Daniel Smolyak

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EDUCATION

University of Maryland, College Park, College Park, Maryland

- Ph.D. in Computer Science, with focus on Machine Learning (In progress) Aug 2020 – Present
- B.S. in Computer Science and Economics, Summa Cum Laude Aug 2016 – May 2020
  - Gemstone Honors Program, Banneker Key Scholar (Full Scholarship)

WORK & RESEARCH EXPERIENCE

Graduate Research Assistant, University of Maryland, College Park Aug 2020 – Present

- Studying machine learning approaches to treatment of Neonatal Opioid Withdrawal Syndrome.
- Collaborating with physicians and geneticists from the University of Maryland Medical School.
- Researching methods for minority subgroup fairness in modelling in the healthcare setting.

Software Engineering Intern, Microsoft, Research and AI Group Jun 2019 – Aug 2019

- As a member of the Bing Conversational Search Team, worked on a feature for query reformulation.
- Extended the scope of the feature by allowing for faceted search, using word ontologies and classifiers.

Data Science Researcher, Indiana Univ. - Purdue Univ. Indianapolis REU Jun 2018 – Aug 2018

- Adapted generative adversarial networks (GANs) to synthesize taxi driver GPS trajectories.
- Developed GAN-based methods for anomaly detection within real driver GPS trajectory data.

Software Engineering Intern, Johns Hopkins Applied Physics Laboratory Sep 2014 – Aug 2017

- Implemented an interface for depth perception with two stereo-cameras using the OpenCV library.
- Enhanced functionality of an image annotator for creating training data for a boat-identifying ML system.
- Developed a webcam image recognition program for identifying hand-written numbers.

PROJECTS

Fair Covid-19 Prediction with Mobility Datasets Jan 2021 – Present

- Developing mobility-based Covid-19 prediction models (linear, LSTM, GNN) for U.S. counties.
- Comparing performance of models across counties composed of varying demographic groups.

Fair Multi-Armed Bandits For Medication Adherence Sep 2020 – Jan 2021

- Experimented with restless multi-armed bandits for optimal distribution of interventions to patients.
- Implemented a periodic-fairness constraint requiring interventions for each patient every x periods.

PUBLICATIONS

Smolyak, D., Gray, K., Badirli, S., & Mohler, G (2020, June). Coupled IGMM-GANs with Applications to Anomaly Detection in Human Mobility Data. *ACM Transactions on Spatial Algorithms and Systems*.

Smolyak, D., Valcarcel, B., & Bjarnadottir, M. (2021, November). A Quantitative Study of NBA Trades and the Value of Draft Picks. (Under submission) *Journal of Quantitative Analysis in Sports*.

Humphries, E., **Smolyak, D.**, Parikh, A., Agarwal, R., Bjarnadottir, M., et al. (2021, October). Polygenic Prediction of Response to Pharmacotherapy in Infants With Neonatal Opioid Withdrawal Syndrome. *European Neuropsychopharmacology*.

Kadakia, S.*, **Smolyak, D.***, Bjarnadottir, M., & El-Metwally, D. (2021, October). Variation in Pulse-Oximetry of Infants with Neonatal Opioid Withdrawal Syndrome. (Submitted) *Pediatric Research*.

Smolyak, D., Lee, B., & Choe, E. K. (2018, April). TandemTrack: Promoting Consistent Exercise Leveraging Multimodal Training and Tracking. In *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems*.

Gasarch, W., Metz, E., Prinz, J., & **Smolyak, D.** (2020). Mathematical Muffin Morsels: Nobody Wants A Small Piece. *World Scientific*.

SKILLS

Programming Languages: Python, Java, C, C++, C#, R, Javascript, SQL, Kotlin, LaTeX.

LEADERSHIP/ SERVICE

Representative, Computer Science, Graduate Student Government Sep 2020 – Present

- Policy-making to promote the welfare of graduate students in the CS department and across the university.
- Chair of Polis Committee, working to deploy *Polis*, an ML-driven group-clustering Wikisurvey software.

Teaching Assistant, CMSC 434, Introduction to Human-Computer Interaction Aug 2018 – May 2019

- Mentoring student teams for a semester-long project to prototype and develop a software application.