MADISON COOTS

MCOOTS@STANFORD.EDU | MADISONCOOTS.COM

EDUCATION

Stanford University, Stanford, CA, 2015 – Present

Computer Science M.S. '21
Management Science and Engineering B.S. '19
English Minor '19

WORK EXPERIENCE

Data Science Intern | U.S. Government | June 2018-Present

Developed a system to analyze and reveal new mission targets, allowing stakeholder to better direct future data collections. Work involved leveraging previously untouched data from disparate sources and designing customized object-oriented model for grouping and structuring data records, allowing us to exploit unseen connections between entities of interest. Served as lead data scientist in coordinating efforts across office units to ensure mission success.

Data Scientist | Lucid | November 2017-Present

Leading deployment of stealth mode startup. Involvement has included developing and evaluating analytic algorithms according to different assumptions about data generation process underlying our targets. In preparation for release of Lucid's web-based application, conducted statistical simulations to determine optimal parameters for our data collection system.

Data Science Intern | U.S. Government | July 2017-September 2017

Greatly enhanced understanding of the reliability of critical data collection processes and identified crucial sources of error in current targeting efforts. After discovering significant discrepancies between data originating from different sources, employed statistical methods to surface influential underlying collection mechanics resulting in these inaccuracies.

Systems Engineering Intern | U.S. Government | June 2017-September 2017

Streamlined the assessment of new technical capability and significantly expedited test plan completion by de-conflicting workflows and parallelizing internal processes. Managed and facilitated important communication between government personnel and contractors throughout project development. After completion of assessment, provided office leadership with recommendations on areas for improvement in future tests, as well as an evaluation of the performance of the contractor.

Research Assistant | Stanford Center for Spatial and Textual Analysis | April 2017-Present

Uncovered novel spatial relationships between polities in Early Modern Germany. Work involved curating and organizing collection of spatial and quantitative data, visualizing the findings by geo-referencing and digitizing historic maps, and determining the most effective geographic projections for the problem at hand. Geographic visualizations leveraged this data to demonstrate complex relationships between people, geographic surroundings, economics, and existing political structures of the era.

PROJECTS

Predicting the Credibility of News Articles

Developed statistical model that predicts credibility of news articles with approximately 90% accuracy. Given article title and contents, model uses logistic regression to produce a binary prediction of whether the article contains false content. Data preprocessing consisted of vectorizing the textual data and using efficient feature reduction. Model building involved covariate selection using a Lasso regression, and experimentation with predictive models including logistic regression and K-Nearest-Neighbors.

Flora: A Web Forum for Guidance on Plant Care

Created a web application to encourage the exchange of plant-related advice and knowledge through an open and anonymous user interface. Project included designing and implementing the frontend layout and backend architecture. UI was written in raw, HTML, CSS, and JavaScript, and the backend involved deploying a MongoDB database and NodeJS (ExpressJS) server.

SKILLS

Stochastic Modeling | Linear Optimization | Probabilistic Analysis | Data Visualization (Tableau) |Geographic Information Systems | Web Development

LANGUAGES

Python | R | Julia | Java Script | Java | C ++ | HTML | CSS