

Data Science Seminar

Hosted by Department of Mathematical Sciences

- Date: Tuesday, May 3, 2022
- Time: 12:00pm - 1:00pm
- Room: ZOOM
- Speaker: Dr. Hongtu Zhu (University of North Carolina)
- Title: Challenges in Biobank-scale: Imaging Genetics and Beyond

Abstract

Recently the UK Biobank study has conducted brain magnetic resonance imaging (MRI) scans of over 40,000 participants. In addition, publicly available imaging genetic datasets also emerge from several other independent studies. We collected massive individual-level MRI data from different data resources, harmonized image processing procedures, and conducted the largest genetic studies so far for various neuroimaging traits from different structural and functional modalities. In this talk, we showcase novel clinical findings from our analyses, such as the shared genetic influences among brain structures, functions, and the genetic overlaps with a wide spectrum of clinical outcomes. We also discuss the challenges we have faced when analyzing these biobank-scale datasets and highlight opportunities for future research. This presentation is based on a series of works with members of the BIG-S2 lab of the University of North Carolina at Chapel Hill.

Biography of the speaker: Dr. Zhu is a tenured professor of biostatistics, statistics, computer science, and genetics at University of North Carolina at Chapel Hill. He was DiDi Fellow and Chief Scientist of Statistics at DiDi Chuxing from 2018 to 2021. He was Endowed Bao-Shan Jing Professorship in Diagnostic Imaging at MD Anderson Cancer Center from 2016 to 2018. He is an internationally recognized expert in statistical learning, medical image analysis, precision medicine, biostatistics, artificial intelligence, and big data analytics. He has been an elected Fellow of American Statistical Association and Institute of Mathematical Statistics since 2011. He received an established investigator award from Cancer Prevention Research Institute of Texas in 2016 and received the INFORMS Daniel H. Wagner Prize for Excellence in Operations Research Practice in 2019. He has published 290+ papers in top journals including Nature, Nature Genetics, Science, PNAS, AOS, and JRSSB, as well as 45+ conference papers in top conferences including NeurIPS, AAI, KDD, ICDM, MICCAI, and IPMI. He has served/is serving an editorial board member of premier international journals including Statistica Sinica, JRSSB, Annals of Statistics, and Journal of American Statistical Association.

This talk is endorsed by the Data Science Transdisciplinary Area of Excellence and the Center for

Imaging, Acoustics, and Perception Science at Binghamton University.

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