FAST-TRACK SPECIAL ISSUE ON

COMPUTATIONAL INTELLIGENCE FOR COMBATING COVID-19

Aims and Scope

COVID-19 (COronaVIrus Disease 2019), announced by World Health Organization (WHO) in March 2020, has become a global pandemic in very short time and caused infections on millions of people with tens of thousands of deaths, which unfortunately are continuing to rise. Not only the healthcare systems worldwide are under high threats but also the global economics were damaged severely.

During the past few months, all countries are pushing to develop novel and effective solutions for coping with this crises by leveraging the resources and efforts from the governments, industry and academia. Various emerging solutions and systems for combating COVID-19 have been under development and deployment, ranging from fast screening methods to accurate diagnosis using different kinds of clinical data (X-Ray, CT, vital signs, etc), risk profiling, patient surveillance, propagation modeling, dashboard visualization and control, drug and vaccine design and social analytics. Computational intelligence plays an important and crucial role in building such kind of solutions since it takes different kinds of computational intelligence technologies, like Neural Networks, Fuzzy Systems and Evolutionary Computation, to deal with the underlying challenges. Moreover, integrations of computational intelligence mechanisms with various types of medical systems/devices are essential for practical deployment in existing healthcare environments.

In light of the above observations, this "Fast-Track Special Issue", which is in line with the *COVID-19 Initiative* of IEEE CIS, aims at soliciting high-quality articles to share the latest developments and insights in applying computational intelligence approaches into practical applications for fighting against COVID-19. The covered topics include all important dimensions like diagnosis and prognosis, treatments and cures, tracking and prediction, data dashboards, early warnings and alerts, social analysis and control, public health policy, etc. The overall goal of this special issue is to offer a venue for researchers and practioners from academia and industry to present the latest technologies and developments in dealing with the challenges brought by COVID-19, with the hope to enlighten new and compelling solutions for combating COVID-19.

Topics

This special issue is targeted on general readership articles about design and application of CI technologies for combating COVID-19. Topics of interest include, but are not limited to:

- Surveillance and tracking of COVID-19 infected patients
- Modeling and prediction of virus propagation and pathways
- Discovery of early markers/symptoms of virus infections
- Personalized and group-based risk profiling and prediction
- Real-time and early alerting systems for hazardous and forefront outbreak
- Fast and accurate diagnosis of COVID-19 through analytics and modeling on various biomedical data (images, vital signs, genome, etc)
- Treatment optimization and care planning for best care of patients
- Prognosis and outcome prediction on patients for effective resource allocation
- Vaccine/medicine design through computational intelligence approaches
- Drug discovery and repurposing via big data analytics approaches
- Intelligent analysis of social media and networks for contact tracing and safety control
- Visual analytics techniques and applications for propagation modeling and monitoring
- Secure and privacy-preserving analysis of data in public health emergencies
- Public Health Policy making through big data analytics and model simulation
- Integrations of intelligent computing mechanisms with Information Technology systems and the Internet of Things (IOT) for smart care on COVID-19

Submission

All manuscripts must be submitted electronically in PDF format. Manuscripts must be in standard IEEE two-column/single space format and adhere to a length of 10-12 pages (including figures and references) for regular papers and 6 pages for correspondence (letters). More information on manuscript details and submission guidelines can be found at the following websites:

- Special Issue website: https://sites.google.com/view/cim-si-covid-19
- IEEE CIM website: https://cis.ieee.org/publications/ci-magazine/cim-information-for-authors

Important Dates

The submitted manuscripts will be processed through a **fast track** procedure for timely publication aligned with the following timeline:

- Manuscript Due: **June 30, 2020** (extended)
- First Notification: July 20, 2020
- Revision Due: August 3, 2020
- Final Notification: August 12, 2020
- Publication Date: November 2020

Guest Editors

- **Vincent S. Tseng**, National Chiao Tung University, Taiwan
- **Stephen T. Wong**, Houston Methodist, Weill Cornell Medical College, USA
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