COVID-19 and Adoption of Medical Technology

The COVID-19 pandemic has posed unprecedented challenges to the society. In response, people are making drastic changes to their daily life, such as social distancing and increased reliance on technological solutions. We examine both the short-term and the long-term effects of such changes on patient adoption of medical technology (e.g., telemedicine and medical artificial intelligence) — an issue of significant implication to the public health and patients’ welfare.

**Dr. He** is the Ph.D. program coordinator in the UCF Department of Marketing. He earned his Ph.D. from the Joseph M. Katz Graduate School of Business, University of Pittsburgh, and joined UCF as a faculty member in fall 2004. Using experimental methods, Dr. He studies behavioral decision making, consumption, and more recently, technology adoptions. His research has appeared in several leading journals in marketing, consumer behavior and applied psychology.

**Dr. Boldt** has a Ph.D. and an MBA from the University of Wisconsin-Madison. Her research involves using advanced statistical and econometrics methods to study important marketing problems. Relying on experimental and observational data, she builds models with Bayesian statistics, big data analytics and econometrics. Dr. Boldt’s substantive research interests include digital marketing, group decision making, retailer pricing and promotion and artificial intelligence. Her research has been published in leading marketing journals.

**Dr. Klucarova** received her Ph.D. in business administration (marketing) from UCF. Prior to that, she worked as a congress project manager at the European Crohn’s and Colitis Organization, the world’s largest forum for specialists in inflammatory bowel disease. She works as a postdoctoral researcher at Montpellier Business School in France. Her research interests include status consumption, prosocial behavior, inference making and consumer adoption of digital technologies. Dr. Klucarova’s research has been published in various marketing and psychology outlets.

**Dr. Senyuz** received her B.A. from Bogazici University in Turkey and her Ph.D. in business administration (marketing) from UCF. Her research focuses on the role of emotions in consumer behavior with an emphasis on social relationships and social impact. She employs experimental design, empirical models and field studies in her research to advance the understanding of practical problems and to positively impact the lives of consumers. Prior to obtaining her Ph.D., Dr. Senyuz worked for multiple global companies including The Coca-Cola Company and Philip Morris International.
**High-Dimensional Analysis for Spectroscopy of Exhaled Gas from COVID-19 Patients**

Dr. Xu’s project focuses on developing a sensitive device to test for COVID infection based on the spectroscopy of the breath. In this talk, she will discuss the investigation of volatile organic compounds (VOCs) that have been found in human breath, including subjects who are healthy, and who are diagnosed with various lung or airway-related diseases. Based on this, her group designs the experiment to fabricate gas mixtures for further analysis.

Dr. Xu joined UCF in 2016. She received her Ph.D. from the University of Chicago. Her research interests include machine learning, high-dimensional statistics and time series. Dr. Xu’s research has focused on the hypothesis test from multivariate time series with an application to the real-time anomaly detection in complex system, and the discriminant analysis from functional data with a chemometric application.

**Artificial Intelligence-Assisted Discovery of Complex Polymeric Nanofilms Designed to Trap and Kill the COVID-19 Virus for Personal Protection Equipment Applications**

Dr. Ozmen and Dr. Seal will present a machine learning modeling approach to assist in the laboratory discovery and fabrication of anti-SARS-CoV-2 nano-coatings to reduce the time and the cost of experimental virus-nanomaterial interaction studies. Through multidisciplinary collaboration, their team implemented a computational-experimental framework that consists of a novel machine learning-based data preparation approach, state-of-the-art compound-protein interaction prediction model and the experimental evaluation of the performance of this model to validate its practical potential.

Dr. Ozmen directs the Human-Centered Artificial Intelligence Research Lab (Human-CAIR Lab). Prior to that, she served as the Director of Research Technology. Her areas of research are big data, social media analysis, social cybersecurity, artificial social intelligence, human-machine teams, social and economic networks, network science, STEM education analytics, higher education economic impact and engagement, artificial intelligence, evolutionary computation and complex systems.

Dr. Seal’s research is focused on synthesizing rare earth and transition oxides and metal/oxide nanoparticles and their tunable surface chemistry for a wide range of biomedical to energetic applications. He joined UCF in fall of 1997 after a brief postdoc with Lawrence Berkeley National Laboratory at the University of California, Berkeley. From 1990-1991, he worked as an engineer for Tata Steel, India. Dr. Seal is a former director of AMPAC and NSTC, and a fellow of FASM, FAVS, FAIMBE, FNAI, FAAAS, FMRS, FRSC, FilM and FACERS.

**An AI-Powered and Epidemiology-Informed Modeling System for COVID-19 Prediction and Analysis**

Dr. Wang will introduce his research progress on epidemiological modeling for infectious diseases (e.g., COVID-19) using deep learning methods. This approach leverages compartmental modeling simulations and incorporates deep neural networks to distill quality modeling knowledge. The analyses of vaccine effectiveness and variant development are also investigated and integrated into the current modeling. This study blends epidemiological modeling and deep learning to enhance both short-term and long-term prediction accuracy. His team’s prediction model has been included in the CDC COVID-19 Forecasting Hub from November 2020 and consistently ranked in the top group.

Dr. Wang joined UCF in fall 2015. His major research interests include deep learning, big data, parallel/cloud computing and software systems, which include the two following aspects: improving the accuracy, security and privacy of deep learning systems; and optimizing performance, scalability, resilience and resource management of big data processing, especially on cloud, GPU and multicore platforms. His research also includes applying AI techniques to various domain applications. Dr. Wang received an NSF CAREER Award in 2011. Prior to joining UCF, he was an assistant and Castagne associate professor at the University of Wyoming. He received a Ph.D. in computer science from Stony Brook University.