



Call for Papers

The traditional healthcare industry is undergoing a major paradigm shift due to the rapid advances, developments, and deployments of wearable and mobile devices as well as communication, machine learning, and big data technologies. Such devices and technologies have brought tremendous benefits and opportunities to the diagnosis, prognosis, treatment, and prevention of human diseases for a better quality of life, but meanwhile also present unprecedented performance and technical challenges in the entire process of data collection, processing, analysis, synthesis, and visualization.

Following the great success in the debut event at Zhengzhou University in 2017 and the 2nd event at Guangxi Normal University in 2018, the 2019 International Conference on Healthcare Science and Engineering (Healthcare'19) will be held at Communication University of Zhejiang, June 28– 30, 2019. Healthcare'19 provides a forum for researchers, engineers, and practitioners from computer science, intelligent media technology, data analytics, medical informatics, biomedical engineering, healthcare engineering, and other engineering disciplines to share and exchange their knowledge and progresses of current research issues, technologies, and ideas in healthcare on wearable and mobile devices as well as communication, machine learning, and big data technologies.

Healthcare'19 features three tracks on healthcare research and applications:

Track 1: Computational Intelligence with Big Data for Healthcare

Track Chairs:

Celimuge Wu, The University of Electro-Communications, Japan, Email: celimuge@uec.ac.jp
Soufiene Djahel, Manchester Metropolitan University, UK, Email: S.Djahel@mmu.ac.uk

Computational Intelligence (CI) enables agents or decision makers such as computers and smart devices to process and analyze captured data computationally, and subsequently to identify and explain the underlying patterns of the data, as well as to efficiently learn specific tasks. CI covers a broad range of nature-inspired, multidisciplinary and computational methodologies, such as fuzzy logic, artificial neural networks, evolutionary computing, learning theory, probabilistic methods, and so on. CI technologies are expected to provide efficient and powerful tools that provide intelligent solutions and scale well with data volumes for big data processing and analytics, while addressing the challenges brought by the massive amount of data.

This track focuses on the technical challenges and applications of CI for healthcare, covering data collection, data transmission, data processing, and data analytics in the healthcare domain. We envision that the convergence of a large collection of CI algorithms and big data will make true artificial intelligence in healthcare a reality in the near future. The areas of interests include, but are not limited to, the following:

- CI for healthcare data collections
- CI for healthcare sensor networks
- CI for healthcare data transmission
- CI for healthcare data networking
- CI for healthcare data processing and analytics
- Data-driven healthcare with CI
- Big data and CI for healthcare
- Fuzzy logic for healthcare
- Artificial neural networks for healthcare
- Evolutionary computing for healthcare
- Learning theory for healthcare
- Probabilistic methods for healthcare
- Machine learning for healthcare
- Fuzzy-based models for healthcare
- Evolutionary models for healthcare

Track 2: Mobile Computing for Healthcare

Track Chair:

Dr. Sandra Sendra, University of Granada, Spain, Email: ssendra@ugr.es

The main goal of Mobile Computing for Healthcare track is to provide a forum for the exchange of novel ideas and approaches among researchers and users related to the interaction between patients and devices. This track covers topics related to transmission of data and its processing. Mobile computing involves the development of mobile communication systems. Communication issues include ad hoc networks and infrastructure networks as well as communication properties, protocols, data formats and concrete technologies to manage the data from mobile applications and device components. The main topics but not limited considered in this track are the following:

- Communications between patients and physicians
- Mobile healthcare applications
- Systems and methods for data processing in Ambient Assisted Living (AAL)
- Systems for remote healthcare
- eHealth virtual communities and collaborative techniques
- Social computing and networking in healthcare
- Smart and ubiquitous technologies for health and wellbeing
- Tracking/wearable and mobile technology
- Healthcare informatics and information systems

- Communication/network infrastructures, architectures and protocols for e-Health
- 5G for Healthcare
- Software-defined networks and network management for Healthcare applications
- Network Function Virtualization for Healthcare applications

Track 3: Medical Devices and Healthcare Information Technology

Track Chairs:

Ming Chyu, PhD, PE, Texas Tech University, Founding Editor-in-Chief of Journal of Healthcare Engineering, Email: M.Chyu@ttu.edu

The Medical Device and Health Information Technology track aims to provide a forum for the exchange of knowledge and ideas among researchers, users (physicians, dentists, nurses, therapists, technicians, patients, etc.), and manufacturers/developers. This track covers topics related to all aspects of medical devices in the 19 major categories below (see US FDA lists of devices) as well as health information technology such as electronic health records. We seek high quality research and review papers presenting engineering, laboratory, and clinical results regarding the design, simulation, manufacturing/developing, operation, performance, and innovation of devices as well as health information technology, both hardware and software, for disease prevention, diagnosis/detection, monitoring, treatment (e.g., surgery, drug delivery), and management; life supporting/sustaining; and replacement/modification of body parts/organs/tissues, and for the general delivery of care. Topics of interests include, but not limited to, the following:

- Anesthesiology Devices
- Cardiovascular Devices
- Chemistry Devices
- Dental Devices
- Ear, Nose, and Throat Devices
- Gastroenterology and Urology Devices
- General and Plastic Surgery Devices
- General Hospital and Personal Use Devices
- Hematology Devices
- Immunology Devices
- Microbiology Devices
- Neurology Devices
- Obstetrical and Gynecological Devices
- Ophthalmic Devices
- Orthopedic Devices
- Pathology Devices
- Physical Medicine Devices
- Radiology Devices
- Toxicology Devices

Publication:

All submissions will go through a rigorous review process. Every accepted paper must be presented at the conference in order to be included in the conference proceedings published by Springer. The best papers will be also recommended for publication in the special issues of several SCI-indexed journals under development.

Online Submission:

Prospective authors are invited to submit unpublished work to Healthcare'19. All full-length papers (up to 8 pages in IEEE 2-column format) should be submitted through EasyChair Conference System. Detailed information is available at:

<https://easychair.org/conferences/?conf=healthcare2019>

Important Dates:

Submission deadline: 03/31/2019

Notification date: 04/30/2019

Final manuscript due: 05/15/2019

Sponsoring Societies:

- *Healthcare Engineering Alliance Society*
- *Chinese Health Information Association Healthcare Big Data International Collaboration Subcommittee*
- *Collaborative Innovation Center on Internet Healthcare and Health Service of Henan Province*
- *IEEE Special Interest Group (SIG) on Big Data with Computational Intelligence*
- *UPV Universitat Politècnica de València*
- *I. de Investig. para la Gestión Integ. de Zonas Costeras: UPV*
- *Communication University of Zhejiang*
- *New Jersey Institute of Technology*

Organizing Committee:

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 - Wenbing Li, Vice President of Communication University of Zhejiang, China
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 - Xianxian Li, Guangxi Normal University, China
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 - Track 1
 - Celimuge Wu, The University of Electro-Communications, Japan
 - Soufiene Djahel, Manchester Metropolitan University, UK
 - Track 2

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