Medical Cyber Physical Systems
in Internet of Things Workshop 2019

Hosted at the 4th IEEE/ACM Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE) 2019 in Washington, DC
https://openconnectedmed.gitlab.io/mcps-workshop-2019/
September 27th, 2019 (Note Change) - Washington, DC

Call for Papers

Medical Cyber-Physical Systems (CPS) encompass a new generation of smart medical systems that integrate human, cyber, and physical elements in closed-loop control. They aim to improve patient care by enabling the delivery of advanced therapies and complex surgeries. An example is the artificial pancreas that allows people with diabetes to better manage their condition. Designing safe and effective Medical CPS involves the work of a multi-disciplinary team of engineers, medical domain experts, and human factors specialists. This work needs to be supported by rigorous development processes and tools, as substantial evidence needs to be documented and integrated to justify design choices and ease the review process mandated by regulation.

The objectives of Medical Cyber-Physical Systems (MCPS) in the Internet of Medical Things workshop 2019 are to provide opportunities for researchers, industrial practitioners, caregivers, and government agencies to demonstrate innovative development methods and tools, present experience reports, discuss open challenges, and explore ideas for future development of Medical CPS as it relates to the Internet of Medical Things. Contributions are welcome on all aspects of system development, including specification, design, analysis, implementation, documentation, and certification of Medical CPS. Demonstrations of existing tools for design and analysis of Medical CPS are also encouraged.

The 10th MCPS workshop will be an one-day event co-located with The 4th IEEE/ACM Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE 2019). Topics of interest include, but are not limited to, the following:

- *Foundations for Integration of Medical Device Systems/Models*: Component-based technologies for accelerated design and verifiable system integration, Systems of systems, Medical devices plug-and-play to support interoperability of heterogeneous systems
- *Enabling Technologies for Future Medical Devices:* Implantable regulatory devices, networked biosensors, tele-surgery, robotic surgery, physiologic signal QoS (Quality of Service), Medical CPS in developing countries
- *Distributed Control & Sensing of Networked Medical Device Systems*: Robust, verifiable, fault-tolerant control of uncertain, multi-modal systems
- *Medical Device Plug-and-Play Ecosystem*: Requirements and emerging standards for supporting interoperability in the clinical environment, including "black box" data recording, device authorization, and data security
- *Human-Machine Interfaces*: Identification of use-related safety requirements, model-based analysis of medical user interface design, user studies involving medical devices, modelling and analysis of use-errors with medical devices
- *Patient Modeling & Simulation*: Large scale, high fidelity organ/patient models for design & testing
- *Embedded, Real-Time, Networked System Infrastructures for High Confidence Medical Devices*: Architecture, platform, middleware, resource management, QoS (Quality of Service), Dynamic interoperation, including plug-and-play operation
- *High Confidence Medical Device Software Development & Assurance*: Care-giver requirements solicitation and capture, design and implementation, V&V (Verification and Validation), Heterogeneity in environment, architecture, platforms in medical devices
- *Internet of Medical Things*: Mobile medical Apps, data analytics, security, logging, forensics, and privacy

- *Medical Practice-driven Models and Requirements*: User-centric design, risk understanding, and use/misuse modeling in medical practice, management of failures in a clinical environment, modeling of operational scenarios, including medical devices, care-givers, patients
- *Certification of medical devices*: Quantifiable incremental certification of medical devices and interoperable medical systems, role of design tools and COTS (Commercial Off-The-Shelf) components, challenges with self-adaptive medical systems

Paper Submission
STILL ACCEPTING EXTENDED ABSTRACTS

Authors are invited to extended abstracts (2 pages, excluding references) which will be reviewed on a rolling basis until August 31st, 2019.

Authors are invited to submit papers (4-6 pages) by ~~July 7th, 2019~~ July 14th, 2019 at https://easychair.org/conferences/?conf=mcps2019. The papers must be in IEEE 2 column format: https://www.ieee.org/conferences/publishing/templates.html. Authors are also encouraged to submit demos and posters for their papers or abstracts. Please indicate in your submission if you wish to present a demo and/or poster.

Papers submissions (4-6 pages) must be original and should not have been published previously or be under consideration for publication while being evaluated for this workshop. Extended abstracts (2 pages) need not be original and could describe previously published work or work under consideration that the authors would like to share with the participants at this venue in order to reach a wider audience.

Note: If submitting an extended abstract about work submitted to the CHASE 2019 conference, please make sure to describe the work in the context of the theme and goals of this workshop. Also, if accepted, you will be expected to have a presentation that is different from your CHASE presentation.

Accepted papers (only 4-6 page papers) will be published in the conference proceedings indexed by IEEE. While extended abstracts will not be published, authors of extended abstracts are encouraged to submit them to the lightning talks session for the main CHASE conference where they can share their work with the larger community beyond those at the workshop: https://conferences.computer.org/chase2019/lightningtalks.html. Lightning talk submissions are due September 1st.

Important Dates

Papers (4-6 pages) due	July 18th, 2019 ~~July 14th, 2019~~ ~~July 7th, 2019~~
Extended abstracts (2 pages) due	August 31st, 2019 ~~July 18th, 2019~~ ~~July 14th, 2019~~ ~~July 7th, 2019~~
Author notification	July 21st, 2019
Papers and abstracts camera ready due (hard deadline)	July 31st, 2019

Organizing Committee
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- Philip Asare, Bucknell University, USA
- Lu Feng, University of Virginia, USA

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