

NIL-JANA AKPINAR

Ph.D. Student in Statistics and Machine Learning

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RESEARCH INTERESTS

My research interests lie in statistical methodology, machine learning in high-stakes decision settings, and fairness, accountability and transparency in machine learning.

CURRENT RESEARCH PROJECTS

Fairness in Liver Transplant Allocations

Nil-Jana Akpinar, Zachary Lipton, Alexandra Chouldechova

- **Why:** There is indication that the current priority system for liver donations disadvantages waitlisted patients of different blood groups, liver conditions, and/or demographics.
- **What:** Analyze parities and the role of population size and matching policies via simulation and based on real-world data, and explore possible solutions.

Algorithmic Bias in Predictive Policing Algorithms

Nil-Jana Akpinar, Alexandra Chouldechova

- **Why:** Recent research questions the fairness of commercial predictive policing algorithms and hypothesizes that they facilitate a vicious circle of overpolicing minority populations.
- **What:** Analyze the roles of data bias, crime reportance and model misspecification on predictive policing algorithms tailored to inform hotspot policing based on simulation and self-exciting point processes.

PUBLICATIONS

- Akpinar, N.-J., Ramdas, A. and Acar, U. (2020) Analyzing Student Strategies In Blended Courses Using Clickstream Data. Thirteenth International Conference on Educational Data Mining EDM.
- Akpinar, N.-J., Kratzwald, B. and Feuerriegel, S. (2020). *Sample Complexity Bounds for Recurrent Neural Networks with Application to Combinatorial Graph Problems*. Thirty-Fourth Conference on Artificial Intelligence AAAI (Student Abstract).
- Akpinar, N.-J. and Feuerriegel, S. (2017). *A Model-free Solver for Arbitrary Graph Problems: Predicting Solutions With Deep Learning*. Presentation at INFORMS annual meeting, Houston TX.
- Akpinar, N.-J., Alfano, S., Kersten, G. and Yu, B. (2017). *The Role of Sentiment and Cultural Differences in the Communication Process of e-Negotiations*. In: Group Decision and Negotiation: A Socio-Technical Perspective, GDN 2017, p.132-144.

EDUCATION

Ph.D. in Statistics and Machine Learning (joint)

Carnegie Mellon University

📅 Aug 2018 – Aug 2023 (Expected)

Current GPA: 4.0/4.0

M.S. in Statistics

Carnegie Mellon University

📅 Aug 2018 – May 2020

GPA: 4.0/4.0

M.S. in Mathematics

University of Freiburg, Germany

📅 Oct 2015 - Jul 2018

Grade: 1.3/6.0 (1.0 (excellent) - 6.0 (fail))

Thesis: Heuristic Solvers for Edge Clique Cover Graph Problems Based on Deep Neural Networks

B.S. in Economics

University of Freiburg, Germany

📅 Oct 2013 - Sept 2017

Grade: 1.5/6.0 (1.0 (excellent) - 6.0 (fail))

Thesis: The Role of Sentiment and Cultural Differences in the Communication Process of e-Negotiations

B.S. in Mathematics

University of Freiburg, Germany

📅 Oct 2012 - Sept 2015

Grade: 1.5/6.0 (1.0 (excellent) - 6.0 (fail))

Thesis: The p -adic logarithm and Brumer's p -adic version of Baker's theorem (German)

AWARDS

- Best three minute student presentation award (AAAI 2020)
- Research visit grant of the German National Academic Foundation (Fall 2016)
- Full study scholarship by the German National Academic Foundation (2013 - 2018)

EXPERIENCE

Fairness and Privacy Research Engineering Intern

[LinkedIn Corporation, Sunnyvale CA \(remote\)](#)

📅 May 2020 - Aug 2020

Developed methods for data anonymization and built a machine learning pipeline for Named Entity Recognition.

Research Assistant

[Information Systems Research Department, University of Freiburg \(Germany\)](#)

📅 Apr 2016 - Jul 2018

Data analysis in R, preparation of teaching materials and homeworks, literature reviews and editing papers in \LaTeX .

Research Intern

[Concordia University, Montréal \(Canada\)](#)

📅 Sept 2016 - Nov 2016

Analyzed communication patterns in electronic negotiations in cooperation with Prof. Gregory Kersten (Concordia University) and Prof. Dirk Neumann (University of Freiburg).

TEACHING AND MENTORSHIP

Teaching assistant

[Carnegie Mellon University](#)

📅 Aug 2018 - present

- **Department of Statistics and Data Science:** Statistical Graphics and Visualization, Text Analysis, Advanced Methods for Data Analysis, Probability Theory for Computer Scientists

[University of Freiburg](#)

📅 Apr 2014 - Jul 2018

- **Department of Mathematics:** Linear Algebra, Mathematics for Students of Natural Sciences, Intro to Programming in C/C++
- **Information Systems Research Department:** Management Information Systems/Intro to Programming in R

Data Science Initiative Fellow

[Carnegie Mellon University and Giant Eagle](#)

📅 Jan 2020 - May 2020

- Mentored five undergraduate students in corporate data science consulting project with supermarket chain Giant Eagle.
- **Methods:** Feature engineering, logistic regression, random forests

[Carnegie Mellon University and Penguin Random House](#)

📅 Aug 2019 - Dec 2019

- Advised four undergraduate students on a corporate consulting project with the book publisher Penguin Random House.
- **Methods:** Generalized additive models, clustering, logistic regression, random forests

SKILLS

Coding

Python, R, Git, \LaTeX
Bash, C++, SQL



Natural Languages

German (native), English
Spanish, Turkish, French



PH.D. COURSEWORK

Graduate Coursework

[Carnegie Mellon University](#)

📅 Aug 2018 - present

- Foundations of Causal Inference & Modern Causal Inference, Edward Kennedy, 36-432/432
- Advanced Introduction to Machine Learning, Nihar Shah, 10-715
- Advanced Statistical Theory II, Alessandro Rinaldo, 36-710
- Advanced Statistical Theory I, Alessandro Rinaldo, 36-709
- Statistical Machine Learning, Larry Wasserman, 36-708
- Advanced Data Analysis, Valerie Ventura, 36-757
- Statistical Computing, Christopher Genovese and Alexander Reinhardt, 36-750
- Intermediate Statistics, Sivaraman Balakrishnan, 36-705
- Regression Analysis, Valerie Ventura, 36-707

SELECTED SERVICE

- Board member of CMQ+, the LGBTQIA+ and allies graduate student group at Carnegie Mellon University (since 2019)
- Elected Member of the Faculty Council, School of Mathematics and Physics, University of Freiburg (2015 - 2018)
- Elected Member of the Senate, University of Freiburg (2015)
- Member of the student council, Department of Mathematics, University of Freiburg (2013 - 2018). Includes member of the examination board and faculty appointment committees.