

Data Science Seminar Series

Optimization Opportunities in Human-in-the-loop Systems



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Web Link: <https://njit-institute-for-data-science.eventbrite.com>

An emerging trend is to leverage an under-explored and richly heterogeneous pool of human knowledge inside machine algorithms, a practice popularly termed as human-in-the-loop (HIL) processes. A wide variety of applications, starting from sentiment analysis to image recognition, query processing to text translation, or even feature engineering stand to benefit from such synergistic man-machine collaboration. This talk will explore optimization opportunities inside such HIL systems, considering the roles and responsibilities of three key stakeholders - humans (workers), machines (algorithms), and platforms (online infrastructure where the work takes place). Optimization inside such HIL systems investigates judicious involvement of workers inside machine algorithms, as well as the desired functionality of the platforms to satisfy a variety of goals pertinent to the aforementioned stakeholders. Following that, the talk will investigate both modeling as well as algorithmic challenges to satisfy conflicting goals of the key stakeholders and how to enable them inside large-scale HIL systems.

Senjuti Basu Roy is an Assistant Professor in the Department of Computer Science at the New Jersey Institute of Technology. Her broader research interests lie in the area of large scale data management with the focus on designing principled algorithms for "human-in-the-loop" systems. She has served as the Mentorship co-chair of SIGMOD 2018, PhD workshop co-chair of VLDB 2018, and serves as the co-chair of the IEEE international workshop on Human-in-the-loop Methods and Human Machine Collaboration in Big Data (HMDData 2017-2020). She is a recipient of the NSF CAREER Award. Her research is funded by NSF, ONR, NIH, and Microsoft Research.