Dr. Xueping Li
Associate Professor, College of Engineering
Director, Ideation Lab

Dr. Tami Wyatt
Associate Professor, College of Nursing
Chair, Education Technology & Simulation
- Ribbon Cutting Ceremony - March 27, 2014
- Before/After Comparison
  - [http://ilab.engr.utk.edu/hits/ribboncutting/](http://ilab.engr.utk.edu/hits/ribboncutting/)
Through interprofessional collaborations, advance the science of health information technology by examining ways HITS enhances healthcare delivery, consumer health, and professional health education.
UTK Collaborators

- Colleges of:
  - Engineering (Li, Ostrowski, Shylo, Kobza, Tan, Stephens)
  - Nursing (Wyatt, Gaylord, Pierce, Lindley, Umberger)
  - Social Work (Contact)
  - Pharmacy (Chyka)
  - Graduate School of Medicine (Goldman)
  - Business (Zhou)
  - Architecture (Lowe)
  - Education (Aydeniz)
External Collaborators
Co-founders of iCare Academic LLC. iCare, an academic Electronic Health Record (EHR) software acquired by Wolters Kluwer Health and branded as “Lippincott’s DocuCare”. Currently used by more than 350 universities globally with more than 20,000 users and 3000 instructors.

- Bringing Interprofessional Teams Together Through Technology to Create Solutions for Healthcare. (HRSA)
- Advanced Modeling and Simulation for System Optimization. (B&W Y-12)
- Pilot Testing EHRs & Simulation. (LWW)
The DocuCare prototype was developed by HITS Co-Directors & graduate students.

DocuCare marketed on July 1, 2012. Today, over 350 colleges and 20,000+ users.

HITS consult, build add-on hardware and software, develop and evaluate training, and conduct usability & outcome studies.
Developed an *interactive narrative* that helps promote the self-care of kids with asthma from 8~11 years old.

Expand project to a comprehensive mobile application intervention including real time patient to provider connections.
Managers would like to know these four things:

- The status of my operations right now
- The optimal options for the given status
- The outcomes I can expect from these options or perturbations to the system
- An easy way to visualize and understand this information

Occupation Health Services (OHS)
RTLS Technologies

- Infrared (IR) based
  - The IR signal is bound by walls and can be tightly focused.
  - IR provides accuracy
- Low-Power RFID
  - RF signals for general location and communication
- WiFi based
- Ultra-wideband
- ...
A Cooperative Research and Development Agreement (CRADA) was signed between Y-12, UTK, and Stanley Healthcare at the Tennessee Valley Corridor’s National Technology Summit in May 2013 as it was highlighted by U.S. Rep. Congressman Chuck Fleishmann.

MAP system is up running at OHS

Predictive modeling and business intelligence
Unified Smart Home Automation Platform (US-HAP) to promote independent living in vulnerable populations
PCPT Process Simulator

- Advantage of Proton
- Efficiency ($$$)
Demo

Provision Center for Proton Therapy

Parameter Settings

- Number of treatment rooms: 5
- Number of changing rooms: 5
- Probability of 1 treatment: 0.15
- Probability of 2 treatments: 0.7
- Probability of 3 treatments: 0.15
- Patients interarrival time: 5.0 minutes

Legend:
- Rooms
- Vacant
- Occupied
- Beam on

Create a pattern with 2 field treatments

Statistics  Animation
Current/Ongoing Projects

- DocuCare and Bar Scanning Prototype
  - MAR & Patient Safety
Interactive Debriefing Mobile Application

Based on the concept of reflection defined by Jack Mezirow sociologist who developed adult learning theories and Blooms Taxonomy
Current/Ongoing Projects

- Sim-Mom
Current/Ongoing Projects

- Proposals
  - NIH R21 (PA-11-332, submitted 03/14) Peak Performers--Asthma All Stars: mHealth Behavioral Intervention for Children
  - AHRQ R18(PA-14-004, submitted 01/14) Bridging EHRs and Simulation to Improve Patient Safety
Outcomes

• Health Resources and Services Agency. Interprofessional Education. 3 years, $1,080,320, funded.
• Y-12. Advanced Modeling and Simulation for System Optimization. 3 years, $315,000, funded
• Lippincott, Wilkins & Williams. Bridging Simulation and EHRs. 6 months, $10,000, funded.
• Lippincott, Wilkins & Williams. Developing and evaluating training for DocuCare. 12 months, $38,000, funded.
• HITS Pilot Funding. Feasibility of Electronic Data Capture from the Electronic Medical Records for Research Purposes and Validation of Bedside Nurse Calculated SIRS Scores. 6 months, $6,000, funded.

• Exploring the Role of Mobile Technology in Access to Pediatric Hospice Care - NIH's Director's New Innovator Award, October 2012, $1.5M, pending.

• NIH-NINR. Asthma All Stars-Peak Performers. Asthma Intervention. $450,000 pending.

• AHRQ. Bridging EHRS with Simulation. $950,000 pending.


Outcomes (Cont.)

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Outcomes (Cont.)

• Lindley, L. (2013) An Exploratory Analysis of Pediatric Hospice and Palliative Care Dialogue on Social Media, CISML Seminar, Knoxville, Tennessee.
• ...
The HITS Lab personnel (PIs) are negotiating a CRADA (Cooperative Research and Development Agreement) between UTK, Y-12, and AeroScout.

Grand Prize Winner of DOL (Department of Labor) App Challenge. $15,000. (In collaboration with UT’s Construction Industry Research and Policy Center)

2012 Technology Transfer Award, University of Tennessee Research Foundation

Final stages of hiring a tenure-track Health Information Technology & Simulation faculty
KEEP UP THE MOMENTUM

Thank you!

HTTP://ilab.engr.utk.edu/hits