

Description

The Jump Applied Research for Community Health through Engineering and Simulation (Jump ARCHES) Endowment offers this Request for Proposals to members of faculty of the University of Illinois at Urbana-Champaign, members of faculty of the University of Illinois College of Medicine at Peoria, and/or OSF HealthCare clinicians. The goal of this select competitive grant is to improve health care quality and patient safety through the combined efforts of researchers, engineers and clinicians. The award is for **1 year of startup/seed money support**. Requests for continuing funding will be based on reported progress.

Please Contact:

Preparation of a responsive application	Antonios Michalos, M.D., M.S (Associate Director, HCESC)	(217) 244-4563 michalos@illinois.edu
Submission of the application	Seth Stutzman, SS, BS, BS (ARCHES Program Coordinator)	(309) 308-9409 seth.t.stutzman@osfhealthcare.org

Goals

Through new technologies, methods or training, this program will use our combined expertise in the broad areas of Sensing Devices, Materials and Mechanics, Health Information Technologies, Simulation, Human Factors/Industrial Ergonomics, Artificial Intelligence, Design and Social and Behavioral Sciences for executing collaborative projects. These projects will be directed to the current or the future state of **Community Health**. Community Health refers to the health status of a population of people, and the actions and conditions, both private and public, to promote, protect and preserve their health. Disparities in the distribution of health care access and its non-clinical drivers produce inequitable health outcomes in communities throughout the world.

Successful proposals in this cycle will explore and apply technologies and systems in the following areas:

- We are exploring solutions to **Community Health** disparities using advanced **data analytics** in the identification and assessment of vulnerable populations.
- We are looking for in-home and coordinated community tools, technologies and networks for assessing wellness and the **social determinants of health** while promoting access to health care, health literacy and community resources. This may involve the creation of digital tools for community health workers and integrating AI, machine learning and robotics to provide better delivery of health care.
- The training and evaluation of current and future medical professionals using **AR, VR, XR** and other technologies for **tele-health**.
- Innovative new solutions using **AI, machine learning** and **robotics** to provide better monitoring and delivery of health care at home and health care facilities.
- Novel **sensors, cloud-based systems** and other technologies for early detection of health risks which could be included into algorithms, determining the immediate need to notify a doctor or the user's emergency contacts.
- To pair with our radical access initiative, we are looking to support solutions in providing **health care to rural communities**. We anticipate a new ARCHES **rural health care testbed** will be operational in the near future. This testbed could help in catalyzing and testing proposed solutions.

- The misuse of and addiction to opioids is a serious national crisis responsible for 130 casualties in the US every day. To address the strains on public health and social and economic welfare, projects involving predictive analyses to identify people at-risk and addressing underlying conditions that if treated well could prevent opioid addiction, will be considered.
- New solutions to health care issues will require broader assessments of the role of agents, AI and machine learning as it relates to **health literacy, social determinants assessments** and other **behavioral health** concerns. Involving the examination of **human factors** that influence whether people will adapt to assistive technology options as part of the more direct assessments is significant to any of these possible solutions.

Special Response for Proposals

Autism Spectrum Disorders (ASDs) refers to a broad range of conditions characterized by challenges with social skills, repetitive behaviors, speech and nonverbal communication that affects an estimated 1 in 59 children in the US today. Through our efforts with OSF HealthCare Children's Hospital of Illinois and Developmental Pediatrics, special projects will be considered for support, including those involving early diagnosis, treatment and quantitative assessment of ASD treatment as well as supporting children and adults with ASDs, allowing them to be more functional at home, school and the workplace while exploring technologies to utilize the unique skillset of these individuals to advance new knowledge.

Amyotrophic Lateral Sclerosis (ALS), Lou Gehrig's disease, is a progressive neuromuscular disease that affects roughly 30,000 people in the US, with 5,000 new cases diagnosed each year. Building on the existing relationship between the OSF HealthCare Illinois Neurological Institute, OSF HealthCare Saint Francis Medical Center, University of Illinois at Urbana-Champaign and the University of Illinois College of Medicine at Peoria, new proposals are being solicited that propose novel technologies, systems and assistive devices for communication and immobility associated barriers experienced by people with ALS and projects addressing the difficulties of their families and caregivers.

Evaluation Criterion: Proposals will be specifically evaluated for their respective alignment to program goals [**Relevance**], the potential impact on patient and learner outcomes [**Impact**] and the proposed plan and quality of the team proposed [**Approach**].

Who can submit a proposal: The Primary Investigator may be from any discipline. Additionally, proposals are **REQUIRED** to include one Investigator from the Grainger College of Engineering at the University of Illinois at Urbana-Champaign and one Investigator from *either* the health care providers of OSF HealthCare *or* the University of Illinois College Of Medicine at Peoria Faculty.

The steering panel for Jump ARCHES will prioritize applied research programs that evaluate the improvement of patient outcomes; the creation of equipment and facilities to evaluate and improve health care; and contributions to scholarship and support for advanced degrees to prepare new generations of experts in the field.

Continued Funding

For the current ARCHES grantees, we invite you to submit a proposal for funding to continue your project if excellent progress has been made during the initial phase(s). This will require a final report before the continued funding request is reviewed. In addition, evidence of proposal(s) submitted for extra-mural funding and technology disclosure to UIUC OTM or OSF OIM must be presented. The proposal must show potential for translational research or external funding opportunities.