

# IEEE Transactions on Emerging Topics in Computing Special Section on New Frontiers in Computing for Next-Generation Healthcare Systems

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Schedule (Tentative):

- deadline for submissions: July 1, 2019
- first decision (accept/reject/revise, tentative): September 15, 2019
- submission of revised papers: November 15, 2019
- notification of final decision (tentative): January 15, 2019
- journal publication (tentative): first half of 2020

Authors are invited to submit a manuscript to this special section. Relevant topics of interest must fall in the domain of e-Health to m-Health and p-Health (\*-Health) and include (but are not limited to):

1. Emerging applications in next-generation healthcare systems
2. Computing aspects of pervasive and ubiquitous healthcare systems
3. Technologies, methods and applications empowering data management and sharing, user privacy, security and safety (e.g. blockchain, privacy by design, fault tolerance, etc.)
4. Assistive computing technologies for children, elderly and disabled individuals
5. Technological advances (e.g. gamification, IoT, mixed/augmented reality, artificial intelligence) for wellness/well-being management
6. Non-conventional and emerging applications of data analytics and machine learning
7. Applications and methodologies leveraging web-generated Data for healthcare and digital epidemiology
8. Semantic Computing applications and methods

Submitted papers must include new significant research-based technical contributions in the scope of the journal. Purely theoretical, technological or lacking methodological-and-generalizability papers are not suitable to this special issue. The submissions must include clear evaluations of the proposed solutions (based on simulation and/or implementations results) and comparisons to state-of-the-art solutions. For additional information please contact the Guest Editors by sending an email exclusively to [tetc-si-ehealth@polito.it](mailto:tetc-si-ehealth@polito.it). Papers under review elsewhere are not acceptable for submission. Extended versions of published conference papers (to be included as part of the submission together with a summary of differences) are welcome **but** there must have at least **50% of new impacting technical/scientific material** in the submitted journal version and there should be **less than 30% verbatim similarity level** as reported by a tool (such as CrossRef). Guidelines concerning the submission process, LaTeX and Word templates can be found at <https://www.computer.org/web/tetc/author>. While submitting through ScholarOne, at <https://mc.manuscriptcentral.com/tetc-cs> please select the option "Special Section on New Frontiers in Computing for Next-Generation Healthcare Systems". As per TETC policies, only full-length papers (10-16 pages with technical material, double column - papers beyond 12 pages will be subject to MOPC, as per CS policies -) can be submitted to special sections. The bibliography should not exceed 45 items and each Author's bio should not exceed 150 words.



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# Special Section on New Frontiers in Computing for Next-Generation Healthcare Systems

A profound transformation is revolutionizing the healthcare system powered by technological advances in computing and information sciences. The pervasiveness of mobile devices, wearable sensors, smart devices, social media, etc., on one hand, and fast-paced advances in data analytics, artificial intelligence, machine learning and edge computing, on the other hand, bring unprecedented opportunities to deliver patient-centered, personalized healthcare in the patients' environment. The rising importance of the e-Health, m-Health (mobile Health) and p-Health (pervasive Health) paradigms are shifting the healthcare provision model from a centralized, standardized, hospital-centered, episodic model, to a decentralized, home-based, personalized, patient-centered and continuous paradigm, pushing the boundary of traditional Health Informatics systems and applications.

From a societal point of view, new opportunities arise for improving the life of a child, elderly, disabled individuals, and those suffering from chronic illnesses, as well as for the prevention of the current epidemics of lifestyle-related diseases. In the future, individuals and patients will use a number of devices measuring a multitude of different signals. The pervasive nature of modern technologies is pushing society to embrace a broader definition of healthcare management, from disease to wellness management, empowering people to take charge of their own health and well-being. At the same time, emerging technologies and data-driven processes are expected to reduce the social and monetary costs of healthcare systems, which have been rising steadily for the past 20 years.

Research and public health are also set to increasingly benefit from the enormous quantities of data available through social media, social networks and the Internet-of-Things. Healthcare Big Data have great potential to empower researchers, industry and practitioners with novel insights, hypothesis and applications, leveraging biological and personal data seamlessly collected in unprecedented real-life scenarios. As an example, the emerging field of Digital Epidemiology is beginning to leverage digital data, usually collected for other purposes, to enhance our understanding of diseases and infections, e.g. by connecting the study of social networks to the modeling of epidemics and infectious diseases. However, the full potential of data collected outside of the traditional structured methodologies of biomedical research and healthcare informatics is still largely untapped.

With technological advances come new opportunities, but also new challenges and threats. Issues related to information security, patients' privacy and data ownership are increasingly pushed into the spotlight. In this respect, emerging technologies such as blockchain provide new ways to record patient's data, written by multiple parties/devices, and make them available to the different actors involved in healthcare provision. There is relative little experience yet on the quality, reliability and biases in healthcare data generated from the Web and social network sites. Data analytics could be used against individuals, who could suffer discrimination based on their health status, if the latter can be inferred by online data traces.

This special issue aims to present the technological advancements in computing that are underpinning the current revolution in healthcare, shaping our future concept of health management in the broadest sense of the term. Cross-disciplinary and emerging applications that lay at the intersection of different sub-fields are especially welcome.