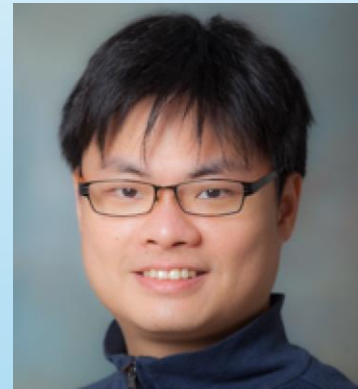


Computing Futures: Challenges in AI, Ethics and HPC

Title: A Plea for History and Philosophy of Statistics and Machine Learning—with a Little Story of Achievabilism

Abstract

Philosophy of science encompasses a broad spectrum of approaches, ranging from the use of mathematical tools in formal epistemology to the focus on scientific practice in history and philosophy of science (HPS). Despite their differences, integrating these approaches is essential, especially when examining the scientific fields that study scientific inference, such as statistics and machine learning. I illustrate this integration with a historical case study of an epistemological idea I call achievabilism—the thesis that the standards for assessing inference methods and learning algorithms should not be invariant but instead sensitive to what is achievable within specific problem contexts. Achievabilism appears crucial to the foundations of statistics and machine learning, yet it has rarely been explicitly articulated and has instead been practiced largely implicitly. This has led to its repeated reinvention by figures such as Putnam (1965) and Gold (1967) in formal learning theory, and Devroye et al. (1996) in statistical/machine learning theory, although its origin can be traced back to Neyman and Pearson (1936) in classical statistics.



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Bio

Dr. Hanti Lin is an associate professor of philosophy at UC Davis. His research focuses on the justification of scientific inference across diverse contexts and disciplines, including physics, epidemiology, economics, statistics, and machine learning. Committed to interdisciplinary research, he has published in both philosophy and data science journals and serves as an associate editor for the *Harvard Data Science Review*. More information about his work is available at: <https://sites.google.com/site/hantilinphil/>.

Date: Mar. 14th, 2025

Time: 11am – 12pm (CT)

Zoom Link:

<https://rutgers.zoom.us/j/99554502801?pwd=rXCCcpqG9LU TdvBDaZIOqnDbp0wFS9.1>

Zoom Meeting ID: 995 5450 2801

Passcode: 699310

