Nino Migineishvili

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University of Washington

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Education

- **University of Washington** — Seattle, WA
  PhD in Computer Science and Engineering — *Sep. 2023 – present*
  - **Advisors**: Katharina Reinecke and René Just
  - **Relevant Coursework**: Advanced Topics in Human Computer Interaction, Computer Security and Privacy
- **University of California, Los Angeles (UCLA)** — Los Angeles, CA
  Bachelor of Science in Mathematics of Computation — *Sep. 2015 – Dec. 2018*
  - **Relevant Coursework**: Optimization, Probability Theory, Algorithms and Data Structures, Machine Learning, Data Mining, Artificial Intelligence, Stochastic Processes, Discrete Math

Fellowship and Awards

Paul G. Allen School of Computer Science — awarded September 2023
Hacherl Endowed Fellowship

Russell Sage Foundation — awarded September 2021
Summer Institute in Computational Social Science Grant

Skills

- **Technical**: Machine Learning (Classification, Regression, Random Forests and Feature Engineering, Cluster, Data Visualization), Statistics (Regression, Bayesian Methods, Distribution Matching, Bootstrapping), Econometrics (Causal Inference, Difference in Difference, Lagged Dependent Variable Regression, Synthetic Controls)
- **Programming**: Python (scikit-learn, NumPy, SciPy, Pandas, Seaborn), SQL, R, SAS, C++, Git, LaTeX, HTML, CSS, JavaScript, AWS, Bash

Selected Projects

- **Exploring Technical Challenges in Forest Management – A Need-Finding Study**: *in progress*
  - **Task**: Conducted interviews across academia, public and private sectors to identify data science and communication challenges around forest management with an emphasis on wildfires.
- **Assessing the Influence of Wildfires on Public Park Visitation Patterns using Gravity Models**: *in progress*
  - **Task**: Developed a gravity model of spatial interaction to understand how wildfire and other factors affect visitation to recreation sites on public lands.
  - **Technology**: Developed and optimized infrastructure to manage high-volume data processing, incorporating parallel computing and cluster computing techniques. Enhanced model accuracy through deep learning algorithms and leveraged public data sources for feature engineering.
  - **Presentation**: Presented findings to the several labs and data science seminars.
- **Predicting and Preventing Homelessness in LA County**:
  - **Task**: Identified clients in real time at risk of homelessness using anonymized, linked client-level data.
  - **Deployment**: Provide rental assistance and connections to legal services to clients who the models predict to be at the highest risk of homelessness
  - **Evaluation**: Evaluate whether referral through targeted treatment machine learning reduces homelessness for clients as compared to similar clients not referred.
- **Predicting Homelessness and High Cost Utilization in LA County**:
  - **Task**: Improved precision of predicting homelessness and high cost utilization by 34% by constructing a conditional machine learning model.
  - **Technology**: Utilized penalized logistic regression and random forest regression for the machine learning model. Performed entity resolution on the data. Loaded, cleaned and preprocessed the data in MySQL and generated relevant features for modeling.

- **Presentation**: Presented the finding to partners in the county and affiliated research managers.

- **Parsimony and Machine Learning**:
  - **Task**: Simplified a machine learning model trained on over 10,000 features to a machine learning model trained on only 4 features with no significant difference in predictive ability.
  - **Technology**: Utilized neuroimaging pipelines such as heudiconv and FSL, as well as feature selection methods using Random Forests and decision boundaries
  - **Presentation**: Was accepted to the Organization for Human Brain Mapping (OHBM), an internal conference, to present my research
  - **Publication**: Submitted paper $DOI : 10.13140/RG.2.2.25126.63047$
- **Dataset Characteristics and Machine Learning**:
  - **Task**: Investigate how dataset characteristics such as distribution of demographic variables, data quality differences across data collection sites, relatedness of individuals and the interaction of the above characteristics account for poor cross-dataset performance of machine learning models.
  - **Technology**: Utilized neuroimaging pipelines such as heudiconv and FSL, MRIQC as well as Mindcontrol. Utilized statistical methods of bootstrapping, paired analysis of errors, anova, F-test
  - **Presentation**: Presented research at the NIH summer poster presentation
- **Social Justice and Big Data**:
  - **Task**: Designed and spearheaded individual research project on using Big Data to improve Social Problems with guidance from Professor Porter. Analyzed survey results from the Social Justice Sexuality project to understand the LGBT experience in minority populations.
  - **Technology**: Employed statistical methods such as principal component analysis through singular value decomposition, CrossCat and k-means clustering. $https://github.com/niniko1997/sjsp$

Articles

- **NIH**: Migineishvili, N., Nielson, D., Lee A., J., Shaw, P., Thomas, A., Bandettini A., P. (n.d.). Parsimony and Machine Learning in Neuroimaging.
- **NIH**: Nielson, D., Pereira, F., Zheng Y., C., Migineishvili, N. (n.d.). Detecting and harmonizing scanner differences in the ABCD study.
- **California Policy Lab**: Wachter, T. V., Bertrand, M., Pollack, H., Rountree, J., Blackwell, B. (n.d.). Predicting and Preventing Homelessness in Los Angeles.
- **California Policy Lab**: Wachter, T. V., Rountree, J., Buenaventura, M., Blackwell, B., Obermark, D. (n.d.). Evaluation of Los Angeles County Measure H-Funded Homelessness Prevention Strategies.
- **California Policy Lab**: Wachter, T. V., Santillano, R., Rountree, J., Buenaventura, M., Gibson, L., (n.d.). Preventing Homelessness: Evidence-Based Methods to Screen Adults and Families at Risk of Homelessness in Los Angeles.

Experience

California Policy Lab (CPL) Los Angeles, CA

Data Analyst *Sep. 2018 – 2022*

- **Predictive Analytics**: Predict homelessness for various sub-populations in order to target high risk individuals; evaluate the effectiveness of homeless prevention programs and triage tools; design an research study around homeless intervention.
- **Entity Resolution**: Streamlined and automated an entity resolution pipeline that matched over 5 million individuals within and across 8 agencies in the county.
- **Dashboard**: Created a web app dashboard to visualize individual case histories both temporally and geospatially.
- **Ethics**: Created an algorithmic fairness evaluation package for testing biases in predictive models.

National Institute of Health (NIH) Bethesda, MD

Data Analyst, Data Science and Sharing Team *Jun. 2017 – 2018*

- **Neuroimaging**: Analyze and perform research on neuroimaging data to build parsimonious machine learning models for prediction and detection of cognitive impairment.
- **Dataset characteristics in machine learning**: Analyze how characteristics such as data quality, distribution of features, etc. in training datasets impact machine learning predictions.

Selected Teaching

Tutor, Private Prep — New York, NY
Computer Science and Math Instructor — *Sep. 2022 – present*

- **Tasks**: Designed curriculum and materials for students ranging from middle school to university level and tutored in courses such as Mathematical Foundations of Computer Science, Data Structures and Algorithms, Social AR/VR, Elementary Symbolic Logic, Concepts of Math, etc.

Data Analyst Workshop, CPL — Los Angeles, CA
Assistant Instructor — *Sep. 2017 – Dec. 2018*

- **Tasks**: Helped instruct a research workshop for data analysts at the California Policy Lab, including topics such as machine learning models, debiased learning and model performance evaluation.

NIMH Workshop for Open and Reproducible Neuroscience, NIH — Bethesda, MD
Assistant Instructor — *Sep. 2017 – Dec. 2018*

- **Tasks**: Helped create and test content that made up workshop teaching materials.

Programming in Computing, UCLA — Los Angeles, CA
Teaching Assistant — *Sep. 2017 – Dec. 2018*

- **Tasks**: Worked with students on programming homework assignments and assisted them with any conceptual or language specific questions of object oriented programming. Maintained a clean and organized computer lab space.

Daily Bruin, UCLA — Los Angeles, CA
Project Manager — *Sep. 2017 – Dec. 2018*

- **Tasks**: Worked on generating interactive and data-oriented flat pages for the university newspaper, the Daily Bruin. As project manager, instructed students on the team on a weekly basis on programming techniques, data visualization methods and coding standards.

Conference and Talks

School on Wheels - UCLA — Los Angeles, CA
Panel on Homelessness in LA County — *Nov. 2021*

Summer Institute in Computational Social Science (SICSS) — Tokyo, Japan
Seminar on interdisciplinary computational social science research methods — *Jul. 2021*

Organization for Human Brain Mapping (OHBM) — Sun Tech City, Singapore
Research Conference — *Jun. 2018*

National Institute of Health — Bethesda, MD
Summer Poster Presentation — *Aug. 2018*

National Institute of Health — Bethesda, MD
Summer Poster Presentation — *Aug. 2017*

Research Programs

eScience Incubator Graduate Fellow — Seattle, WA
eSciene Institute at the University of Washington — *Jan. 2023 – present*

Graduate Fellow — Seattle, WA
Center for Environmental Politics at the University of Washington — *Sep. 2023 – present*

Volunteer and Outreach

Solar Decathlon - UCLA — Los Angeles, CA
Chief Programming Officer — *May 2015 – Dec. 2018*

- **Tasks**: On the executive board, lead research in creating a zero net energy house with an interdisciplinary approach. On the Monitoring and Controls team, work on an AI model to design a user friendly control system.

Alternative Spring Breaks - UCLA — Los Angeles, CA
Site Leader — *May 2015 – Dec. 2018*

- **Tasks**: Plan community service project in Los Angeles and throughout the United States around social justice issues. Create and manage the website and help organize events that support more than 35 on campus community service organizations.