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Original Publication Citation

Li, L. (2021). Editorial: Leveraging emerging technology to fight the COVID-19 pandemic. *Journal of Industrial Integration and Management*, 6(2), 141-145. <https://doi.org/10.1142/S2424862221020012>

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Editorial

Leveraging Emerging Technology to Fight the COVID-19 Pandemic

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Published 5 May 2021

The COVID-19, also known as the coronavirus pandemic, is an ongoing pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The World Health Organization declared the outbreak a Public Health Emergency of International Concern in January 2020 and a pandemic in March 2020. Coronavirus disease 2019 resulted in immense challenges that the world faces (Wei *et al.*, 2020; Xu, 2020a; Yin *et al.*, 2020). COVID-19 is accelerating industrial sectors' efforts in developing emerging technologies to fight against COVID-19.

Emerging technologies are those technological innovations that represent progressive developments within a field for competitive advantage or converging technologies representing previously distinct fields that are in some way moving towards more vital interconnection. Emerging technologies include a variety of technologies such as nanotechnology (Ivanov and Muminova, 2016a, 2016b; Ivanov *et al.*, 2020, 2021), artificial intelligence (Xu, 1999; Chi-Hsien and Nagasawa, 2019; Haenlein *et al.*, 2019; Lu, 2019; Mazurek and Małagocka, 2019; Tung, 2019; Kang *et al.*, 2020; Kullaya Swamy and Sarojamma, 2020; Chen *et al.*, 2021), IoT (Xu *et al.*, 2014, 2018; Gorkhali *et al.*, 2020; Lu and Ning, 2020; Pradhan and Chawla, 2020; Zhao *et al.*, 2020), industrial information integration (Xu, 2011, 2020b), and many others (Li *et al.*, 2001; Li and Xu, 2001; Shi *et al.*, 2007; Wang *et al.*, 2007; Xu *et al.*, 2008; Tan *et al.*, 2010; Xu, 2013). Emerging technologies have attracted much attention from industry (Li *et al.*, 2014; Li, 2020) and have played an important role in fighting against the COVID-19.

In this aspect, there are many research issues needed to be addressed. The purpose of this special issue reports the research and practice in emerging technologies used to fight against COVID-19. The special issue also serves as a forum for scholars and practitioners to share their research results related to emerging technologies and pandemic control.

In the paper entitled "Significant role of modern technologies for COVID-19 pandemic" by Vaishya *et al.* (2021), the authors have discussed the technologies that can save human lives by providing innovative solutions in fighting against COVID-19 pandemic.

Nanomedicine ranges from the medical applications of nanomaterials and biological devices to nanoelectronic biosensors. Gupta *et al.* (2021) discussed the application of nanotechnology in medical treatments.

Currently, biosensor technology drives much of the mobile and wearable device industry (Li *et al.*, 2013; Chen *et al.*, 2021). In the paper entitled "Advancements in Biosensor technologies for the medical field and COVID-19 pandemic" (Bahl *et al.*, 2021a), authors consider biosensors technologies to play a crucial role in diagnosing various medical diseases, including COVID-19. The paper describes the significant advancement of biosensor-based technological solutions for medical diagnosis related to COVID-19.

In the paper, by Bahl *et al.* (2021b), entitled "Bioengineering technology in context to COVID-19 pandemic: Potential roles and applications", the authors consider that in collaboration with other disciplines, bioengineering having a wide range of important applications can play a significant role in propagating the immediate and urgent response to the COVID-19.

Cloud computing is available on-demand, including servers, storage, databases, networking, software, over the cloud (Jiang *et al.*, 2014; Aceto *et al.*, 2020). In the paper by Singh *et al.* (2021) entitled "Cloud computing in solving problems of COVID-19 pandemic", the authors have discussed leverage the function of cloud computing to fight against the COVID-19 pandemic.

Tissue engineering is a biomedical engineering discipline. In the paper entitled "Tissue Engineering and its Significance in Healthcare during COVID-19 Pandemic: Potential Applications and Perspectives" by Softa *et al.* (2021), the authors explored tissue engineering's useful applications during the ongoing COVID-19 pandemic situation.

Effectively managing the medical supply chain during the pandemic is a topic discussed by the media every day. In the paper co-authored by Khan *et al.* (2021), the authors identified and discussed the significant impact of COVID-19 on the current supply chain, with specific reference to the medical supply chain.

In the paper entitled "COVID-19 Pandemic and Debates on the Design of Operating Theatre Ventilation Systems in Healthcare Facilities", Jaly *et al.* (2021) have reviewed the literature related to the challenges the society faced during the COVID19 pandemic and practical operating theatre ventilation system implementation cases.

In the paper entitled "Technological Resources for fighting COVID-19 Pandemic Health Issues", Tyagi *et al.* (2021) concluded that the deficiency in medicines and other necessary equipment could be solved by employing engineering technology for finding specific solutions.

We hope that this special issue will serve our readers as an avenue to gain a new perspective on emerging technologies in fighting against a pandemic. We are deeply grateful to the many individual reviewers who worked so diligently to make this special issue possible. Without their time, effort, and support, this issue would never have come to be.

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