Intelligent Solutions for Computer Communication-Assisted COVID-19 and alike Diagnosis

1. SCOPE OF THE SPECIAL ISSUE

The COVID 19 is a disease which created a significant impact by causing death to the majority of the world population in 2019-20. This disease was firstly found in animals, and later it has been transferred to humans. The primary source for the transmission of the disease, detection and treatment methods are still unknown. COVID 19 is known to be Corona Virus Disease 19, where 19 represents the year of the disease outcome. However, lots of the details about this virus is still missing. How it spreads, prevention measures and vaccinations issues need to be further investigated. In this field, Artificial Intelligence (AI) and computer communication networks can play a key role in achieving many effective and efficient solutions. Especially the Machine Learning (ML) sub-field of AI, which can be applied over distributed computer systems and networks, because of its learning-from-samples capability. Nowadays, the trend is to apply Deep Learning (DL), which is an advanced form of the ML techniques considering the advantages of more than one technique. Such intelligent techniques can achieve very effective diagnosis for the COVID-19 and alike diseases by even being better than physicians according to the recent reports. It can examine extended counts of the possibilities and exchange the found results in timely manners. Current computer-communication infrastructure includes a number of smart devices having the sensing and data routing capabilities to communicate with each other using various protocols, allowing the disease updates to be accessed any-time from anywhere. They have the potential to provide innovative services which could not be possible without the progress made in the ML field. Owing to their advanced technical capabilities, intelligent communication paradigms are making the way into the COVID-19 and alike diseases treatment and detection. COVID-19 and alike crisis reaction and coordination, open or private infrastructure control, coordination or support to astute computing systems are a portion of the spaces in which the intelligent communication systems may end up key in the medical dianosis very soon. Moreover, these communication infrastructure will turn into a critical component of the urban monitoring and treatment systems. And thus, there exists a need for merging their traditional usage that gather data with the existing/forthcoming wireless communication technologies.

This Special Issue aims to solicit original research articles, which contributes to the current state of the art by reporting results for the used ML techniques in the problem scope of computer

networks-assisted COVID-19 and alike diagnosis. Main objective of this special issue is to be informed about the latest developments, achievements from real applications, and future perspectives for the computer communication-assisted medical diagnosis while describing the complete outbreak for COVID-19.

The topics of interests include, but are not limited to:
- Deep Learning for COVID-19 and alike diagnosis,
- Neural Network for medical diagnosis,
- Collaboration of Image Progressing and ML for COVID-19 and alike diagnosis,
- Collaboration of Computer Communication and ML for COVID-19 and alike diagnosis,
- Use cases of computer-assisted COVID-19 and alike detection systems,
- COVID-19 Patient Care and Treatment using ML-oriented systems,
- Emerging Networks solutions for improved medical diagnosis results,
- Intelligent Hardware solutions for COVID-19 and alike diagnosis,
- Effective use of computer communication and ML for solving open medical problems,
- Next Generation Networks (NGNs) and ML solutions for medical diagnosis.
- Security and privacy aspects in medical diagnosis.

2. WHY THE THIS JOURNAL?

This Journal has proven it's highly reputable venue in a very shorty period. We believe that it will definitely help attract high quality research contributions, which will add value to our addressed topic of interest. Researchers from industry as well as academia are expected to shed light on the challenges and potential opportunities for the fusion of emerging technologies; deep learning, computer communications, and IoT.

To the best of our knowledge, this topic has not been featured in this journal, nor in other publications with emphasis on ML-based sensing and challenges facing data gathering and exchanging in such systems. Specific requirements of the communication technologies to be implemented in such systems are challenging and worth dedicating a whole issue towards such topic.

3. WHY THESE GUEST EDITORS?

The guest editors (GEs) for the topic of interest has been carefully chosen to cover diversity of the topics in the proposed special issue (SI). We have considered the involvement of industry and academia sectors. In addition, the selection of GEs also guarantees covering different regions and sectors of the journal, which will help attracting works from different regions and sectors.
The GEs also covers different research interests included in the intelligent networks/systems in general, machine/deep learning techniques for next generation networks, security and privacy for wireless networks, and wireless sensor networks. In the following, more specifically we list specific expertise and previous research involvement of each GE.

Prof. Fadi Al-Turjman received his Ph.D. in computer science from Queen's University, Kingston, Ontario, Canada, in 2011. He is a full professor and a research center director at Near East University, Nicosia, Cyprus. Prof. Al-Turjman is a leading authority in the areas of smart/intelligent, wireless, and mobile networks' architectures, protocols, deployments, and performance evaluation. His publication history spans over 250 publications in journals, conferences, patents, books, and book chapters, in addition to numerous keynotes and plenary talks at flagship venues. He has authored and edited more than 25 books about cognition, security, and wireless sensor networks' deployments in smart environments, published by Taylor & Francis, Elsevier, and Springer. He has received several recognitions and best papers' awards at top international conferences. He also received the prestigious *Best Research Paper Award* from Elsevier Computer Communications Journal for the period 2015-2018, in addition to the *Top Researcher Award* for 2018 at Antalya Bilim University, Turkey. Prof. Al-Turjman has led a number of international symposia and workshops in flagship communication society conferences. Currently, he serves as an associate editor and the lead guest/associate editor for several well reputed journals, including the *IEEE Communications Surveys & Tutorials* **(IF 22.9)** and the Elsevier Sustainable Cities and Society **(IF 4.7)**.

Prof. Ahmed E. Kamal is a professor of Electrical and Computer Engineering at Iowa State University in the USA. He received a B.Sc. (distinction with honors) and a M.Sc. both from Cairo University, Egypt, and an M.A.Sc. and a Ph.D. both from the University of Toronto, Canada, all in Electrical Engineering. He is a Fellow of the IEEE and a senior member of the Association of Computing Machinery. He served as an IEEE Communications Society Distinguished Lecturer for 2013 and 2014. Kamal's research interests include wireless networks, cognitive radio networks, optical networks, wireless sensor networks, Internet of Things and performance evaluation. He received the 1993 IEE Hartree Premium for papers published in Computers and Control in IEE Proceedings, and the best paper award of the IEEE Globecom 2008 Symposium on Ad Hoc and Sensors Networks Symposium. Kamal chaired or co-chaired Technical Program Committees of several IEEE sponsored conferences including the Optical Networks and Systems Symposia of the IEEE Globecom 2007 and 2010, the Cognitive Radio and Networks Symposia of the IEEE Globecom 2012 and 2014, and the Access Systems and Networks track of the IEEE International Conference on Communications 2016. He is also the chair of the IEEE Communications Society Technical Committee on Transmission, Access and Optical Systems (TAOS) for 2015 and 2016. He is on the editorial boards of the IEEE Communications Surveys and Tutorials, the Computer Networks journal, and the Optical Switching and Networking journal.

4. WHY NOW?
Recently, COVID-19 crisis has revolutionized the concept of computing and communication, especially for the distributed systems in smart environments. In addition, it is without doubt the time for intelligent systems, deep learning-enabled in specific. The surge in development and research in the area of intelligent IoT has been unprecedented, these days. It is commonly believed that now is the time for enabling machine intelligence to everything, including IoT systems. The emergence of computer communication in the area of medical diagnosis pushes the research community towards finding the fusion of deep learning-enabled solutions for COVID-19 and alike deiseases.

5. WHO WILL SUBMIT?

Recently a number of researchers from industry as well as academia have been seen working on the emergence of computer communication systems for Biomedical technologies. There are many of them also focusing on the machine intelligence techniques for next generation networks. We hope and aim to target those researchers to submit their valuable novel and unpublished works.

6. WHAT IS THE TARGET NUMBER OF ACCEPTED PAPERS?
The editors are targeting between 10 and 12 high quality accepted papers, which can definitely be adjusted based on journal specifications and standards.

Tentative Submission Deadline:

Sept. 1st, 2020.