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*
  - **Relevant Coursework**: Advanced Topics in Human Computer Interaction
- **University of California, Los Angeles (UCLA)** — Los Angeles, CA
  Bachelor of Science in Mathematics of Computation; GPA: 3.50 — *Sep. 2015 – Dec. 2018*
  - **Relevant Coursework**: Optimization, Probability Theory, Algorithms and Data Structures, Machine Learning (Stanford Online), Data Mining (UCLA Online), Artificial Intelligence, Stochastic Processes, Discrete Maths

Experience

- **California Policy Lab (CPL)** — Los Angeles, CA
  Data Analyst — *September 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 — *June 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.

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++, Linux, Git, LaTeX, HTML, CSS, JavaScript

Projects

- **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. $https://github.com/niniko1997/sjsp$
- **Hydroponics Wall Farm**:
  - **Task**: Designed, built and programmed sensors to collect environmental data and respond to a feedback loop. Built back-end server for wifi communication and data visualization
  - **Technology**: Programmed Arduinos to collect sensory data and communicate it over radio frequencies. Set up back-end server on Azure using Django. Began utilizing data visualization in JavaScript with D3.
  - **Award**: Received $10,000 in funding from The Green Initiative Fund (TGIF) at UCLA to expand scope of project.

Contribution to Public Goods

- **Data Wiki**: Helped develop documentation for the Enterprise Linkage Project (ELP) and the Infohub data to facilitate easier understanding for future researchers at the California Policy Lab (CPL).
- **Repository**: Made all code written for NIH research projects publicly available on GitHub.
- **Open Data**: Worked with researchers across NIH to push for open access to data and made data for research projects public. Additionally, aided in documenting data sources.

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.

Teaching

- **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 — *November 2021*
- **Summer Institute in Computational Social Science (SICSS)** — Tokyo, Japan
  Seminar on interdisciplinary computational social science research methods — *July 2021*
- **Organization for Human Brain Mapping (OHBM)** — Sun Tech City, Singapore
  Research Conference — *June 2018*
- **National Institute of Health** — Bethesda, MD
  Summer Poster Presentation — *August 2018*
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  Summer Poster Presentation — *August 2017*