DISTINGUISHED LECTURE SERIES IN STATISTICS

VERIDICAL DATA SCIENCE TOWARDS TRUSTWORTHY AI



Distinguished Professor University of California, Berkeley

Biography

Bin Yu is Chancellor's Distinguished Professor in the

FRIDAY, 19 JANUARY 2024



10.30-11.30 AM (SINGAPORE)



BLK S17, #04-06, SEMINAR ROOM NATIONAL UNIVERSITY OF SINGAPORE

Abstract

Data Science is at the heart of today's AI and has driven most of recent advances in biomedicine and beyond. Human judgment calls are ubiquitous at every step of a data science life cycle (DSLC): problem formulation, data cleaning, EDA, modeling, and reporting. Such judgment calls are often responsible for the "dangers" of AI by creating a universe of hidden uncertainties well beyond traditional sample-to-sample uncertainty. To mitigate these dangers, veridical (truthful) data science is introduced based on three fundamental Computability Predictability, principles: and Stability (PCS). The PCS framework unifies, streamlines, and expands on the ideas and best practices of statistics and machine learning. In every step of a DSLC, PCS emphasizes reality predictability, check through considers computability up front, and takes into account of uncertainty sources including those from data curation/cleaning and algorithm choice to build trust in data results. The PCS framework will be showcased through collaborative research in finding genetic drivers of a heart disease and microbiome-related identifying metabolite signature for possible early cancer detection. PCS is supported by a python software package v-flow and a documentation template with links at https://binyu.stat.berkeley.edu.

Department of Statistics and the Department of Electrical Engineering and Computer Sciences at UC Berkeley. Her recent research focuses on statistical machine learning practice, algorithm, and theory, veridical data science for trustworthy AI, and interdisciplinary data problems in neuroscience, genomics, and precision medicine. Among her many accolades, she is a member of the U.S. National Academy of Sciences and the American Academy of Arts and Sciences, recipient of the 2018 COPSS E. L. Scott Prize, the 2023 IMS Wald Memorial Award and Lectureship, and the 2023 COPSS Distinguished Achievement Award and Lectureship (formerly the Fisher Award and Lectureship). She also served as President of the Institute of Mathematical Statistics. She holds a Honorary Doctorate from the University of Lausanne, Switzerland.



Department of Statistics and Data Science Faculty of Science

