

SATYAKI ROY

SUMMARY

I am an Assistant Professor in the Department of Mathematical Sciences at the University of Alabama in Huntsville.

SKILLS

Research Interest. Design of computational tools to answer questions related to public health

Skills: Machine & statistical learning, bioinformatics, genomics, epidemiology, network theory, algorithms, and IoT

EDUCATION & TRAINING

- 2020 - 2022 **Postdoctoral Research Associate (Genetics)**
University of North Carolina, Chapel Hill
- 2014 - 2019 **Ph.D. in Computer Science**
Missouri University of Science and Technology, Rolla, Missouri
- 2012 - 2014 **M.Sc. in Computer Science**
St. Xavier's College, Kolkata, West Bengal, India
- 2009 - 2012 **B.Sc. in Computer Science**
St. Xavier's College, Kolkata, West Bengal, India

PROJECTS

- Thrust 1 **Biological and social network modeling**
Machine learning and network theory to find design principles of large biological and social systems
- Thrust 2 **Disease inference tools**
Bioinformatics workflow to identify biomarkers for complex disease conditions
- Thrust 3 **Pandemic management**
Recommender systems to inform human behavior and public policies during health crises
- Thrust 4 **Biosensing applications for healthcare**
Sensing and communication architectures that inform healthcare management and decision-making

SELECTED WORKS

- 09/2023 **Towards a Unified Pandemic Management Architecture: Survey, Challenges, and Future Directions**
• Unified pandemic management architecture that leverages IoT-based communication to automate recommendations on vaccine distribution, dynamic lockdown, mobility scheduling, and pandemic prediction (ACM Computing Surveys, Volume 56, Issue 2)
- 12/2022 **Curbing Pandemic Through Evolutionary Algorithm-Based Priority Aware Mobility Scheduling**
• Evolutionary algorithm (EA) based mobility scheduler that incorporates the personalized itineraries of individuals to determine the ideal timing of their mobility in order to mitigate contagion during an outbreak (IEEE Transactions on Intelligent Transportation Systems Volume 24 Issue 4)
- 09/2021 **A machine learning approach identifies 5-ASA and ulcerative colitis as being linked with higher COVID-19 mortality in patients with IBD**
• Random sampling approach to generate clinical COVID-19 outcomes from summary statistics; apply machine learning approaches to analyze the primary and secondary covariates to predict COVID-19 outcomes in inflammatory bowel disease patients (Scientific Reports Volume 11 Issue 1)
- 03/2021 **Quantifying Mobility and Mixing Propensity in the Spatiotemporal Context of a Pandemic Spread**
• Model that uses a composite latent factor to gauge the role of social mixing and mobility in contagion. (IEEE Transactions on Emerging Topics in Computational Intelligence Volume 5, Issue 3)
- 06/2020 **Motifs enable communication efficiency and fault-tolerance in transcriptional networks**
• Analysis of network motifs in the topological robustness of transcriptional networks and the characterization of their structural properties based on the connectivity and clustering of motif-rich entities (Scientific Reports Volume 10 Issue 1)