HEALTH CARE ENGINEERING SYSTEMS CENTER

The Grainger College of Engineering

10th Year Anniversary

HEALTH CARE ENGINEERING SYSTEMS SYMPOSIUM

Celebrating a decade of the Jump ARCHES partnership

October 16, 2023

I Hotel and Conference Center
Champaign, Illinois

jump ARCHES

AN OSF HEALTHCARE, UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN AND UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE PEORIA COLLABORATION

10th Year Anniversary

HEALTH CARE ENGINEERING SYSTEMS SYMPOSIUM:

Celebrating a Decade of the Jump ARCHES Partnership

Monday, October 16, 2023

AGENDA

8:00 – 8:45AM

Breakfast, Registration, Networking

8:45 – 10:00AM

Opening Remarks

Robert J. Jones - WELCOME
Chancellor
University of Illinois Urbana-Champaign

Susan Martinis
Vice Chancellor for Research and Innovation
University of Illinois Urbana-Champaign

Michelle Conger
Chief Strategy Officer and CEO-OSF OnCall Digital Health
OSF HealthCare System

Michael Cruz
Chief Operating Officer
OSF HealthCare System

James Rehg - Welcome and Overview of HCESC
Director, Health Care Engineering Systems Center
Founder Professor, Computer Science, and Industrial and Enterprise Systems Engineering
University of Illinois Urbana-Champaign

John Vozenilek - Overview of Jump ARCHES
VP/Chief Medical Officer
Innovation and Digital Health, Simulation Center
OSF HealthCare System, Peoria IL

10:00 – 10:15AM

Break

10:15 – 11:15AM

Keynote

Rashid Bashir - INTRODUCTION
Dean, Grainger College of Engineering
University of Illinois Urbana-Champaign

Roderic I. Pettigrew, PhD, MD, - KEYNOTE SPEAKER
Chief Executive Officer (CEO) of Engineering Health (EnHealth) and Executive Dean for Engineering Medicine (EnMed)
Texas A&M University

11:15 – 1:00PM

Networking (Posters/Demos/networking)

Lunch served at noon

1:00 – 3:00PM

Jump ARCHES Research Talks

Chair: James Rehg

Bedside and Beyond: Evolution of a Pediatric Code Cart Augmented Reality App
Trina Croland /Abigail R. Wooldridge/ Kyle Formella

Establishing Transfer Validity of VR Umbilical Venous Catheter Simulation
Nicole Rau

Evaluating the Impact of Virtual Reality on Pre-Surgical Planning
Matt Bramlet

Hands Down: Empowering Children and Families through CPR education
Paul Jeziorczak/Inki Kim

Merging multimodal data (SEEG, MRI, and CT) for automated 4D visualization of Seizure Onset Zones in VR
Brad Sutton

Development of medical education task trainers and a digital tool for spasticity and rigidity assessment
Liz Hsiao-Wecksler and Chris Zallek

Exposomic Equity, a new paradigm: What is it, why it is important, and how can we communicate its effect on the health of all communities (using human-centered design)
Ruby Mendenhall and Scott Barrows

Maps of Medical Reason: Applying Knowledge Graphs and Artificial Intelligence in Medical Education and Practice
William Cope and Mary Kalantzis

Environmental Surveillance for Viruses and Antimicrobial Resistance
Helen Nguyen

FlightPath and NeuroDNA: Creating a New Interoperability Standard for the Evaluation of Neurocognitive Impairment
Adam Cross and Inki Kim

3:00 – 3:10PM

Break

3:15 – 4:00PM

Panel: Digital Rural Health

Moderator: **Caroline Cao**
Panelists: **Jim Rehg, John Vozenilek, Wendy Rogers, Susan Wolf, Jonathan Handler, Brandi Clark**

4:00PM

Closing Remarks

Jim Rehg

4:00 – 5:00PM

Reception

OPENING REMARKS

Chancellor Robert J. Jones

» Chancellor, University of Illinois Urbana-Champaign

Robert J. Jones is the 10th chancellor of the University of Illinois Urbana-Champaign. He previously served as president of the University of Albany, State University of New York following a 34-year career as a faculty member and senior administrator at the University of Minnesota. His leadership at Illinois, the state's flagship public research university, has seen the launch of the Carle Illinois College of Medicine, the nation's first engineering-based medical school, the receipt of two of the largest gifts in the university's history resulting in the endowed naming of two colleges, the launch and achievement of a historic $2.25 billion fundraising campaign goal more than a year ahead of schedule and the invention of a novel, affordable, accurate and rapid COVID-19 testing ecosystem that allowed the university to safely resume in-person instruction during a global pandemic. His tenure has also been distinguished by significant initiatives to increase access and affordability for all students and to foster a more diverse and inclusive university. Jones created the first vice-chancellor-level diversity office and senior leadership position at Illinois. And he established the Illinois Commitment Scholarship program that offers four years of free tuition to nearly 2,000 Illinois families each year. Throughout his career, Jones has worked to make education available to promising young scholars around the world. From 1984-1994, he worked with Archbishop Desmond Tutu's South African Education Program (as an academic and scientific consultant) which educated more than 3,000 black South Africans in American Universities. Jones also serves on the Board of Directors of APLU, Campus Compact, the Farm Foundation, the Donald Danforth Plant Science Center, and the National 4-H Council. He is a fellow of the American Society of Agronomy and the Crop Science Society of America. He was elected a member of the American Academy of Arts and Sciences in 2019.

Susan Martinis, PhD

» Vice Chancellor for Research and Innovation
University of Illinois Urbana-Champaign

Susan Martinis is Vice Chancellor for Research & Innovation at the University of Illinois Urbana-Champaign, where she provides leadership for the campus-wide interdisciplinary research institutes, promotes new research initiatives, and oversees the administrative and business processes that ensure the safe, ethical, and productive conduct of research at Illinois.

Dr. Martinis, the Stephen G. Sligar Professor of Molecular and Cellular Biology, studies the mechanisms, evolution, and biomedical applications of protein synthesis and RNA-protein interactions. She is a successful researcher, engaged in entrepreneurial and corporate partnerships, a committed educator, and an experienced administrator.

Michelle Conger

» Chief Strategy Officer and CEO-OSF OnCall Digital Health
OSF HealthCare System

Michelle Conger is the chief strategy officer for OSF HealthCare and chief executive officer for OSF OnCall Digital Health. In her role as chief strategy officer, she partners with the CEO, board of directors and executive leadership in the ongoing generation and execution of system strategy. She also assists in ensuring the alignment of key strategic initiatives and business
development plans.

Conger led the creation of OSF Innovation, a division dedicated to health technology incubation, usability and simulation strategies and venture capital investment strategies. As CEO of OSF OnCall Digital Health, she is leading the organization in the development of a versatile digital platform that will use existing and emerging digital technologies to transform health care delivery to meet the challenges and expectations of the modern health care user.

She has led many transformation initiatives across the Ministry including the implementation of Epic, organizational design transformation, population health strategy development and the creation of a systemwide program management office. Her past roles have included senior vice president of the Performance Improvement Division and executive director of planning for the Information Technology division. Her professional accomplishments also include achieving a 6 Sigma Black Belt and 6 Sigma Master Black Belt. Conger has a master's in social work from the University of Illinois.

Mike Cruz, MD

» Chief Operating Officer
OSF HealthCare System

Dr. Mike Cruz serves as chief operating officer for OSF HealthCare. He is responsible for ensuring that clinical and administrative services are organized to meet the needs of those we serve.

Dr. Cruz started with OSF HealthCare Saint Francis Medical Center in 1987 as a resident in the emergency medicine program. He was hired as an emergency medicine attending physician in 1990 and held the position of vice chairman of the department for a decade. In September 2007, Dr. Cruz was appointed vice president of Quality & Safety for OSF Saint Francis and began serving as the associate chief medical officer. Dr. Cruz was promoted to president of OSF Saint Francis in January 2015. In January 2017, Dr. Cruz assumed the responsibilities of interim CEO of the Central Region in addition to serving as the OSF Saint Francis president. He formally took over the role of CEO of the Central Region in November 2017, providing leadership support, which included OSF Saint Francis and OSF HealthCare Children's Hospital of Illinois in the Peoria area as well as the broader geographic area to the north and south of the Tri-County Area.

In addition to his role as Central Region CEO, Dr. Cruz was promoted to chief operating officer of OSF HealthCare in December 2018. He served both roles until September 1, 2022, when the role of Central Region CEO was filled, enabling him to focus more on his operational responsibilities. Dr. Cruz earned a bachelor's degree in biochemistry from the University of Illinois at Urbana- Champaign and medical degree from the University of Illinois College of Medicine Chicago.

James Rehg, PhD

» Director, Health Care Engineering Systems Center
» Founder Professor, Computer Science, and Industrial and Enterprise Systems Engineering
University of Illinois Urbana-Champaign

Dr. James Rehg is the new director of the Health Care Engineering Systems Center (HCESC). He is appointed as the Founder Professor with joint faculty appointments in the Departments of Computer Science and Industrial and Enterprise Systems Engineering. Due to a current project with Meta, Dr. Rehg will ramp up his leadership involvement with UIUC by August 2023.

He was previously a professor at Georgia Institute of Technology's School of Interactive Computing. He was also the co-director of the Center for Health Analytics and Informatics. His research interests include computer vision and machine learning, and his research group at Georgia Tech works in several interdisciplinary areas: developmental and social psychology, autism research, mobile health, and robotics.

John Vozenilek, MD, FACEP

» Vice President, Chief Medical Officer, Innovation and Digital Health
OSF HealthCare
» Duane and Mary Cullinan Professor in Simulation Outcomes
» Professor Clinical Emergency Medicine
University of Illinois College of Medicine at Peoria
» Clinical Professor BioEngineering
University of Illinois College of Engineering, Urbana Champaign

Dr. John Vozenilek is the vice president and chief medical officer for Innovation and Digital Health at Jump Trading Simulation & Education Center, a collaboration between OSF HealthCare and the University of Illinois College of Medicine Peoria (UICOMP). In this role, Dr. Vozenilek provides central coordination and oversight for undergraduate, graduate, interdisciplinary and continuing medical education programs for OSF HealthCare. Under his direction, OSF HealthCare and UICOMP have built resources for educators who wish to use innovative learning technologies for teaching and assessment.

As the Duane and Mary Cullinan Professor in Simulation Outcomes, Dr. Vozenilek is actively involved in academic programs across traditional departmental boundaries and in clinical practice at OSF HealthCare. In addition to his role in simulation, Dr. Vozenilek teaches master's degree candidates in the fields of simulation, health care quality and safety and is formally appointed to teach biodesign at the University of Illinois at Urbana-Champaign

KEYNOTE

Rashid Bashir, PhD - INTRODUCTION

» Dean, The Grainger College of Engineering
University of Illinois Urbana-Champaign

Dr. Rashid Bashir is Dean of The Grainger College of Engineering, the Grainger Distinguished Chair in Engineering and Professor of Bioengineering at the University of Illinois at Urbana-Champaign. Previously, he was the Executive Associate Dean at the Carle-Illinois College of Medicine (2017 – present), the Abel Bliss Professor of Engineering, Head of Department of Bioengineering (2013 – 2017), and Director of the Micro and Nanotechnology Laboratory (a campus-wide clean room research facility) (2007 – 2013). Prior to joining UIUC, he was at Purdue University (1998 – 2007) with faculty appointments in Electrical and Computer Engineering, and Bioengineering. From 1992 to 1998 he worked at National Semiconductor Corporation in Santa Clara, CA as Sr. Engineering Manager.

His research integrates biology and medicine with micro and nanotechnology in two broad areas, how micro/nanotechnology can help solve problems in life sciences (diagnostics and therapeutics), and how life science can help solve problems in micro/nanotechnology (bio-inspired self-assembly). His research projects span from solid state nanopores to 3D biofabrication due to his interest in bionanotechnology, biosensors and bioelectronics, and nanotechnology.

Roderic I. Pettigrew, PhD, MD - KEYNOTE SPEAKER

» CEO of EnHealth and Executive Dean of EnMed
Texas A&M University

Dr. Pettigrew serves as chief executive officer (CEO) of Engineering Health (EnHealth) and executive dean for Engineering Medicine (EnMed) at Texas A&M University, in partnership with Houston Methodist Hospital. Dr. Pettigrew also holds the endowed Robert A. Welch Chair in Medicine. EnHealth is the nation's first comprehensive educational program to fully integrate engineering into all health-related disciplines. EnMed is the nation's first four-year, fully integrated engineering and medical education curriculum leading to both an MD and master's degree in engineering in four years.

An internationally recognized leader in biomedical imaging and bioengineering, Dr. Pettigrew served for 15 years as the founding director for the National Institute of Biomedical Imaging and Bioengineering (NIBIB) at the National Institutes of Health (NIH). Prior to his appointment at the NIH, he joined Emory University School of Medicine as professor of radiology and medicine (cardiology) and Georgia Institute of Technology as professor of bioengineering. He is known for pioneering work in four-dimensional imaging of the cardiovascular system using magnetic resonance imaging (MRI).

Dr. Pettigrew has been elected to membership in the National Academy of Medicine, the National Academy of Engineering (NAE), the National Academy of Inventors, the American Academy of Arts and Sciences, and the National Academy of Sciences, India. His awards include gold medals from the Academy of Radiology Research and the Radiological Society of North America, the Arthur M. Bueche Award from the NAE and the Vannevar Bush Award from the National Science Board.

He is a graduate of Morehouse College as a Merrill Scholar (BS in physics), Massachusetts Institute of Technology (MIT) as a Whitaker HST fellow (PhD in radiation physics) , the Leonard M. Miller School of Medicine at the University of Miami (MD), and completed residency training at UC-San Diego.

SYMPOSIUM PRESENTATIONS

Oral presentations, Posters and Live Demonstrations reflect a small part of the research funded by Jump ARCHES.

The Jump ARCHES program is a collaboration between OSF HealthCare, the University of Illinois Urbana-Champaign, and the University of Illinois College of Medicine Peoria.

It was established in 2014 with a $62.5 million gift to provide direct access and competitive grants to engineers and physicians working together to combat problems in the realm of health care. In 2019, the partnership was expanded with a new commitment of $50 million This expansion has fueled a new generation of joint research projects on mobile sensors, Internet of Things applications, data analytics, and deeper understandings of social and behavioral determinants of health.

The Jump ARCHES Program has funded **154** research projects in excess of **$11M**.
Information on funded proposals at: *https://healtheng.illinois.edu/jumparches/fundedgrants*

Jump ARCHES also supports a Summer Internship program. The goal of this program is introducingstudents to innovative projects in the healthcare engineering space. Applicants can be from a STEM (Science, Technology, Engineering and Mathematics), SBS (Social and Behavioral Science), or related field.

Information on Summer Internships at: *https://healtheng.illinois.edu/jumparches/summer-internship*

Explore the Jump ARCHES Program at:
https://healtheng.illinois.edu/jumparches
https://www.osfinnovation.org/invent/innovation-academic-incubator/jump-arches

jump | ARCHES

AN OSF HEALTHCARE,
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN
AND UNIVERSITY OF ILLINOIS COLLEGE OF
MEDICINE PEORIA COLLABORATION

BEDSIDE AND BEYOND: Evolution of a Pediatric Code Cart Augmented Reality App

Trina Croland

Dr Croland is a Professor of Pediatrics at the University of Illinois College of Medicine Peoria (UICOMP), Section Chief for Hospital Medicine for the Dept of Pediatrics, and Medical Director for General Pediatrics at OSF Healthcare Children's Hospital of Illinois (CHOI). She has 18yrs experience in simulation-based education.

Abigail Wooldridge

Abigail R. Wooldridge is an Assistant Professor in the Department of Industrial and Enterprise Systems Engineering and PI of the Human Factors in Sociotechnical Systems Laboratory. She also holds courtesy appointments in Kinesiology and Community Health and the School of Information Sciences. Dr. Wooldridge's research focuses on understanding, modeling and improving complex sociotechnical systems, in particular those found in health care.

Kyle Formella

Kyle Formella currently serves as Director of Medical Visualization at Jump Simulation in Peoria, IL. Together with the team he leads, Medical Visualization has produced over 20 mobile apps since 2017, as well as a massive library of educational multimedia and other interactive products. Kyle first joined Jump Simulation and OSF HealthCare in 2013.

ABSTRACT

Pediatric codes are rare events that require fast intervention from medical professionals to resuscitate a child. A pediatric code cart contains all medications and equipment immediately needed to complete a pediatric resuscitation, but lack of familiarity and standardized training with the cart contents has been a recurrent theme noted by pediatric learners and healthcare workers. To address this need, a mobile platform-based augmented reality application for 3D instantiation of the pediatric crash cart and its contents was developed with expertise from UICOMP and OSF. The Code Cart AR app was then included in a 2019 ARCHES grant, the primary function of which was to improve outcomes in pediatric code scenarios by ensuring that clinicians have sufficient knowledge of the weight-based system and the specific contents and their location within a standard pediatric weight-based code cart. The team hypothesized educators would find an augmented reality instantiation of a pediatric crash cart to be a valid and acceptable method for verifying the knowledge-based awareness of the contents of a weight-based cart. Original aims were to refine and validate the current proof of concept app for professional use, develop the full potential of the application, assess the usability of the AR app module, and evaluate the effect of this disruptive technology on the learning system. Pre/post surveys and timed assessments on item retrieval speed and accuracy, app usability and satisfaction were performed with cohorts of students, residents, nursing staff, and attendings with results presented at numerous national and international meetings, and published in Ergonomic, Human Factors, BMJ Innovations and Healthcare Ergonomics and Patient Safety. The Code Cart AR app is being shared for free with the international community deployed as a free app on the Apple App Store and Google Play. It provides on-demand access to a fully stocked weight-based code cart, including a range of gamified challenges to encourage user engagement and performance growth. Follow up work resulted in a redesign of the original AR platform to allow scaling of the product to appeal to a broader audience within OSF and a more generalized application for other healthcare systems known as MedCart AR, which was recently licensed to a startup for commercialization.

Establishing Transfer Validity of VR Umbilical Venous Catheter Simulation

Nicole Rau, MD

» Assistant Professor of Clinical Pediatrics
» Department of Pediatrics, Division of Neonatology
University of Illinois College of Medicine at Peoria

Dr. Nicole Rau is an Assistant Professor of Clinical Pediatrics at the University of Illinois College of Medicine at Peoria and a clinical Neonatologist at OSF/Children's Hospital of Illinois. She is also the Assistant Program Director for the Pediatric Residency at OSF/Children's Hospital of Illinois.

Dr. Rau holds a Doctorate of Medicine from the Medical College of Wisconsin in Milwaukee, WI where she also completed her pediatric residency and neonatology fellowship. She has a Masters of Science in Health Professions Education from Rosalind Franklin University. Her research interested are in augmented reality for procedural education.

ABSTRACT

Background: Residents have fewer opportunities to practice neonatal procedures due to fewer NICU rotations, duty hour restrictions, and increased learners. Trainees need a method to practice neonatal procedures without expensive simulation laboratories or the availability of actual patients.

Objective: Establish transfer validity of a Virtual Reality (VR) umbilical venous catheter (UVC) insertion simulation.

Methods: A team of engineers and neonatologists developed a tutorial and step-by-step walkthrough of UVC placement using the Oculus Meta Quest 2 HMD. Face and Content validity were established with expert testing. To establish transfer validity, 18 residents were randomized to either use the VR module or watch a video on UVC insertion. Residents complete a pre/post survey on their confidence to independently perform the steps of UVC placement and then performed the procedure on a manikin.

Results: Both the VR and video groups had an increase in confidence on the post survey ($P < 0.05$ for all 9 items). There was no difference in the change in confidence between groups. There was no difference in total score when performing UVC insertion on a manikin however, the VR group was faster at a mean of 146.6 seconds compared to 225.3 seconds for the video group ($P=0.029$).

Conclusions: Participants in the VR and video groups increased their confidence in performing the steps of UVC insertion and performed equally well on a manikin. The VR users did perform the procedure faster, although this difference is not likely to be clinically significant.

Evaluating the Impact of Virtual Reality on Pre-Surgical Planning

Matthew T. Bramlet MD,

» UICOMP, UIUC, OSF Children's Hospital

Dr. Matthew Bramlet is the director of the Advanced Imaging and Modeling Lab for OSF Innovation. He is also a pediatric cardiologist directing the congenital cardiac MRI program at the OSF HealthCare Children's Hospital of Illinois and serves as an assistant professor of Clinical Pediatrics at the University of Illinois College of Medicine Peoria. He is a founding member of Enduvo, a VR platform which enables display, recording, and sharing of educational and medical 2D/3D/4D models.

Research team:
Bradley P. Sutton PhD, Grainger College of Engineering, UIUC
Mark Plunkett MD, UICOMP, UIUC, OSF Children's Hospital
Eliot Bethke, Grainger College of Engineering, UIUC
Jennifer R. Amos PhD, Grainger College of Engineering, UIUC

ABSTRACT

Pre-surgical planning for pediatric cardiology is a complex and multi-disciplinary exercise which makes it challenging to study. For clinical reasoning during the pre-surgical process, components such as domain-specific knowledge, experience and intuition are essential [1,2]. It is also widely understood that interpreting traditional 2D imaging presents challenges for visualizing and planning surgical approach, especially for newer surgeons [3]. While past studies have considered newer modalities for pre-surgical imaging review including Virtual Reality (VR), they tend to focus on prospective medical records, study the VR tool in isolation from clinical context, or rely solely on subjective, self-reported measures from users [3,4].

In our work, we have designed a study which looks to provide a richer picture of why, when, and how VR confers benefits by implementing a think-aloud exploration of real pre-surgical planning sessions with pre and post questionnaires. Our pre and post questionnaires follow from the well-known NASA Task Load Index (NASA-TLX) and give us a baseline of the surgeon's expectations and self-reported mental demands of reviewing the case. We have found early emergent themes including surgeons seeking confirmation of their assumptions made in surgical conference, as well as exploring and refining mental models before surgery. On average, users reported that cases were 2.0 points less demanding on a 10-point scale to review and explore in VR compared to surgical conference (u=6.1 vs u=4.1, N=7). Our team is continuing to explore how VR impacts clinical planning and reasoning to further identify and understand specific benefits VR provides.

1. Metrician SH. A novel method of assessing clinical reasoning in surgical residents. Surgical innovation. 2006 Jun;13(2):115-9
2. Norman G. Research in clinical reasoning: past history and current trends. Medical education. 2005 Apr;39(4):418-27.
3. Lan, L., Mao, R. Q., Qiu, R. Y., Kay, J., & de Sa, D. (2023). Immersive Virtual Reality for Patient-Specific Preoperative Planning: A Systematic Review. Surgical Innovation, 30(1), 109–122. https://doi.org/10.1177/15533506221143235
4. Napa S, Moore M, Bardyn T. Advancing Cardiac Surgery Case Planning and Case Review Conferences Using Virtual Reality in Medical Libraries: Evaluation of the Usability of Two Virtual Reality Apps. JMIR Human Factors. 2019;6(1):e12008. doi:10.2196/12008

HANDS DOWN: Empowering Children and Families through CPR education

Paul Jeziorczak, MD

» Clinical Assistant Professor of Pediatric Surgery
University of Illinois College of Medicine, Peoria

Dr. Jeziorczak is a pediatric surgeon and Visiting Associate Professor of Clinical Surgery and Pediatrics at the University of Illinois College of medicine Peoria. He is currently the trauma medical director for the OSF Children's Hospital of Illinois Peoria. His research interests include public health, firearm injury prevention, public health and policy, and surgical innovation. He has worked on several projects through the Jump Arches program and looks forward to ongoing collaboration

Inki Kim, PhD

» Assistant Director of Research in Medical Simulation, Health Care Engineering Systems Center (HCESC),
University of Illinois Urbana-Champaign

Dr. Kim received a PhD in Industrial Engineering at Penn State University. Currently he leads the AR/VR Research Core at the HCESC and is also a Faculty fellow from the National Center for Supercomputing Applications, University of Illinois Urbana-Champaign. His main research interests are in engineering
design, analysis, and improvement of "human-in-the-loop" systems that rely on streamlined human interaction with highly automated machines.

ABSTRACT

Every day there are numerous families that experience a sudden change in a child's health status. This can be secondary to a traumatic injury, sequelae of congenital disease, or from a previously undiagnosed condition. While we have made great strides in medicine, surviving the initial period before definitive intervention is of utmost importance. Nationally, if a child is born prematurely or is otherwise in need of the neonatal intensive care unit part of the discharge criteria is completion of a cardiopulmonary resuscitation course to educate and empower parents and family in the event of cardiopulmonary arrest. Currently, there is no such intervention pathway for the remainder of children and families in the hospital. There is ample evidence to support the use of hands only CPR to save a life. Many families are faced with the need to start early resuscitation at home often guided by the 911 emergency services operators. The purpose of this grant proposal is to create a program for families of children admitted to the Children's Hospital of Illinois surgical service and address a significant health knowledge gap for many families. We propose integrating a practice manikin with a feedback mechanism to assess the depth and rate of compression with proper hand placement and visual feedback. Data from this initial trial will be validated and used to expand the program to additional pediatric services. The overall goal would be to create a program that could then be disseminated to improve knowledge of CPR.

Merging multimodal data (SEEG, MRI, and CT) for automated 4D visualization of Seizure Onset Zones in VR

Brad Sutton

» Professor, Bioengineering and Carle Illinois College of Medicine
» Technical Director, Biomedical Imaging Center, Beckman institute
University of Illinois Urbana Champaign

Brad Sutton holds a PhD in Biomedical Engineering from the University of Michigan after his undergraduate at University of Illinois Urbana Champaign in General Engineering. He is currently a Professor of Bioengineering, a Health Innovation Professor with the Carle Illinois College of Medicine, and a fellow of NCSA. He also serves as the technical director of the Biomedical Imaging Center at Beckman Institute. Dr. Sutton's research is in the development of magnetic resonance imaging acquisition and reconstruction methods to improve the accuracy, speed, and information content of
neuroimaging and dynamic imaging methods.

Research team:
James Evans (Bioengineering, UIUC), Andres Maldonado (Neurosurgery OSF), Matthew T. Bramlet (Pediatric Cardiology, UICOMP), Jennifer Amos (Bioengineering, UIUC), Elliot Bethke (Bioengineering, UIUC), Connor Davey (Jump Trading Simulation and Education Center)

ABSTRACT

Epilepsy is a neurological disorder that affects over 70 million people worldwide. One-third of epilepsy cases are classified as drug resistant epilepsy (DRE). A procedure called Stereoelectroencephalography (SEEG), where surgeons place depth electrodes into a patient's brain, is used to monitor seizures and localize the seizure foci to perform resection surgery. Constructing a mental model of the activity in a patient is difficult even for experienced epileptologists due to the complex data collected during the procedure: SEEG electrical data, magnetic resonance imaging (MRI), and computed tomography (CT). Visualization tools exist to isolate electrodes and isolate the seizure onset zone; however, they do not incorporate time-series data in their visuals. We developed a software package to automatically combine the MRI, CT, and SEEG data to create a 3D+time virtual reality (VR) model of SEEG patients. We processed six patients who were evaluated for DRE at OSF Saint Francis Medical Center in Peoria, Illinois. Patients underwent pre-implantation MRI and post-implantation CT. DIXI SEEG electrodes were sampled at 512Hz. We first registered the MRI to the CT space and segmented grey matter, white matter, and cerebral spinal fluid out. SEEG electrode segmentation was performed by applying image erosion and grouping the voxels into contacts by treating them as point clouds to construct. We then map the SEEG channels to the names used during implantation. Blender scripting is utilized to automatically build a 3D+time model of the data which can be loaded into VR. In our VR model, electrodes grow and shrink based off the relative power within a window compared to the global average. Using the model, epileptologists can see seizure start and signal propagation. Our preliminary investigation suggests this model can reduce the mental burden required for presurgical planning and improve surgical team communication.

Development of medical education task trainers and a digital tool for spasticity and rigidity assessment

Liz Hsiao-Wecksler

» Grayce Wicall Gauthier Professor, Mechanical Science and Engineering
University of Illinois at Urbana-Champaign

Prof. Hsiao-Wecksler was the Interim Director of the HCESC from 01/21-08/23 and is an Affiliate of CI MED, Neuroscience Prog, Center for Autonomy, Beckman, CSL, CHAD, CARD (Collaborations in the Advancement of Research on Disability), and departments of BIOE and ISE. She is a Fellow of ASME and ASB and former President of ASB and Associate Editor of J Med Dev. Her group has also been supported by NSF, NIH, Dept Homeland Security.

Chris Zallek

» Neurologist, *OSF HealthCare Illinois Neurological Institute*
» Clinical Assistant Professor of Neurology, *UICOM-Peoria*

Dr. Zallek is also NeuroHealth Lab lead investigator at Jump Simulation. His primary interests are neuro exam training simulators and enhancing clinical care with digital neurological exams. He received his M.D. from the University of Iowa and completed his Neurology residency and Neuromuscular Disorders/EMG fellowship at the University of Michigan.

ABSTRACT

Clinical trainees learning to assess the muscle tone abnormalities of spasticity and rigidity experience
inconsistent hands-on training opportunities due to practice patient availability. Exam task trainers are an approach to provide realistic and accessible practice opportunities. Initially, we developed a passive
hydraulic arm simulator of biceps spasticity. We then developed a powered robotic simulator arm based on a series elastic actuator and control system schemes to mimic spasticity, lead-pipe rigidity, and cogwheel rigidity. Both devices were assessed with benchtop tests and validation studies with multiple experienced clinicians. Feedback on the task trainer's realism and haptic behaviors were incorporated into successive iterations. For simulator development, there is a lack of quantitative data representing spasticity and rigidity kinetic and kinematic characteristics. We developed a portable muscle stiffness measurement device - the PVRM (Position, Velocity and Resistance Meter) – using inertial measurement
units and a load cell to quantify joint angle, velocity, and muscle resistance features present with muscle tone examination. A clinical study of 38 participants was conducted to establish a database quantifying different levels of spasticity, rigidity, and normal healthy behaviors of the biceps and triceps, during passive elbow movements. We are in the process of collecting similar data on over 100 participants in China. These ARCHES-supported projects (P-2 and P-184) have resulted in 1 PhD dissertation, 3 MS theses, 3 US provisional patent applications, 1 additional invention disclosure, 4 journal papers (2 in-prep), 6 published conference proceedings, and 5 peer-reviewed conference abstract presentations.

EXPOSOMIC EQUITY, A NEW PARADIGM: What is it, why it is important, and how can we communicate its effect on the health of all communities (using human-centered design)

Ruby Mendenhall, PhD

» Kathryn Lee Baynes Dallenbach Professorship in Liberal Arts and Sciences (Sociology, African American Studies, Urban and Regional Planning, and Social Work)
» Associate Dean, Carle Illinois College of Medicine
» Faculty (Affiliate), Carl R. Woese Institute for Genomic Biology; Institute of Government and Public Affairs and Cline Center for Democracy
University of Illinois Urbana-Champaign

Scott Barrows, MA, FAMI

» Director, *OSF Innovation Design Lab*
» Clinical Assistant Professor, Emergency Medicine
University of Illinois College of Medicine Peoria
» Clinical Assistant Professor, Grainger College of Engineering
University of Illinois Urbana-Champaign
» Clinical Assistant Professor, Biomedical Visualization
University of Illinois Chicago
» Faculty (Affiliate), UX Design, Bradley University

ABSTRACT

The term “exposome” has been credited to cancer researcher Dr. Christopher Wild in 2005 and generally, refers to all exposures throughout the life course. These lifelong exposures to external forces include environment, diet, behavior, societal influences (such as structural racism), infections, pandemics, and cumulative biological responses to various. The exposome has been called “a new frontier in education” in that there are few resources that teach about it. Our project develops educational materials that teach the public about the exposome, especially youth of color experiencing health disparities. The youth will evaluate their own environmental risks and help assist in the (re)development of new and historical/cultural tools to radically transform their communities into safe spaces of healing. The U.S. Centers for Disease Control and Prevention (CDC) identified the need for investments in and the exploration of new technologies and tools to measure internal and external exposures. We will engage the residents of the most vulnerable and underserved communities in Illinois who experience medical neglect and health inequities as a result of structural racism. The youth will measure various aspects of their communities (e.g., access to free food; cancer prevention education; poverty levels; affordable housing; spaces that make them joyful, happy, and hopeful; etc. After measuring their exposome, the youth will work with us to create Wellness Stores and Places in Phillips H.S. in Chicago and Friendship House in Peoria

MAPS OF MEDICAL REASON: Applying Knowledge Graphs and Artificial Intelligence in Medical Education and Practice

Bill Cope

» Professor
» Department of Education Policy, Organization & Leadership
College of Education
» Information Trust Institute, College of Engineering
» Health Care Engineering Systems Center, College of Engineering
University of Illinois Urbana-Champaign

Bill Cope is a Professor in the Department of Education Policy, Organization & Leadership, University of Illinois, Urbana-Champaign. His recent research has involved the development and application of AI in education, including generative AI with the support of a number of grants from the US Department of Education, the Bill and Melinda Gates Foundation and the National Science Foundation. He has been the PI on three Jump ARCHES grants.

Mary Kalantzis

» Professor
» Department of Education Policy, Organization & Leadership
College of Education
University of Illinois Urbana-Champaign

Mary Kalantzis is a world leader in the 'new literacy studies', focusing on multimodality and diversity in contemporary communications. She is a former Dean of the College of Education at the University of Illinois. Her current work explores the dynamics of "e-learning ecologies." In recent years she worked to conceptualize the nature of communication and learning in the digital age, focusing on the policy, practice, and pedagogical design implications of new technologies in education, from early childhood to higher education.

ABSTRACT

MedMap is a web-based knowledge graphing environment, with a wide range of potential sites of applications, including to support medical students in clinical case analysis, and to build medical logic visualizations to supplement electronic health records. MedMap sources concepts from multiple medical ontologies. In medical education, MedLang supports students in the analysis of single medical cases by medical students and researchers by means of an innovative semantic suggestion and tagging tool. It consists of: a) a multimodal, browser-located case documentation space, supporting a wide range of data and media embeds; b) a semantic lookup and annotation tool, where standard terms from medical and other ontologies can be identified, and the case rigorously documented in a way that allows AI-supported comparison across cases; c) a medical logic mapping tool which makes clinical reasoning explicit. In our most recent work, we are supplementing MedMap with generative AI to offer feedback on SOAP notes.

Environmental Surveillance for Viruses and Antimicrobial Resistance

Helen Nguyen, PhD

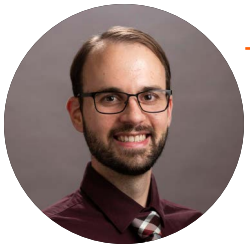
» Ivan Racheff Endowed Professor of Civil and Environmental Engineering
Institute of Genomic Biology
» Carle Illinois Medical College
University of Illinois Urbana-Champaign

Dr. Helen Nguyen holds a doctorate in environmental engineering from Johns Hopkins University. Her research group focuses on pathogen transmission and control. Besides several projects based in the US, her group has conducted research in developing countries on human resilience to waterborne infectious disease outbreaks related to extreme natural events. Her group has published about 120 peer-reviewed papers on a wide range of topics related to pathogen control and detection, the human health impact of water reuse, food safety, impacts of the extreme flood on pathogen spreading, pathogens in drinking water distribution systems, and water quality after natural disasters. She has led multiple interdisciplinary projects funded by the National Science Foundation, the Environmental Protection Agency, and the US Department of Agriculture

ABSTRACT

Future pandemics will require wastewater surveillance to be deployed quickly and effectively. We have developed a framework for adapting wastewater monitoring strategies based on the characteristics of the pathogen, its infection, transmission processes, and target population(s). This system was applied to different sizes of sewersheds, including city- and neighborhood-scale sewersheds and communities served by septic systems and communities vulnerable to infectious diseases (as evidenced from COVID-19 case data). We monitored SARS-CoV-2 RNA in these wastewater samples for 17 months. We found that the sensitivity of virus detection improves by decreasing the sewershed size. However, monitoring small-sized sewersheds requires an increase in the number of monitoring sites and related costs to cover the surveillance area. Therefore, we enhanced the accessibility and accuracy of an environmental surveillance system with three steps: sample processing, target sequence determination, and target sequence detection. First, we developed porcine gastric mucin conjugated magnetic beads (PGM-MBs) and proved the PGM-MBs could effectively concentrate multiple viral species in Adenoviridae, Reoviridae, Caliciviriade, and Coronaviridae from wastewater. Second, we developed a pipeline to find specific PCR-based assays for SARS-CoV-2 variants or sensitive assays for genetically diverse noroviruses. Third, we optimized reverse transcriptase (RT), loop-mediated amplification (LAMP), and Pyrococcus furiosus Argonaute (PfAgo) to develop an assay, called RT-LAMP-PfAgo, to monitor viruses in the environment.

FLIGHTPATH AND NEURODNA: Creating a New Interoperability Standard for the Evaluation of Neurocognitive Impairment



Adam Cross

» Assistant Professor of Research
» Department of Pediatrics, University of Illinois College of Medicine Peoria
» Director, Children's Innovation Lab at OSF HealthCare Jump Center

Dr. Cross is a board-certified pediatrician, board-eligible pediatric hospitalist, and board-eligible clinical informatician. Apart from his role as a researcher, he also teaches the Innovative Clinical Investigator course and is an adjunct professor within the Healthcare Engineering Systems Center (HCSEC).

Inki Kim

» Assistant Director of Research in Medical Simulation, Health Care Engineering Systems Center (HCESC)
» Faculty fellows, National Center for Supercomputing Applications, University of Illinois Urbana-Champaign

Dr. Kim received a PhD in Industrial Engineering at Penn State University. Prior to joining the HCESC, he was an Assistant Professor of Systems & Information Engineering department at the University of Virginia. Currently he leads the AR/VR Research Core at the HCESC to advance user-adaptive systems in eXtended Reality.

ABSTRACT

Conditions associated with neurocognitive impairment (NCI) often present heterogeneously through various combinations of physical and cognitive impairments, posing a challenge to diagnosis. Common etiologies, such as traumatic brain injury (TBI) and dementia, are not yet routinely identified through objective lab or imaging results but instead rely on a combination of physical and cognitive evaluations as well as symptom reporting. The testing batteries are primarily paper-based, dependent on language and education, suffer from learning bias, and must be administered by a healthcare professional. This project seeks to address these limitations by developing a new interoperability standard for NCI based on an individual's ability to track an object within a mixed reality (MR) space and will first test this paradigm as a novel method for the detection and characterization of concussion. The on-board sensors of smartphones and tablets will be leveraged to inform the application of the user's position and orientation as well as the physical surfaces within the environment. A high-fidelity virtual hummingbird will then be introduced and will fly throughout the user's space in MR. The MR app, dubbed FlightPath, regularly adapts the hummingbird's flight patterns to the tracking capabilities of the user, incrementally increasing or decreasing in complexity to identify the optimal testing strategy for an individual. These data will then be converted into a three-dimensional representation of the physical position and rotation of both elements for direct visualization of tracking patterns, creating an objective evaluative method for diagnosis, sub-classification, and prognostication, dubbed NeuroDNA.

PANEL: Digital Rural Health

Moderator: Caroline Cao, PhD

Caroline Cao, Ph.D.

» Director of Applied Health Technology Initiatives
» Professor of Industrial and Enterprise Systems Engineering
The Grainger College of Engineering, University of Illinois Urbana-Champaign
» Director of Engineering Innovation and Medical Simulation
» Health Innovation Professor
Carle Illinois College of Medicine, University of Illinois Urbana-Champaign
» Adjunct Professor
Future Industries Institute, STEM, University of South Australia

Caroline G. L. Cao received a Ph.D. in mechanical & industrial engineering from the University of Toronto in 2002. Prior to joining UIUC, she was Chair for Industry of the Future and Professor of Computer Science at IMT Atlantique in Brest, France from 2021 to 2023, where she developed partnerships with industries to address challenges in Industry 4.0 and 5.0 (e.g., digital twins, human-robot interaction, artificial intelligence, XR technology, system resilience). Professor Cao is a researcher, educator, and entrepreneur with extensive experience in the design and development of medical systems and devices, and enabling technology (AR/VR, simulation and training, decision aid, sensory substitution, navigational aid, robotics, etc.) for minimally invasive surgery and robotic surgery. She is a recipient of the National Science Foundation Career Award, a US Fulbright Scholar award, and the International Chair of RFI Atlanstic 2020. Professor Cao is an elected Fellow of the Human Factors and Ergonomics Society.

James Rehg, PhD

» Director, Health Care Engineering Systems Center
» Founder Professor, Computer Science, and Industrial and Enterprise Systems Engineering
University of Illinois Urbana-Champaign

Dr. James Rehg is the new director of the Health Care Engineering Systems Center (HCESC). He is appointed as the Founder Professor with joint faculty appointments in the Departments of Computer Science and Industrial and Enterprise Systems Engineering. Due to a current project with Meta, Dr. Rehg will ramp up his leadership involvement with UIUC by August 2023.

He was previously a professor at Georgia Institute of Technology's School of Interactive Computing. He was also the co-director of the Center for Health Analytics and Informatics. His research interests include computer vision and machine learning, and his research group at Georgia Tech works in several interdisciplinary areas: developmental and social psychology, autism research, mobile health, and robotics.

John Vozenilek, MD, FACEP

» Vice President, Chief Medical Officer, Innovation and Digital Health
OSF HealthCare
» Duane and Mary Cullinan Professor in Simulation Outcomes
» Professor Clinical Emergency Medicine University of Illinois College of Medicine at Peoria
» Clinical Professor BioEngineering
University of Illinois College of Engineering, Urbana Champaign

Dr. John Vozenilek is the vice president and chief medical officer for Innovation and Digital Health at Jump Trading Simulation & Education Center, a collaboration between OSF HealthCare and the University of Illinois College of Medicine Peoria (UICOMP). In this role, Dr. Vozenilek provides central coordination and oversight for undergraduate, graduate, interdisciplinary and continuing medical education programs for OSF HealthCare. Under his direction, OSF HealthCare and UICOMP have built resources for educators who wish to use innovative learning technologies for teaching and assessment.

As the Duane and Mary Cullinan Professor in Simulation Outcomes, Dr. Vozenilek is actively involved in academic programs across traditional departmental boundaries and in clinical practice at OSF HealthCare. In addition to his role in simulation, Dr. Vozenilek teaches master's degree candidates in the fields of simulation, health care quality and safety and is formally appointed to teach biodesign at the University of Illinois at Urbana-Champaign

Wendy A. Rogers, PhD

» Shahid and Ann Carlson Khan Professor of Applied Health Sciences
University of Illinois Urbana-Champaign

Wendy A. Rogers, Ph.D., is the Shahid and Ann Carlson Khan Professor of Applied Health Sciences at the University of Illinois Urbana-Champaign. Her primary appointment is in the Department of Kinesiology and Community Health. She has an appointment in Educational Psychology and is an affiliate of the Beckman Institute; Illinois Informatics Institute; Center for Social and Behavioral Science; and the Discovery Partners Institute. She is a Certified Human Factors Professional (BCPE Certificate #1539). She is the Director of the McKechnie Family LIFE Home; the Health Technology Education Program; Program Director of CHART (Collaborations in Health, Aging, Research, and Technology); and Director of the Human Factors and Aging Laboratory. Her research interests include design for aging; technology acceptance; human-automation interaction; aging-in-place; human-robot interaction; aging with disabilities; cognitive aging; skill acquisition; and training. Dr. Rogers' research is funded by the National Institutes of Health through the National Institute on Aging and through the National Institute of Nursing Research. In addition, her work is funded by the Department of Health and Human Services through the National Institute on Disability, Independent Living, and Rehabilitation Research.

Jonathan Handler M.D.

» Senior Fellow for Innovation
OSF HealthCare

Dr. Handler trained as an emergency medicine physician in Washington, D.C. As part of a four-year residency program, where he was able to sub-specialize in clinical informatics. Dr. Handler is the first Senior Fellow to join OSF HealthCare. In this role, he supports each of the OSF Innovation Labs, and acts as a strategic adviser to OSF Innovation leadership. He advances efforts to develop breakthrough innovation, transforming care for those the organization serves.

Susan Wolf, APRN

» Internal Medicine, Urgent Care
OSF HealthCare

Susan Wolf serves as the Clinical Director for OSF OnCall Digital Care. Susan completed both her undergraduate and graduate degrees at OSF Saint Francis Medical Center College of Nursing and her doctoral and MBA degrees at Southern Illinois University at Edwardsville. Her nurse practitioner background in primary care and urgent care allows her to better serve patients and elevate providers within the many programs under the digital care umbrella. Her role as clinical director includes assisting with program design surrounding clinical excellence and collaborating with multidisciplinary teams both internal and external to OSF HealthCare.

Brandi Clark

» Vice President, Digital Care, OSF OnCall
OSF HealthCare

Brandi Clark is the Vice President of Digital Care for OSF OnCall. She has served OSF HealthCare since 2004 and has served in a variety of leadership positions within performance improvement, business development and on demand services prior to her transition to digital care in 2021.

Brandi's accomplishments in the digital acute care space include the design and build of the OSF Digital Hospital which provides inpatient level care to patients in their homes. In the outpatient and community space, Brandi led the design and build of a continuum of remote patient monitoring programs to transform care for Medicaid recipients in collaboration with 4 FQHC partners through a contract with the Illinois Healthcare Transformation Collaborative (HTC).

Brandi received her Bachelor of Science in speech language pathology from Southern Illinois University in Carbondale, where she went on to earn her Master of Science in speech language pathology. Brandi is married to Jeff. They are the parents of Evan, 10, and Camden, 8. In her spare time, Brandi enjoys spending time with her family, watching her boys play soccer, and traveling.

POSTERS

Contextualizing Nursing Needs for Development of Retention-Support App.

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Enabling Adaptive Treatment Planning through Fast Point-cloud Segmentation

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A Participatory Design Approach to Develop a VR-Based Electrocardiogram Training Simulator

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Robotic Mirror Therapy for Stroke Rehabilitation

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Understanding High Job Turnover Rate in Environmental Services: Two Targets for Innovation

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Developing a Guided Mixed-Reality (MR) Simulator for Neonatal Needle Thoracentesis Procedure

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Examining the Acceptance of Motivational Interviewing Chatbots (MintBot): A Pilot Study

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VRtual Ed: A Virtual Three-Dimensional Educational Platform for Healthcare Students

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Digital Twin and Agent-Based Simulation: Co-Simulation to Support Intelligent Navigation of Healthcare Mobile Robot

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AI-Powered Computational Tools for Accurate Detection and Segmentation of Brain Tumor

Yudu Li[1,2] , Shirui Luo[2], Xiyue Zhu[2,3], Ruihao Liu1, Wenli Li[1], Andrew Tsung[4,5], Matthew Bramlet[4,5], Brad Sutton[1,6,7], Volodymyr Kindratenko[2,3], and Zhi-Pei Liang[1,3]
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Remote State Anxiety Detection and Monitoring Using Multimodal Wearable Sensors (RADWEAR)

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Monitoring of Home Exposure to Asthma Triggers in Support of Individualizing Children's Asthma Care Plans

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Detecting Mental Health Changes Using Multimodal Wearable Data (WEAR)

Maxine He[1], Jonathan Cerna[1], Abdul Alkurdi[2], Jay Clore[3], Manuel Hernandez[1,4,5], Elizabeth Hsiao-Wecksler[1,2], Richard Sowers[6]
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Correlations of Growth and Mental Health Measures among Youth

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Rapid and Highly Sensitive Detection of Pathogens in Blood through Blood Drying and Isothermal Amplification

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Advancing Assistive Technology Design in a Smart Home Simulation Space

Harshal Mahajan, Samuel Olatunji, Ketan Mahajan, Sierra Speckmann, Wendy Rogers
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A Clinically Relevant Feature Design and Machine Learning Approach for Vision-based Digitized Neurological Examination

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Advancing Assistive Technology Design in a Smart Home Simulation Space

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Early Detection and Prediction of Parkinsonism Powered by Multi-Modal Few-Shot Learning

Andy Zhou[1*], Samuel Li[1*], Pranav Sriram[2*], Xiang Li[1*], Jiahua Dong[1*], Ansh Sharma[1], Yuanyi Zhong[1], Shirui Luo[3], Maria Jaromin[3], Volodymyr Kindratenko[2,3], George Heintz[4], Christopher Zallek[5], Yu-Xiong Wang[1,2,3]
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*Equal contribution

A Field Experiment to Evaluate the Efficacy of Convenient Health Kiosks in Delivering First Line Preventative Health Screening to Rural and Underserved Communities.

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How to design and operate end-to-end vaccine deployment using social media, addressing supply chain allocation constrains, and utilizing telemedicine?

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Voice Vitals: Exploring novel screening methods for anxiety and depression

Kaci Cuningham[1], Alexis Reinders[1], Sonia Pulido[1], Anna Ford[1], Fiona Gruzmark[1], Carmen Calhoun[1], Victor Medina[1], Cory Mahler[1], Dustin Pilat[2], Abigail Sebald[2], Ryan Finkenbine[1,2], Sarah Donohue[1], Mary Pietrowicz[3]
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DEMONSTRATIONS

Healing Healthcare Disparities among BIPOC Patients through Virtual Reality Cultural Competency Training

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Robotic Arm Task Trainers for Spasticity and Rigidity Assessment

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Toward Automated Diagnosis and 3D Representation of SEEG Clinical Data

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CliniPane: a "Third Paradigm" decision support and clinical intelligence application

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AI for Healthcare Compliance: Towards an Intelligent Regulatory Change Management System

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Empowering Children and Families through CPR education in Mixed Reality

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OSF HealthCare in partnership with the University of Illinois Urbana-Champaign is pleased to announce the inaugural Call for Proposals for the 2024 OSF Faculty Fellowship Program.

Through Faculty Fellowships and with the support of the Jump ARCHES program, OSF HealthCare and the University of Illinois Urbana-Champaign aim to develop and cultivate a cohort of faculty members with expertise in healthcare research and its translation to clinical practice and implementation. The program embeds University of Illinois Urbana-Champaign faculty members with a clinical team at OSF HealthCare in Peoria, IL and provides financial support to enable fellows to dedicate significant time to the development of a joint project with the potential for significant research and clinical impact.

In this program, candidates with a strong interest in developing innovative technology-based solutions to healthcare problems will have the opportunity to gain a strong background in the real-world, system-level dimensions that govern the delivery of healthcare solutions and the adoption of technological innovations. Faculty fellows should then be well positioned to pursue additional engagements with OSF HealthCare, including the development and implementation of their proposed project, using the Jump ARCHES funding mechanism.

Eligibility

All tenure track and specialized faculty at the University of Illinois Urbana-Champaign in all colleges are eligible to participate in the Faculty Fellows program.

For further information and application submission please visit:
https://osfhealthcare.smapply.io/prog/osf_faculty_fellowship_program

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