closer and more effective coordination of current research and educational efforts.

**Healthcare Policy (Assistant, Associate or Full Professor):** This faculty will possess expertise in linking cluster research and policy, acquiring and maintaining state/national databases relevant to older and disabled individuals, ability to secure UCF’s participation in federal demonstration projects, publish research in health policy outcomes, and develop curriculum in aging, disability, and policy. This hire will be housed in COHPA/Social Work or Health Management and Informatics with possible joint appointment in CON or COS/Psychology.

**Healthcare Economics- (Assistant, Associate or Full Professor):** This faculty will possess expertise in health economics and health services research, be able to quantify the value of innovations, health policies, and programs that address physical, social, and technology determinants of health among older adults and individuals with disabilities. This position will be located in the College of Nursing with a possible joint appointment in COHPA/Social Work or Health Professions, Health Management & Informatics, or Rosen.
Manipulator Design (Assistant or Associate Professor): To complement existing strengths in biomechanics, sensing, guidance, and navigation in MAE and computer vision, AI, Machine Learning, and User Interfaces in CS, a hire in manipulator design is being proposed. Possible areas include nanorobotics, dexterous manipulation (multi-finger hands, touch (haptics), skin etc.), non-trivial locomotion (e.g., snakes, legged robots, jumping robots), exoskeleton design, etc. This hire could be in CECS/MAE or CECS/CS and potentially joint with NSTC.

Cooperative Co-robotics (Assistant or Associate Professor): To meet emerging societal needs, co-robots are no longer just partnering with a human but are instead starting to cooperate with each other in teams and with teams of humans leading to mixed communities of humans and robots. Thus, we propose to make a hire in the upcoming areas of self-reconfiguring modular and large robot systems that would increase the scope of potential projects in human-robot interaction. We envision this position to be joint between CECS/CS and CECS/ECE.

Dynamics and Control (Assistant or Associate Professor): Wearable assistive devices such as exoskeletons and humanoid companion robots with multiple degrees-of-freedom are becoming ubiquitous but they suffer from the problems of simultaneous coordination of their motions in order to be robust to exogenous disturbances inherent to the unstructured environments in which they

Figure 2: DAT Cluster Scope of Research
operate. To round out existing strengths in controls in UCF, an assistant or associate professor position in either CECS/ECE or CECS/MAE is being proposed in the area of geometrical control and dynamics of humanoid robots/exoskeletons.

**Rehabilitation Science (Full Professor):** One hire at the full professor level is imperative to get the proposed PhD program in Rehabilitation Science in COHPA/Health Professions up and running while bringing in an established clinical research program for the development and clinical testing of devices with various patient populations (e.g., neurology, gerontology). This hire will facilitate in-house clinical validation and assessment for AT designs originating in other cluster components.

**Health Technology Interaction (Assistant, Associate or Full Professor):** This faculty member will bridge the disciplines of health technology, computer science, and engineering. Preference will be given to an individual who has experience with human-computer interaction and healthcare, human-centered design and the development of end user applications that promote the health, safety, and well-being of aging populations and their caregivers. This position will be housed in CECS/Computer Science or COS/Psychology.

**Hospitality Health Care (Assistant, Associate or Full Professor):** This faculty member will possess expertise in designing, operating, and evaluating the senior living experience in a range of housing and residential care settings. This position will be located at Rosen with joint appointment in COHPA/Social Work or Health Management & Informatics.

The anticipated home departments and joint appointments described above will be finalized based on the likely disciplinary focus of the newly recruited faculty member. Applicants seeking a position will be asked to indicate their preferred home department for tenure purposes and preferences for joint appointments. Submission of candidates for consideration of hiring will follow established procedures used by the home department conducting the search. Search committees will be comprised of the cluster lead(s), core cluster faculty and department chairs (or faculty designated by the department chair) from the home department and joint appointment department. To attract a strong full professor candidate from any of the thematic areas listed for the new faculty positions, we will offer the title of DAT Cluster Director. Drs. Aman Behal and Denise Gammonley will serve as interim cluster co-leads facilitating search activities for the hires until a new lead is brought on board.

Each discipline represented in the cluster has its own group(s) of professional organizations where faculty can be recruited. Some examples are the IEEE, ASME, ACM, National Gerontological Nursing Association, the Society for Social Work and Research, American Physical Therapy Association, and the American Psychological Association. In addition, several interdisciplinary venues for recruiting a diverse pool of applicants exist. As an example, aging focused recruitment can be facilitated through the website listings and annual meetings of the Gerontological Society of America, the American Geriatrics Society, and the Association for Gerontology in Higher Education.

**Support, space, and mentorship for newly hired cluster faculty** will be shared by the home department, any department where the faculty member has a joint appointment, and by the entire core faculty. Support will be provided in the form of mentors from the cluster for assistant professors and associate professors as well as funding to support additional training and development to advance the cluster aims. Funding for mentorship and development of new faculty will be shared by the home department, departments where the faculty member has a joint appointment, and by funds generated by the cluster team. Funds acquired by the cluster team and designated for faculty development will be distributed equitably for all core faculty. Available
space in the College of Nursing will be used to house up to two members of the cluster team and space in the new UCF Downtown campus will be made available by COHPA once the new downtown campus opens. Additional housing for the end user application phase of developed assistive technologies could be accommodated in the CON’s future relocation to the Medical City at Lake Nona. Collocation is critical for the success of the cluster subset related to the design, development, and validation of the assistive technology interventions; therefore, the cluster is requesting allocation of contiguous laboratory and graduate student office space in the Interdisciplinary Building which is under construction on the main campus.

**Collaborative Readiness**

The participating cluster units boast a cadre of strong researchers funded and engaged in innovative and practical studies related to disability, aging and technology. Over the past 5 years, cluster team members and affiliated faculty have collaborated on grant submissions, publications, and theses and dissertations. Core faculty from the cluster have acquired federal funding as well as foundation and internal funding, operate a clinical psychology research and treatment lab, and have held a Research Roundtable meeting monthly over the past two years to share research ideas and opportunities for collaboration. Members of the cluster also have a significant record of collaborative scholarship, external funding, and teaching that addresses robotic assistive devices for persons with spinal cord injuries, mobile phone applications, simulation and game design for disease self-management, health activity monitoring for family caregivers using mobile applications, long-term care quality, non-pharmacologic interventions for cancer disability, dementia and caregiving, chronic disease self-management, end-of-life transitions, and interventions to optimize behavioral health outcomes and strengthen the elder care workforce. Research funding has been obtained from NSF, NIDILRR, NIH, NINR, industry, and foundation funders. Combining the efforts of our proposed new hires with the expertise of current cluster members will create critical mass at UCF to be competitive for center-level research and training grants.

**Funding Opportunities**

The alignment of a disability and aging focus to be achieved by the DAT cluster is responsive to federal funding trends which have merged the Department of Health and Human Services’ Administration on Aging and Office on Disability into a singular organization, namely, the Administration for Community Living. The DAT cluster has identified several sources of funding not just for research but also for education and training. Federal funding sources to enhance the undergraduate curriculum include the NSF Division of Undergraduate Education’s Improving Undergraduate STEM Education: Education and Human Resources program, NIH Undergraduate NRSA Institutional Research Training Grant (T34), the NIH Kirchstein Interdisciplinary Research Training Award and combined Research Education Grant (T90/R90), the NIH Research Education Program (R25), the Bridges to the Baccalaureate program (R25) and the NIA Academic Research Enhancement Award (R15). At the graduate level, available federal funding sources for pre-and post-doctoral institutional training include: (1) NIH-Ruth L. Kirschstein National Research Service Award (NRSA) Postdoctoral National Research Service Award (F32), (2) the Agency for Healthcare Research and Quality Pre and PostDoctoral National Research Service Award (T32), (3) the Kirschstein National Research Service Award Short-Term Institutional Research Training Grant (T35) for health professions students, (4) the National Institute of Nursing Research pre and postdoctoral research training program (T32),
and (5) NSF Research Traineeship Program (NRT) Traineeship Track for STEM graduate students involved in high priority interdisciplinary research, and Graduate Education (IGE) track for pilot testing innovative approaches to graduate education. Due to its unique interdisciplinary focus funding can be sought from a diverse array of federal, foundation, and community funders. In addition to traditional seed funding, LIFE@UCF’s annual Tucker Gerontology Award grants will be a source for pilot research projects. Table 1 shows some prominent federal research funding mechanisms for the DAT cluster:

<table>
<thead>
<tr>
<th>Funder</th>
<th>Mechanism</th>
<th>Funding Amounts and Project Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIDILLR</td>
<td>Rehabilitation Engineering Research Centers</td>
<td>Up to $5 million—5 years</td>
</tr>
<tr>
<td>NIA</td>
<td>Roybal Centers for Translational Research on Aging—P30 Center Core</td>
<td>Up to $1.5 million—5 years</td>
</tr>
<tr>
<td>NIA</td>
<td>Pepper Older Americans Independence Centers</td>
<td>$1 million—5 years (P30)</td>
</tr>
<tr>
<td>HRSA</td>
<td>Geriatric Workforce Enhancement Programs</td>
<td>$1 million—5 years</td>
</tr>
<tr>
<td>NSF</td>
<td>General and Age Related Disabilities Engineering (GARDE)</td>
<td>$500K+ 1-5 years</td>
</tr>
<tr>
<td>NSF</td>
<td>National Robotics Initiative 2.0</td>
<td>Up to $1.5 million—4 years</td>
</tr>
<tr>
<td>NSF</td>
<td>Information and Intelligent Systems (Cyber-Human Systems, Robust Intelligence)</td>
<td>Up to $3 million—5 years</td>
</tr>
<tr>
<td>NSF</td>
<td>Smart and Connected Health</td>
<td>$500K—4 years</td>
</tr>
<tr>
<td>NIH/NINR</td>
<td>Intervening with Cancer Caregivers to Improve Patient Health Outcomes and Optimize Health Care Utilization</td>
<td>$275K—2 years (R21) $Unlimited (R01)</td>
</tr>
</tbody>
</table>

Appendix C shows a list of the affiliate faculty associated with the cluster while Appendix D shows related research funding (present and past) obtained by core and affiliate members of the DAT cluster.
Appendix A

Aims of Proposed DAT Cluster and Other Centers on Aging:

<table>
<thead>
<tr>
<th>University Center on Aging</th>
<th>Aims/Mission Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Proposed) UCF Disability, Aging and Technology Cluster</td>
<td>“...to enhance positive physical and psycho-social determinants of health, inform and be informed by policy and develop technological innovations through interdisciplinary research, education, and service partnerships.”</td>
</tr>
<tr>
<td>FIU Center on Aging—School of Public Health/College of Health and Urban Affairs</td>
<td>“...to expand knowledge and understanding about the lives of older people through research, education and training.”</td>
</tr>
<tr>
<td>UM/Georgia Tech Center for Research and Education on Aging and Technology Enhancement</td>
<td>“...to ensure that older adults can successfully use technology and realize the potential benefits of technology.”</td>
</tr>
<tr>
<td>UF Institute on Aging</td>
<td>“…to improve the health, independence and quality of life of older adults by means of interdisciplinary teams in the areas of research, education and health care.”</td>
</tr>
<tr>
<td>USF School of Aging Studies</td>
<td>“…excellence in applied aging research and education.”</td>
</tr>
<tr>
<td>FSU Pepper Institute on Aging and Public Policy</td>
<td>“…to initiate research, educate students and provide outreach activities that address the opportunities and challenges of an aging population.”</td>
</tr>
<tr>
<td>UM Center on Aging</td>
<td>The Center on Aging’s mission is to enhance the quality of life for older adults and their families through research, education and services to our community.</td>
</tr>
<tr>
<td>UWF Center on Aging</td>
<td>“…to improve the quality of life of aging adults through the application of science to address challenges associated with aging and to promote healthy aging, with an emphasis on prevention.”</td>
</tr>
<tr>
<td>UNF Center for Aging Research</td>
<td>“…to facilitate and support interdisciplinary research that seeks to identify, evaluate and disseminate new knowledge related to health and social services needed to ensure an optimum quality of life for our growing elderly population.”</td>
</tr>
</tbody>
</table>
Appendix B

Sample of Established Community Partnerships of the DAT Cluster:

1. Alzheimer’s and Dementia Resource Center
2. Alzheimer’s Association
3. Boys and Girls Clubs
4. Brain Fitness Club
5. Easter Seals Adult Day Care
6. Florida Hospital
7. Florida Pioneer Network
8. Hospice of the Comforter
9. LIFE at UCF
10. Neighbors Network
11. Nemours Children’s Hospital
12. Orange County Government
13. Orange County Public Schools
14. Orlando Health
15. Oviedo Hospital (HCA)
16. Senior Resource Alliance
17. Seniors First/Meals on Wheels
18. Share the Care Adult Day Care
19. Westminster Winter Park
20. Winter Park Health Foundation Nemours Children’s Hospital
Appendix C

List of Affiliate Faculty for the DAT Cluster (Core cluster faculty have been listed on page 1 of the proposal):

1. Morris Beato (PT/COHPA)
2. Varadraj Gurupur (HMI/COHPA)
3. Peter Hancock (Psych/COS, IST)
4. William Hanney (PT/COHPA)
5. Su-I Hou (PAF/COHPA)
6. Helen Huang (MAE/CECS)
7. Charles Hughes (CS/CECS)
8. Joseph LaViola (CS/CECS)
9. Hansen Mansy (MAE/CECS)
10. Reid Oetjen (HMI/COHPA)
11. Sudeshna Pal (MAE/CECS)
12. Sang-Eun Song (MAE/CECS)
13. Gregory Welch (CON, CS/CECS, IST)
14. Zhihua Qu (ECE/CECS)
15. Tom Wan (COHPA)
16. Tracy Wharton (Social Work/COHPA)
17. Richard Zraick (Comm. Sciences and Disorders/COHPA)
## Appendix D

Past and Present Funding of Core and Affiliated Faculty Related to DAT Cluster Activities:

<table>
<thead>
<tr>
<th>Faculty (Core and Affiliated)</th>
<th>Dept/College</th>
<th>Agency</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behal (PI), Smither (Co-PI)</td>
<td>ECE/CECS &amp; NSTC, Psych/COS</td>
<td>NSF</td>
<td>CHS: Small: Empowerment of Disabled Individuals via an Adaptive Framework for Indirect Human-Robot Interaction</td>
</tr>
<tr>
<td>Behal (PI), Hancock (Co-PI), Bölöni (Co-PI)</td>
<td>ECE/CECS &amp; NSTC, CS/CECS, Psych/COS</td>
<td>NSF</td>
<td>CHS: Medium: Collaborative Research: Social Learning in Mixed Human-Robot Groups for People with Disabilities</td>
</tr>
<tr>
<td>Behal (PI)</td>
<td>ECE/CECS &amp; NSTC</td>
<td>NIDRR</td>
<td>Development of an Intelligent Assistive Robotic System for Individuals with Multiple Sclerosis</td>
</tr>
<tr>
<td>Behal (PI)</td>
<td>ECE/CECS &amp; NSTC</td>
<td>NSF</td>
<td>Collaborative Research: A Novel User Interface for Operating an Assistive Robot Arm in Unstructured Environments</td>
</tr>
<tr>
<td>Behal (PI)</td>
<td>Clarkson U. ECE</td>
<td>NMSS</td>
<td>Evaluation of a Wheelchair Mounted Robot to Improve Function for Persons with MS</td>
</tr>
<tr>
<td>Bölöni (PI)</td>
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<td>LIFE at UCF</td>
<td>A Community Based Patient Centered Advance Care Planning Intervention</td>
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<td>Conner (PI) Wang (Co-I)</td>
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<td>STTR Phase II: Developing a Mixed Reality Rehabilitation System</td>
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<td>ONR</td>
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<td>DOE</td>
<td>Advanced Kalman Filter for Real-Time Responsiveness in Complex Systems</td>
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<td>Welch (PI)</td>
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<td>NIH-NLM</td>
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<tr>
<td>Welch (Co-PI)</td>
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<td>NSF</td>
<td>Electronic Books for the Tele-Immersion Age: A New Paradigm for Teaching Surgical Procedures</td>
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<td>Xu (PI)</td>
<td>MAE/CECS</td>
<td>USDA</td>
<td>Collaborative Research: Cooperative Tractors and Multi-Spectrum Disease Detector for Citrus Farming Automation</td>
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References:


A. Personal Statement- your value to the cluster

I have been working in the field of Assistive Robotics for over a decade now. Assistive Robotics deals with unique issues that prevent people with disabilities and the elderly from fully participating in society. This field has necessitated my involvement in interdisciplinary research bringing my expertise in Electrical Engineering together with expertise from Computer Science, Psychology, Statistics, and Social Work. I have published and got joint funding in the area of assistive robotics with faculty across disciplines and colleges at UCF. I understand the various elements involved in the lifecycle of Assistive Technology development, what the needs of the special populations are, and how to bring together teams to generate usable interventions.

B. Contribution to Scholarship and Creative Activities

My group has been working on assistive robotics to rehabilitate persons with disabilities. We are designing controllers to allow robots to safely perform physical interaction tasks such as combing, feeding, scratching, massaging, etc. To maximize rehabilitation, we have designed controllers that ensure safe interaction with users while projecting anisotropic impedance to guide them along therapist designed trajectories. We have also developed a computer vision based robotic platform called UCF-MANUS to facilitate interaction of disabled users with their environments. We utilized to demonstrate the relationship between autonomy, performance, and user satisfaction: (a) Users are very sensitive to deterioration in robot performance while their satisfaction shows little correlation with their own performance, and (b) Users prefer engagement with the robot over an autonomous robot even if it reduces overall system efficiency. Our findings using data collected from field trials at Orlando Health will propel research toward design of adaptive human robot interfaces that can flexibly share control between disabled individuals and their robotic assistants.
I have 50 refereed journal publications in print or in press. My journal publications have appeared in prestigious international journals such as AIAA Journal of Guidance Dynamics and Control, Automatica, IEEE Transactions on Automatic Control, IEEE Transactions on Control Systems Technology, IEEE Transactions on Industrial Electronics, IEEE/ASME Transactions on Mechatronics, IEEE Transactions on Power Delivery, IEEE Transactions on Systems, Man, and Cybernetics, Robotica, and many others. I have over 50 conference articles many of which are highly cited and in very prestigious and competitive conferences such as IEEE CDC, ICRA, IROS, ACC, etc. I have four (4) research monographs 3 of which have been published and 1 is under contract. They are with renowned publishers such as Prentice-Hall, Birkhauser, and CRC Press. I have also served as editor on one (1) book. As of 1/27/2017, according to Google Scholar, my work has been cited over 2640 times with an h-index of 26 and an i-10 index of 47.

C. Evidence of Impact & Support

As a PI, my research has been funded by the National Science Foundation (NSF), National Institutes of Health (NIH), U.S. Department of Energy (DOE), National Institute of Disability and Rehabilitation Research (NIDRR), and the National Multiple Sclerosis Society (NMSS). I have also received internal grants at UCF such as FSI and ORC in-house research grant. As a PI, I have been awarded grants worth about $3M in my career. I was recently honored as a member of the UCF Class of 2015 Millionaires. Some of my major grants related to this cluster are as below, I have listed in bold my collaborators on those grants who are core/affiliate members of this cluster.

- **Development of an Intelligent Assistive Robotic System for Individuals with Multiple Sclerosis**, National Institute of Disability and Rehabilitation Research (NIDRR), 2012-2016, $604,622 ($598,636 + $5,986 MFFA), PI: Behal.

Besides partnering with faculty at UCF on successful grant funding and publications, I have partnered with Orlando Health Rehabilitation Institute for conducting field trials of our technology. Before coming to Orlando to join UCF, I had partnered with Good Shepherd hospital in PA to conduct field trials of assistive technology.

My group’s research in assistive robotics has been featured on TV and in print including NSF News, Wired magazine, Popular Science, CNET, UCF News and Information, etc. The assistive robotics story was carried by at least 42 web outlets. We were also featured on TV stories that ran on Channel 13 News and UCF Knightly News. Our robot video was a banner story on the ORC front page for a large part of Summer 2011.
BIOGRAPHICAL SKETCH
Provide the following information for all the core cluster personnel. Follow this format for each person.
DO NOT EXCEED TWO PAGES PER INVESTIGATOR.

NAME: Norma E. Conner
Cluster Lead: yes

POSITION TITLE, DEPT, & UNIT and or COLLEGE: Norma E. Conner, PhD, RN
Associate Dean for Academic Excellence, College of Nursing

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, include postdoctoral training if applicable. Add/delete rows as necessary.)

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<td>Nursing</td>
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<td>Rutgers, The State University of New Jersey Newark, NJ</td>
<td>MS</td>
<td>10/1996</td>
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<td>Rutgers, The State University of New Jersey Newark, NJ</td>
<td>PhD</td>
<td>05/2003</td>
<td>Nursing</td>
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NOTE: The Biographical Sketch may not exceed two pages. Follow the formats and instructions below.

A. Personal Statement- your value to the cluster

(I have extensive educational preparation and teaching experience in the area of community and population health. I have had responsibility for the coordination of the University of Central Florida College of Nursing community nursing coalitions which has involved forging partnerships with the very communities that are the focus for this cluster. My clinical experiences include extensive work with community dwelling adults who are seriously ill or dying, and individuals eligible for aged and disabled waiver program, and their families. My research experience has focused on end of life decision making, with a particular focus on Black patients and their informal caregivers and decision makers. To date my research has focused on determining predictors of hospice use, end of life decisions, informal caregiving, and pediatric palliative care. I have also successfully conducted a community based study with adults looking at their beliefs, values and practices related to their uninsured status. I demonstrate in published works that I am successful in the recruitment and retention of study participants from the Black community, which is a known challenge for researchers. Through smaller grant funding I have continued to move the science of end of life decision making among Blacks forward. I have partnered with Dr. Paulson (psychology) mutually serving on one another’s Honors in the Major students’ committees. We have also published together. Dr. Gammonley and I have submitted two grant)

proposals together unfortunately neither was funded. My collaborations with these cluster partners have related to caregivers and caregiving.

B. Contribution to Scholarship and Creative Activities

Much of my scholarship relates to end-of-life caregiving and decision-making, hospice and palliative care, and advance care planning, particularly among Blacks. In addition I have studied nursing student end-of-life care attitudes after taking an online death and dying course. I have had several articles pertaining to these topics published in both nursing and medical journals. In my research I work to inform healthcare providers of the disparities experienced by some minority culture groups at the end of life because our current end of life paradigm does not reflect their beliefs and values. I also hope that the education and patient centered advance care planning interventions used in my studies will improve the end of life experiences for patients and their families. In February I will be joining the editorial board of the Journal of Hospice and Palliative Medicine to further impact dissemination of the knowledge of end of life care.

C. Evidence of Impact & Support

I have had grant funding for several studies (including funding from the Dick Tucker Applied Gerontology Grant program at LIFE, UCF’s Learning Institute for Elders). Many of the funded studies used a community engaged approach and/or pertained to patients, caregivers, and health care providers and end of life decision making. I have received scores (not within fundable range) on two submitted NIH grants pertaining to Advance Care Planning, and am awaiting a February review on the resubmission of the most recent NIH grant. I have presented many poster and podium peer reviewed presentations at national, regional and local conferences, pertaining mostly to end-of-life care. I have been invited to give a podium presentation on caregiving at the International Glut-1 Deficiency Conference Family Program. I have also been invited to present at the American Association of Colleges of Nursing Undergraduate Conference on Population Health in Baccalaureate Nursing Education, which resulted in an invitation to consult with Rutgers, Camden on how to improve their population health component of their curriculum. Most recently I was elected to induction as a Distinguished Fellow of the National Academies of Practice. This honor will take place in March of 2017. The National Academies of Practice consist of interdisciplinary practitioners who influence health policy, legislation and work to promote quality healthcare.
NAME: Denise Gammonley
Cluster Lead: Yes

POSITION TITLE, DEPT, & UNIT and or COLLEGE: Associate Professor, Social Work, COHPA

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, include postdoctoral training if applicable. Add/delete rows as necessary.)

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<td>Florida State University</td>
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<td>Florida State University</td>
<td>MSW</td>
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<td>U. of North Carolina at Chapel Hill</td>
<td>PhD</td>
<td>1998</td>
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<td>James Haley Veterans Administration Hospital</td>
<td>Fellow</td>
<td>1987</td>
<td>Interdisciplinary Team Training in Geriatrics</td>
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<td>John A. Hartford Foundation/Gerontological Society of American</td>
<td>Fellow</td>
<td>2009</td>
<td>Hartford Faculty Scholars in Geriatric Social Work</td>
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NOTE: The Biographical Sketch may not exceed two pages. Follow the formats and instructions below.

A. Personal Statement- your value to the cluster

My accomplishments leading COHPA’s planning effort to develop a center on aging, serving as coordinator of the university wide interdisciplinary certificate and minor in Aging Studies since 2003, my experience as a researcher and licensed clinical social worker experienced in engaging Florida’s aging service providers with UCF research, and my record of collaborative research engagement with faculty across multiple units on campus has prepared me to serve as the lead for the Empowered Living cluster. As PI or Co-PI on prior funded projects and grant proposal submissions I have created and participated in interprofessional research teams, obtained IRB approval and developed strategies for recruitment and data collection from older adults with decisional impairments, guided team project efforts, coordinated inclusion of students, community agency staff and administrators in research efforts, and demonstrated ability to analyze qualitative and quantitative data and produce research products.

B. Contribution to Scholarship and Creative Activities

Caring for older adults with disabilities in the community requires significant attention to the training and support needs of professional caregivers and intergenerational families. Community
agencies are typically under-resourced, suffer from significant staff turnover, and are limited by weak regulations that do little to promote high quality care. At the same time there is a growing need to provide community-based therapeutic social environments that promote vital aging by emphasizing prevention of disability in addition to rehabilitation. My research has sought to bridge these issues by evaluating clinical intervention strategies and examining systemic issues affecting the delivery of high quality person-centered care to older persons in community and long-term care residential settings. Findings from my early work on the benefits of lay health advisor interventions for both older adults with mental illness and the lay health advisor underscored the necessity of carefully constructed training and support for these informal caregivers to maintain these roles and derive positive benefits to their well-being. Focusing next on the broader systemic issues influencing the preparation and adequacy of the elder care workforce my research examined psychosocial care quality and social services staffing in the population of US nursing homes. A major contribution of this effort was the identification factors driving the presence of qualified staffing in nursing homes. We learned, for example, that qualified social service personnel staffing, nursing home payer status and market forces are major contributors to psychosocial care quality in nursing homes. Turning attention to developing the ability of the elder care workforce to deliver quality person-centered care recently funded collaborative research with the Dept. of History “Using Oral History to Introduce Person-centered Care in Assisted Living” examined the benefits of staff training interventions to support use of a special therapeutic activity program (oral histories) in assisted-living settings.

C. Evidence of Impact & Support

My efforts to enhance community based care, psychosocial care quality and train the elder care workforce has been funded by the John A. Hartford Foundation, Council on Social Work Education, New York Academy of Medicine, Winter Park Health Foundation, Pabst Charitable Foundation, and LIFE@UCF. My research continues to have an important influence in long-term care policy. My research has been cited by the National Nursing Home Social Work Network in their nursing home regulatory reform recommendations submitted to the Centers for Medicare & Medicaid Services. Results from the oral history studies revealed the importance of providing focused training to staff and quality supervision and support and the activity programming has been integrated into regular activities in assisted-living facilities. In addition to funded research I have obtained external funding for training and curriculum development initiatives at the undergraduate and graduate level. In recognition of my expertise in research and training the elder-care workforce I served for seven years as a national mentor and trainer for the National Center for Gerontological Social Work Education for and have delivered invited and peer-reviewed presentations on interprofessional practice and educating the elder care workforce to the National Initiative on Care of the Elderly in Canada, the National Hartford Centers for Gerontological Nursing Excellence, the Social Work Section of the American Geriatrics Society, the Social Work Leadership Institute of the New York Academy of Medicine, and the Royal University in Phnom Penh, Cambodia. I have had additional impact educating the elder care workforce at the national and regional level as an invited presenter, and in designing and delivering workshops on supervisory skills and aging services for the National Association of Social Workers and numerous local and regional organizations. I have significant experience establishing collaborations with researchers across the UCF campus that have resulted in grant submissions and funded proposals where I have served as PI or Co-PI. Collaborations with UCF colleagues focused on aging research have resulted in 10 joint peer-reviewed publications since 2009. My significant involvement in leadership roles such as Secretary/Treasurer of a statewide advocacy organization for long-term care, and appointment to the Older Adults Workgroup of the Winter Park Health Foundation are examples of my community service that will directly support the efforts of the Empowered Living cluster.
BIOGRAPHICAL SKETCH

Provide the following information for all the core cluster personnel. Follow this format for each person.

DO NOT EXCEED TWO PAGES PER INVESTIGATOR.

NAME: Ladislau Bölöni  Cluster Lead: No

POSITION TITLE, DEPT, & UNIT and or COLLEGE: Associate Prof,


Dept of Computer Science, College of Engineering and Computer Science

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, include postdoctoral training if applicable. Add/delete rows as necessary.)

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<td>2000</td>
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NOTE: The Biographical Sketch may not exceed two pages. Follow the formats and instructions below.

A. Personal Statement- your value to the cluster

My academic background is in the field of distributed computing and autonomous software agents, the subject of my PhD thesis. Although I branched out to a number of different applications, the core of my work remains taking the agent perspective: seeing the world as the place of interaction between entities that pursue their own goals. In many of my recent projects, the concept of agent is extended to also encompass humans, crowds, robots, sensor nodes exhibiting autonomy or components of the Internet of Things. Agents do not pursue their goals in the empty space: they need to be aware of the goals of their teammates, interaction partners and opponents, as well as the social norms of their environment. I am particularly interested in situations where heterogeneous teams of agents need to collaborate with each other. For instance, in one of my recent NSF funded projects in collaboration with Dr. Aman Behal, we are focusing on assistive robotics where the robot and the disabled or elderly person collaborate to form a single learning unit.

We are particularly interested in situations where the humans and the robots are autonomous entities with their own goals that share the same geographic but also social-cultural space. In these cases, the behavior of the robot is judged not only on its ability to improve the measurable performance on a task, but also on certain social / cultural / psychological metrics. For instance, a robot might be better accepted by people if it conforms to the social norms governing movement in a crowd, even if it comes at the expense of the mission performance. Similarly, we found that the satisfaction of a disabled user with an assistive robot hinges not only on its
performance, but also on its conformance to the subjective preferences of the user – some users might prefer to use direct control even at the expense of lower performance.

**B. Contribution to Scholarship and Creative Activities**

I have written two books and co-authored more than 30 journal and more than 100 conference publications. My papers had been cited more than 4000 times, according to Google Scholar. Some of the recent representative publications in the field of assistive robotics are listed below.


**C. Evidence of Impact & Support**

My research funding in the recent years in the field of robotics includes:

- PI, Robotics Collaborative Technology Alliance (RCTA) - H8-4 – Human-Robot Teamwork in Social-Cultural Settings, April 7, 2015 - Jan 20, 2017, Army Research Laboratory, $120,000.
### BIOGRAPHICAL SKETCH

Provide the following information for all the core cluster personnel. Follow this format for each person.

**DO NOT EXCEED TWO PAGES PER INVESTIGATOR.**

<table>
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<tr>
<th>NAME: Nicole Dawson, PT, PhD, GCS</th>
<th>Cluster Lead: No</th>
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**POSITION TITLE, DEPT, & UNIT and or COLLEGE:** Assistant Professor, Doctor of Physical Therapy, College of Health & Public Affairs

**EDUCATION/TRAINING** *(Begin with baccalaureate or other initial professional education, include postdoctoral training if applicable. Add/delete rows as necessary.)*

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<td>Sports Medicine</td>
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<td>Ohio University; Athens, OH</td>
<td>MPT</td>
<td>2002</td>
<td>Physical Therapy</td>
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<td>Cleveland State University; Cleveland, OH</td>
<td>M.A.</td>
<td>2013</td>
<td>Adult Development &amp; Aging Psychology</td>
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<tr>
<td>Cleveland State University; Cleveland, OH</td>
<td>Ph.D.</td>
<td>2015</td>
<td>Adult Development &amp; Aging Psychology</td>
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**NOTE:** The Biographical Sketch may not exceed two pages. Follow the formats and instructions below.

**A. Personal Statement- your value to the cluster**

My training as an intervention research, my academic background, and clinical experience as a Board Certified Geriatric Physical Therapist allow me to lend specialized skills to the Empowered Aging Cluster. I am currently an Assistant Professor at the University of Central Florida teaching the geriatrics curriculum in the Doctor of Physical Therapy program. My academic training in Adult Development and Aging Psychology has prepared me to view teaching and research through a lifespan and developmental approach. My previous research worked with an inter-disciplinary team of social and physical scientists focusing on better understanding the illness experience and its potential negative effects on individuals and their caregivers. Additionally, I have had experience in developing, implementing, and evaluating non-pharmacological interventions while closely working with both the caregiver and individual with dementia. The proposed project would allow me to use this experience to assist my co-investigators in developing a project to develop a multi-state intervention in efforts to prevent negative health-related outcomes that may present due to responsibilities of caregiving.

**B. Contribution to Scholarship and Creative Activities**

1. **Non-pharmacological intervention development, implementation, and evaluation for individuals with dementia (IWDs).** Previous research has begun redefining the illness experience for IWDs and urged clinicians to expand the IWDs role in their care. In attempts to move away from the deficit-based medical model, a paradigm shift focusing on remaining strengths and abilities is emerging. Using this strength-based based, I recently developed, implemented, and evaluated a moderate-intensity functional exercise program for IWDs that was delivered in their homes with support from the caregiver. This project was aimed at
providing a sound conceptual framework as well as theoretical guiding principles to an exercise intervention for IWDs. The newly designed intervention was found to be highly acceptable and feasible while exhibiting good tolerance by the IWDs. A randomized-controlled trial yielded efficacious findings with respect to strength, balance, and fast gait speed for those receiving the intervention. This project contributed significantly to the literature demonstrating that IWDs are able to participate in and benefit from a moderate-intensity functional exercise program. This success may lead to improved functional independence and reduced burden on caregiver or the healthcare system.

2. **Understanding the illness experience to inform psychosocial interventions.** There is a dearth of literature regarding the illness experience from the perspective of the individual with dementia (IWD) as most of the current body of literature focuses on data gathered through proxy reports of caregivers or clinicians. The primary aim of this line of research was to better understand the impact of the illness on various psychosocial outcomes. Using data from a dyadic intervention, PROJECT ANSWERS, developed by Dr. Katherine Judge, both qualitative and quantitative analyses were completed to describe the IWDs’ ability, validity, and reliability with answering various types of survey questions as well as interpreting the pattern of responses to assist with describing their illness experience. This insight can assist with assessment tool development along with identification of key areas that may be amenable to psychosocial interventions to improved well-being for IWDs.


C. **Evidence of Impact & Support**

1. Faculty Sponsored Research Support Initiative, College of Health and Public Affairs, University of Central Florida. $2,500, Summer-Fall 2016.

2. Dawson, N. & Tucker, J. Investigating the Impact of an Innovative Intergenerational Physical Activity Program on Older Adults and Children 8 to 11 Years Old. Submitted to LIFE @ UCF Richard Tucker Applied Gerontology Grant, $8,500.
NAME: Meghan Hufstader Gabriel  
Cluster Lead: No

POSITION TITLE, DEPT, & UNIT and or COLLEGE: Assistant Professor, COHPA, HMI

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, include postdoctoral training if applicable. Add/delete rows as necessary.)

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<td>History</td>
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<tr>
<td>University of Tennessee, Health Science Center, Memphis, TN</td>
<td>Ph.D.</td>
<td>07/2009</td>
<td>Health Outcomes and Policy Research</td>
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NOTE: The Biographical Sketch may not exceed two pages. Follow the formats and instructions below.

A. Personal Statement- your value to the cluster

I have the expertise, training, and motivation to successfully fulfill my role on the proposed cluster regarding disability, aging, and technology. I have a broad background in health outcomes, claims data analysis, health economics, and health information technology (health IT). My research includes the value of health information technology on ambulatory care sensitive conditions (ACSCs), adoption and use of health IT including e-prescribing and the electronic prescribing of controlled substances, health disparities, including digital divide and racial and ethnic disparities, and secondary data analyses. As a result of my previous experiences as an Associate Consultant in the Health Economics and Outcomes Research department of a drug development services company, Health Economist for the Office of the National Coordinator for Health IT, and as an Assistant Professor in a Health Management and Informatics department, I am aware of the importance of this cluster proposal and the steps necessary to help our team succeed. My research has provided important contributions to not only the academic research literature, but also to help promote use of health information technology interventions to improve the lives of patients. In addition to my work with health IT, I have a record of work regarding medication utilization and medication related economic and clinical outcomes. Specifically, my contributions have highlighted differences and disparities and ways to address these differences in terms of health IT interventions and their adoption and use, my research has addressed the diffusion of health information technology across the United States. Specifically, that health information technologies are used and valued by both providers of healthcare and patients.
B. Contribution to Scholarship and Creative Activities


BIOGRAPHICAL SKETCH

Provide the following information for all the core cluster personnel. Follow this format for each person.

DO NOT EXCEED TWO PAGES PER INVESTIGATOR.

NAME: Loerzel, Victoria  Cluster Lead: No

POSITION TITLE, DEPT, & UNIT and or COLLEGE:

Associate Professor and Beat M. and Jill L. Kahli Endowed Professor in Oncology Nursing.
College of Nursing

EDUCATION/TRAINING:

<table>
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<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>Completion Date YEAR</th>
<th>FIELD OF STUDY</th>
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</thead>
<tbody>
<tr>
<td>Florida Atlantic University, Boca Raton, FL</td>
<td>Bachelor of Science in Nursing</td>
<td>05/1993</td>
<td>Nursing</td>
</tr>
<tr>
<td>Case Western Reserve University, Cleveland, OH</td>
<td>Master of Science in Nursing</td>
<td>01/1997</td>
<td>Clinical Nurse Specialist</td>
</tr>
<tr>
<td>University of Central Florida, Orlando, FL</td>
<td>Doctor of Philosophy</td>
<td>08/2007</td>
<td>Nursing</td>
</tr>
</tbody>
</table>

NOTE: The Biographical Sketch may not exceed two pages. Follow the formats and instructions below.

A. Personal Statement- your value to the cluster

My research focuses on older adults with cancer, symptom self-management, quality of life, cognitive representation of symptoms and illness, and technology-based interventions. The primary aim of my research is to assist older adults to manage symptoms better, allowing them to remain at home and avoid unplanned hospital admission due to cancer treatment. The value I bring to the cluster include expertise in qualitative and survey research with older adults. I have a long history of recruitment and retention of this population and also have solid clinical partners with access to older adults.

I have received over $500,000 in research funding since 2007 including funding from the National Institute of Nursing Research (NINR) in 2015 to create a technology-based "serious game" to improve self-management of nausea and vomiting in older adults under treatment for cancer. This interdisciplinary project included partnering with simulation and game design experts from the UCF Institute for Simulation and Training and nurse scientists from the University of South Florida and Michigan State.

I am also currently partnering with Dr. Sejal Barden from Education and Human Performance to develop a technology-based intervention to assist Latino cancer survivors manage psycho-emotional issues after treatment. This R15 proposal will be submitted to the NINR in October 2017.
B. Contribution to Scholarship and Creative Activities

To my knowledge, my team and I are the first to develop a technology-based intervention to help older adults manage side effects at home. Our novel approach of using a formative evaluation process in conjunction with a community advisory board consisting of older adults with cancer, their caregivers and oncology nurses, has resulted in a realistic intervention to promote the use of symptom management strategies at home.

In addition, I have a solid track record of funding, publications and presentations at the local, regional and national/international level.

C. Evidence of Impact & Support

I have received over $500,000 in research funding since 2007. My research areas include symptom self-management, quality of life, cognitive representation of symptoms and illness, technology-based interventions for older adults with cancer. I received funding from the NINR in 2015 to create a serious game to improve self-management of nausea and vomiting in older adults under treatment for cancer. I have a long-standing partnership with Orlando Health and the UF Health Cancer Center-Orlando which gives me access to older adults with cancer for inclusion in my studies.
NAME: Patrick S. Pabian
Cluster Lead: No

POSITION TITLE, DEPT, & UNIT and or COLLEGE:
Associate Professor & Program Director, Doctor of Physical Therapy Program, COHPA

EDUCATION/TRAINING

<table>
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<th>Completion Date</th>
<th>FIELD OF STUDY</th>
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<tr>
<td>Bradley University, Peoria, IL</td>
<td>BS</td>
<td>05/2000</td>
<td>Physical Therapy</td>
</tr>
<tr>
<td>University of St. Augustine for Health Sciences, St. Augustine, FL</td>
<td>DPT</td>
<td>04/2007</td>
<td>Doctor of Physical Therapy</td>
</tr>
<tr>
<td>University of Central Florida, Orlando, FL</td>
<td></td>
<td>06/2010</td>
<td>Research Fellowship</td>
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<tr>
<td>American Physical Therapy Assoc., Education Leadership Institute, Alexandria, VA</td>
<td></td>
<td>07/2014</td>
<td>Education Leadership Fellowship</td>
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<tr>
<td>University of Central Florida, Orlando, FL</td>
<td></td>
<td>Anticipated 12/2017</td>
<td>Advanced Quantitative Methodology Certificate</td>
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<tr>
<td>University of Central Florida, Orlando, FL</td>
<td>PhD</td>
<td>Anticipated 2019</td>
<td>Higher Education</td>
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</table>

A. Personal Statement- your value to the cluster

As a senior faculty member, researcher, and program administrator for the Doctor of Physical Therapy Program at the University of Central Florida, I am well-equipped to assist in this research cluster. I direct all administrative functions of the UCF Doctor of Physical Therapy Program, which is a foundation from which this collaborative project will be cultivated. I have been highly involved in the Health & Wellness task Force with Legacy Point, as well as much recent research activity with the Interprofessional Education Committee with the UCF College of Medicine, College of Nursing, and units within COHPA. I have participated in several research projects and co-authored several publications (3) and national presentations (4) this academic year involving the interdisciplinary teams from which this cluster was built. Thus, not only my practices, but also my administrative skillsets and clinical expertise will positively contribute to this cluster team.

B. Contribution to Scholarship and Creative Activities

My scholarship and creative activities focus in two predominant areas relative to this cluster: (1) orthopedic patient care, and (2) interprofessional education and patient management. Thus I will
contribute to research on the aging population for orthopedic pathologies and mobility disorders such as gait, but also integration of cluster activities into education opportunities for the DPT students as well as those representatives from other disciplines. Evidence of contribution in these areas are as follows:

**Orthopedic Patient Care in Older Adults**

**Interprofessional Education & Patient Management**

**C. Evidence of Impact & Support**

I have been able to create sustainable relationships with interdisciplinary teams to collaborate on projects both involving research activities and community projects. This is evident not only in recent peer-reviewed products involving multiple faculty from units in COHPA, CECS, and CEHP, but also grant activity for research and collaborative community projects. Examples of this activity are as follows:

"A Biodesign Program in Rehabilitation Engineering"
National Institutes of Health, Department of Health and Human Services
Pal, S, *Pabian, PS (Co-PI)*, Cendan, J, Golden, A, Ross, E, Steiner, M
Submitted & scored, *awaiting determination* ($216,000) 2018-2022

"UCF – UCP of Central Florida Pediatric Physical Therapy Initiative"
5-Year partnership agreement for pediatric research & rehabilitation service enhancement
University of Central Florida, Doctor of Physical Therapy Program & United Cerebral Palsy of Central Florida
*Pabian, PS* (Principle Investigator)
*Funded*, Contracted Agreement ($200,000) 2013-2018
NAME: Daniel Lee Paulson, PhD

POSITION TITLE, DEPT, & UNIT and or COLLEGE:
Assistant Professor
Department of Psychology
College of Sciences
University of Central Florida

EDUCATION/TRAINING

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<th>FIELD OF STUDY</th>
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<tr>
<td>Virginia Tech; Blacksburg, VA</td>
<td>BS</td>
<td>12/2002</td>
<td>Psychology</td>
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<tr>
<td>James Madison University;</td>
<td>MA</td>
<td>12/2005</td>
<td>Psychological Sciences</td>
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<tr>
<td>Harrisonburg, VA</td>
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<tr>
<td>Wayne State University; Detroit,</td>
<td>PhD</td>
<td>08/2013</td>
<td>Psychology (Clinical)</td>
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<td>MI</td>
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</table>

A. Personal Statement - your value to the cluster

As a licensed clinical psychologist, I often work with older adults with life limiting disorders including geriatric neurocognitive disorders (i.e.: Alzheimer’s disease) and their families. I look forward to contributing to work advanced by the proposed faculty cluster by piloting experimental interventions in the clinic, and providing methodological and statistical expertise on emerging research.

B. Contribution to Scholarship and Creative Activities

A complete list of publications can be found at: https://psychology.cos.ucf.edu/people/paulson-daniel/

*Denotes scholarly work on which I am the first faculty author

Most of my research has examined the interrelationships between physical health and mental health variables among older adults. These relationships are gaining attention as healthcare delivery tends toward increasingly interdisciplinary care. In particular, I have examined broad clinical trajectories using both the Health and Retirement Study and the Wisconsin Longitudinal Study. We developed and validated a subjective frailty index using HRS data, which was then used in studies describing a clinical trajectory characterized by high cerebrovascular burden, depressive symptomatology, frailty, and earlier mortality.


My second primary research domain examines the dementia caregiver trajectory from a psychosocial perspective. This ongoing research includes two published papers and two still in production examining the contribution of individual differences (demographic and psychosocial) between caregivers to decision making. This project also involves our ongoing interventional trial.


C. Evidence of Impact & Support

- **University of Central Florida In-House Grant** Paulson (PI) 05/2015-05/2017
  Vascular Burden and Decline: Depression, Cognition, Sleep and Frailty
  The goal of this research is to examine the relationships between depressive symptomatology, neuropsychological correlates of vascular aging, subjective sleep quality, and frailty.
  Role: PI

- **NIH Loan Repayment Program** Paulson (PI) 11/2015-11/2017
  Title: Dementia Caregiver Preparedness
  The goal of this research is to examine various facets of caregiver preparedness among informal caregivers of persons with dementia.
  Role: PI

- **UCF College of Medicine Award** Paulson (PI) 01/2016-01/2017
  PI: Daniel Paulson; Co-PI’s: Nichole Lighthall, Kiminobu Sugaya, Cerissa Blaney
  Title: UCF Caregiver Support and Stress Study
  The goal of this research is to examine the relationship between psychosocial and demographic variables and stress hormones among dementia caregivers.
  Role: PI
BIOGRAPHICAL SKETCH

Provide the following information for all the core cluster personnel. Follow this format for each person.

DO NOT EXCEED TWO PAGES PER INVESTIGATOR.

NAME: Denver Severt

POSITION TITLE, DEPT, & UNIT and or COLLEGE: Associate Professor, Rosen College of Hospitality Management

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, include postdoctoral training if applicable. Add/delete rows as necessary.)

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<tr>
<td>Virginia Polytechnic Institute &amp; State University</td>
<td>Ph.D.</td>
<td>2002</td>
<td>Hospitality and Tourism Management</td>
</tr>
<tr>
<td>University of Oregon</td>
<td>MBA</td>
<td>1991</td>
<td>Organizational Theory and Accounting</td>
</tr>
<tr>
<td>Appalachian State University</td>
<td>BSBA</td>
<td>1988</td>
<td>Finance, Banking, and Economics</td>
</tr>
</tbody>
</table>

NOTE: The Biographical Sketch may not exceed two pages. Follow the formats and instructions below.

A. Personal Statement- your value to the cluster

My contribution will be to represent the hospitality component as it relates to these populations and our faculty person hired will work together in the program.

B. Contribution to Scholarship and Creative Activities (As of 2008 when hospitality in healthcare projects commenced)


### C. Evidence of Impact & Support

Principal Investigator, Fall 2014 and Spring 2015, $12,500 Presbyterian Homes, Improving Service Excellence in a Continual Care Retirement Center.

Principal Investigator, Fall 2013 and Spring 2014, $2,500 Presbyterian Homes, Improving Service Excellence in a Continual Care Retirement Center.

Co-Investigator, 2012 to 2013, Winter Semester $18,000 UCF Internal Grant Toni Jennings Provost Fellowship, UCF Teaching Academy, Healthcare Application.

Principal Investigator, 2010 to 2011 Funded Research from Orlando Health, Inc. The Discharge Process at the Doctor P. Phillips Hospital, $49,800.

Principal Investigator, 2009 to 2010 Funded Research from Orlando Regional Medical Center, Enhancing Service Excellence, $98,400.

Principal Investigator, 2008 to 2009 Funded Research from the Doctor P. Phillips Hospital, Enhancing Service Excellence, $48,418.

Principal Investigator, 2007 to 2008 Funded Research from the Doctor P. Phillips Hospital, Enhancing Service Excellence, $48,418.
BIOGRAPHICAL SKETCH
Provide the following information for all the core cluster personnel. Follow this format for each person.
DO NOT EXCEED TWO PAGES PER INVESTIGATOR.

NAME: Janan Al-Awar Smither  
Cluster Lead: NO

POSITION TITLE, DEPT, & UNIT and or COLLEGE: Professor, Dept. of Psychology, COS

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, include postdoctoral training if applicable. Add/delete rows as necessary.)

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<th>FIELD OF STUDY</th>
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<tr>
<td>The American University of Beirut</td>
<td>B.Sc.</td>
<td>1977</td>
<td>Biology-Psychology</td>
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<tr>
<td>The Johns Hopkins University</td>
<td>M.A.</td>
<td>1980</td>
<td>Experimental Psychology</td>
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<tr>
<td>The Johns Hopkins University</td>
<td>Ph.D.</td>
<td>1985</td>
<td>Experimental Psychology</td>
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NOTE: The Biographical Sketch may not exceed two pages. Follow the formats and instructions below.

A. Personal Statement- your value to the cluster
Disability, aging, and technology are the three keywords that describe my research career. In 1998, I established an assistive technology information and referral center at UCF that served the elderly and disabled community in Orlando and the surrounding four counties. I served as director of the FAAST center for several years. Currently, I am the director of the Technology and Aging Lab at UCF. I have over 25 years of experience in the teaching, practice, research and development of complex human-machine systems with a special focus on older adults. My research interests include human-computer interaction, robotics; technology and aging; technology and functional independence; and aging and driving.

B. Contribution to Scholarship and Creative Activities
I have over 100 journal articles, book chapters, proceedings, technical reports and scientific presentations, and my research has been funded by a variety of agencies including NSF, NASA, the National Highway Transportation Agency (via the Florida Department of Safety and Motor Vehicles, and the Florida Department of Transportation), the Army Research Institute, NAVAIR, and the National Institute on Aging. Throughout my research career, I have focused on training graduate and undergraduate students in the scientist-practitioner model. My lab typically has 3-4 doctoral students and a significant number of undergraduate research assistants every semester (8-12). All of these students are directly involved in the lab's research activities. All students in the lab (graduate and undergraduate) attend a weekly seminar where we discuss all aspects of the research we are working on (brain storming, experimental design, data collection, data analysis, etc.).
that way, students are exposed to many facets of the experimental process and not just to the specific project they are working on. Furthermore, students in my lab are also encouraged to make presentations and contribute to writing reports and papers. As a result of training in my lab, making presentations at regional and national conferences, and having authorships in peer reviewed publications, many of my undergraduate students have been accepted to, and gone on to pursue graduate degrees at universities throughout the U.S. Some of these students also secured prestigious NSF fellowships at their graduate programs (University of Michigan, Penn State University, University of Massachusetts to name a few).

C. Evidence of Impact & Support

Ever since I attended the National Institute on Aging’s Summer Research Institute on Aging in 1989, my research has focused on aging and technology. Initially, I investigated older adults’ interactions with computers. The main goal of those studies was to enhance usability by identifying interface characteristics and personality factors that may influence acceptance of computers and enhance older users’ performance. It is interesting to note that the factors and characteristics (e.g. utility, trust, usability, complexity, etc.) that impact computer use by the elderly that I investigated and identified in my early research are very much the same ones identified by today’s researchers investigating 21st century computer-based technologies such as robotics and wearable computer devices.

At the same time that I was conducting the above research, I was invited to establish the UCF-Florida Alliance for Assistive Services and Technology (FAAST) Center, a regional Information & Referral center for the Americans with Disabilities Act “Tech Project.” Given that a large proportion of the disabled community is made up of older adults, I accepted the invitation and established the FAAST Center at UCF, which I headed for several years. During my tenure as director of the center, I was invited to testify to the State Legislative Committee on Long Term Care and to the Federal Committee on the Refunding of the “Tech Project” of the Americans with Disabilities Act. Furthermore, on three separate occasions, I was asked to write policy papers for the State of Florida Legislature. I also published a number of assistive technology related research articles. Although a large part of my work at FAAST was service oriented, I believe my efforts contributed significantly to raising awareness among policymakers, stakeholders, caregivers, and seniors about the use of technology to enhance the functional independence of older adults in the U.S.

More recently, my research focused on aging and driving. This involved developing, testing, and validating assessment instruments that measure temporal factors in vision. My work also investigated the relationships between age-related declines in these factors and crash risk. My driving and aging research was funded for several years by the Department of Transportation through the Florida DHSMV and DOT. Currently, I am involved in a number of funded research projects that investigate robotics, disability, and Aging. My interdisciplinary robotic arm research (Psychology and Engineering) is funded by a 3-year grant from the National Science Foundation. Furthermore, my lab is collaborating with UCF CREATE on an investigation of robotic kits for the elderly. A proposal for funding this research has just recently made the cut for receiving support from LIFE at UCF. This LIFE grant will allow us to run the “proof of concept” research necessary to justify more substantial funding in the near future.
NAME: Gita Sukthankar

POSITION TITLE, DEPT, & UNIT and or COLLEGE: Associate Professor, Department of Computer Science, CECS

EDUCATION/TRAINING

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<td>Princeton University, NJ</td>
<td>A.B.</td>
<td>1997</td>
<td>Psychology</td>
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<td>Carnegie Mellon University, PA</td>
<td>M.S.</td>
<td>2000</td>
<td>Robotics</td>
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<tr>
<td>Carnegie Mellon University, PA</td>
<td>Ph.D.</td>
<td>2007</td>
<td>Robotics</td>
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NOTE: The Biographical Sketch may not exceed two pages. Follow the formats and instructions below.

A. Personal Statement- your value to the cluster

Human-robot interaction is the study of how to structure user interactions between humans and robots toward improving task performance and creating a positive user experience. My expertise in this area is closely related to many of the technology challenges that this cluster plans to address. My research on human activity recognition was supported from 2008-2010 by the Quality of Life Technology Center, a NSF funded center dedicated to research on personal assistive robots. I serve as the faculty contact for the Intelligent Robotic Systems minor; a key aspect of the cluster’s educational mission will include expanding the minor’s technical electives to include new interdisciplinary courses on human-robot interaction and assistive robotics.

B. Contribution to Scholarship and Creative Activities


2015. (nominated for Best Innovative Applications paper).


C. Evidence of Impact & Support

Awards


Invited Talks

- "Towards Analytics for RAP (Robots-Agents-People) Systems": CMU Robotics Institute Seminar (2016)
- "Synergies between AI in Games and Robotics": NSF Workshop on Research Issues at Boundary of AI and Robotics (2015)

Relevant Service

- DARPA Information Science and Technology Advisory Group (2015-2018)

Relevant Funding

- PI (50%) 6/2013–5/2014 In-house Grant: Acquisition of Robot Platforms for Research and Education in Human Robot Interaction ($108,441)
**BIOGRAPHICAL SKETCH**

Provide the following information for all the core cluster personnel. Follow this format for each person.

DO NOT EXCEED TWO PAGES PER INVESTIGATOR.

<table>
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<tr>
<th>NAME: Pamela Wisniewski</th>
<th>Cluster Lead: No</th>
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**POSITION TITLE, DEPT, & UNIT and or COLLEGE:** Assistant Professor, Computer Science, College of Engineering and Computer Science

**EDUCATION/TRAINING**

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<tr>
<td>University of Florida; Gainesville, FL</td>
<td>B.S.</td>
<td>12/2001</td>
<td>Decision &amp; Information Sciences</td>
</tr>
<tr>
<td>University of Florida; Gainesville, FL</td>
<td>M.S.</td>
<td>12/2002</td>
<td>Decision &amp; Information Sciences</td>
</tr>
<tr>
<td>University of North Carolina at Charlotte; Charlotte, NC</td>
<td>Ph.D.</td>
<td>08/2012</td>
<td>Computing &amp; Information Systems</td>
</tr>
<tr>
<td>Pennsylvania State University</td>
<td>Post Doc</td>
<td>08/2015</td>
<td>Information Sciences &amp; Technology</td>
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**A. Personal Statement- your value to the cluster**

The proposed Faculty Cluster Initiative on **Empowered Aging** aims to develop research, health policies, programs, and technological innovations in order to address physical and social factors that influence health in later life, such as socioeconomic status, environmental exposures, and early life course disadvantages. The end goal is to help individuals maintain vitality through good health and community engagement as individuals grow older. As key component of this initiative are the technology innovations that support health and vitality. Technology solutions for empowered aging must be both evidence-based and usable for interventions to be effective.

My areas of expertise are in Human-Computer Interaction (HCI) and user-centered design (UCD). I have extensive training in UCD methodologies, such as contextual inquiry, through qualitative interviews, document analysis, and end-user surveys. My experience includes understanding the needs of a diverse group of end users, proposing design solutions, documenting business systems requirements, implementing technology, and evaluating system implementations to ensure both compliance and success. I have relevant industry experience working as a systems developer for the Lash Group, a medical consulting company owned by AmerisourceBergen, as well as working for the financial services industry as both a developer and business analysis. I have also taught undergraduate and graduate-level courses in Human-Computer Interaction and Health Data Management & Decision Support. Currently, I am acting as the educational researcher on an NSF funded REU Site project at UCF related to the Internet of Things, (IoT) and my students have developed a caregiving mobile app based on the Fitbit API, which facilitates health activity monitoring for elderly family members. I am also working with Drs. Gabriel and Gurupur from COHPA on understanding the assistive technology needs of family caregivers of Alzheimer’s and dementia patients. My peer-reviewed, published work specifically related to this proposal includes:


The primary corpus of work has focused more generally of user-centered, HCI topics, which include adolescent online safety, social media privacy, and knowledge worker productivity within technology-mediated environments. However, all of these topics have the unifying theme of understanding end-users and designing solutions to meet their needs. As such, my research expertise in UCD can readily be applied to the current context of Disability and Aging. My goal is to help recruit a new faculty member with expertise specifically in HCI and aging populations to leading design, development, and user study efforts related to technology innovations proposed by members of the cluster.

**B. Contribution to Scholarship and Creative Activities**

A large body of my work has focused on promoting adolescent online safety through adolescent resilience and coping strategies. My work has won numerous best paper (top 1%) and honorable mention awards (top 5%) in premiere conferences in my field, as well as garnering attention within news media. By combining technology contexts such as social media with existing theories from developmental psychology, my research has made advances in moving us beyond a fear-based paradigm of trying to shield teens from any and all risks to one where we help teach teens how to effectively deal with the online risks that they will inevitably encounter. Interestingly, I have found that adolescents and older adults have many of the same concerns related to gaining/maintaining independence and dealing with surveillance tactics employed by caretakers who are tasked with ensuring their safety. This is a theme I plan to focus on in my future research to create a bridge between these two research streams – to find ways to empower both teens and older adults in technology-mediated environments.

**C. Evidence of Impact & Support**

I have been at UCF just over a year so my evidence of impact and support is abbreviated by my duration in my current role:

- **$51,400** (2016) in industry/internal funding related to my efforts for building an industry User Experience (UX) lab as an experiential learning experience for CECS students.
- **$38,991.20** (2015, 10% credit) for the "REU Site: Research Experiences in the Internet of Things," supported by the National Science Foundation. Led by Drs. Turgut and Jin.
- **$2,500** (2015) in internal support for the Faculty Support Research Initiative Award from UCF’s College of Heath and Public Affairs. Co-PI: Dr. Gabriel.
BIOGRAPHICAL SKETCH

Provide the following information for all the core cluster personnel. Follow this format for each person.
DO NOT EXCEED TWO PAGES PER INVESTIGATOR.

NAME: Yunjun Xu
Cluster Lead: (No)

POSITION TITLE, DEPT, & UNIT and or COLLEGE: Associate Professor, Mechanical and Aerospace Engineering, College of Engineering and Computer Science

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, include postdoctoral training if applicable. Add/delete rows as necessary.)

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<th>FIELD OF STUDY</th>
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<tr>
<td>Nanjing University of Aero. &amp; Astro. (NUAA), China</td>
<td>BS</td>
<td>1996</td>
<td>Aircraft Design</td>
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<tr>
<td>Nanjing University of Aero. &amp; Astro. (NUAA), China</td>
<td>M.S.</td>
<td>1999</td>
<td>Control Theory and Control Engineering</td>
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<tr>
<td>University of Florida</td>
<td>M.S.</td>
<td>2002</td>
<td>Electrical &amp; Computer Engineering</td>
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<tr>
<td>University of Florida</td>
<td>Ph.D.</td>
<td>2003</td>
<td>Mechanical and Aerospace Engineering</td>
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NOTE: The Biographical Sketch may not exceed two pages. Follow the formats and instructions below.

A. Personal Statement- your value to the cluster

My research interests include complex system modeling, estimation and control, nonlinear robust control, constrained optimal control, autonomous systems, field robots, and aerial robots.

I could contribute to the center via my experiences in modeling and simulation, robotic technologies, and control system designs.

B. Contribution to Scholarship and Creative Activities

(Briefly describe your most significant contributions to scholarship and creative activities. Include appropriate indicators for your area of scholarship and external recognition.)

AIAA Associate Fellow
ASME Member
Associate Editor, ASME Journal of Dynamic Systems, Measurement and Control (2016 - )
AFOSR Summer Faculty Fellow
Some Awards at UCF (CECS-Distinguished Research Award – Associate Professor Level, UCF Millionaire Club, CECS-Distinguished Research Award – Assistant Professor Level)
C. Evidence of Impact & Support
(Briefly describe evidence of impact and support related to the proposed cluster (i.e. external funding, partnerships, collaborations, synergies, new policies, keynote or invited lectures.).)

Published ~50 journal articles
60 conference papers and presentations
> $2.47M funding since joining UCF at 2008 (external)

Five Example Journal Papers:

Journal Papers published in 2015