Trevor Olsen

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WORK HISTORY

- **Freddie Mac, Senior Data Scientist, McLean, VA (08/2022 to present)**
  - Created a house price prediction deep learning model which covers 100 million properties in the US. Provided a 2% accuracy boost compared to production in pre-defined testing regions
  - Proposed and constructed tree-based appraiser adjustment models which are within 5% of the actual appraiser adjustment in 99% of the validation set
  - Proposed and constructed a comparable sales neural network model to provide predictions on submarkets the production models were unable to predict
  - Implemented a constant time geospatial lookup algorithm to enable enhanced data engineering
  - Constructed a data pipeline which blends all vendor data sources into a single source of truth
  - Won the 2023 Q1 Hackathon which involved matching school boundaries to US properties by developing the algorithm that had the best coverage and fastest runtime
  - Planned and organized the 2024 Q3 hackathon to enrich the geospatial data for production models. New features provided a 1-2% boost in production price prediction models over initial testing regions
- **University of South Carolina, Graduate Assistant, Columbia, SC (08/2016 to 12/2021)**
  - Instructed or graded for 18 courses and conducted research. Earned an average student evaluation of 4.75/5
- **Miami Dade College, Adjunct Faculty, Miami, FL (05/2015 to 08/2016)**
  - Taught a wide range of classes including Financial Math, Trig and Calc. Average student evaluation of 4.9/5

PROJECTS

- **NCAA March Madness Bracket Predictor**
  - Assembled 20 years of data with web scraping before pre-processing with Pandas
  - Predicted the correct winner with 75% accuracy using predictive models (ex: Logistic Regression)
  - Utilized a Bayesian optimizer to tune the hyper-parameters
- **Computer Science Dissertation**
  - Developed more than 10 sampling methods which reduced the runtime by 90% when compared to the best know algorithm and solved novel problems in the robotics pursuit-evasion domain
  - Implemented in C++ with additional Python and Shell scripts to automate over 5000 simulations
  - Resulted in 3 publications with 2 additional papers in preparation
- **Mathematics Dissertation**
  - Analyzed over a billion graph isomorphism classes and generalized structures by attributes
  - Created in Python (SageMath), resulted in 3 written publications and 2 articles in preparation

EDUCATION

- **Ph.D. in Computer Science** (2021), University of South Carolina, Columbia, SC
- **Ph.D. in Mathematics** (2020), University of South Carolina, Columbia, SC
- **M.A. in Mathematics** (2015), University of Miami, Coral Gables, FL
- **B.S. in Mathematics and Computer Science** (2013), Palm Beach Atlantic University, West Palm Beach, FL

SKILLS & STRENGTHS

- **Programming Experience** – Python (XGBoost, LightGBM, Scikit-learn, PyTorch, Tensorflow, Matplotlib, Seaborn, Plotly, Pandas, Numpy, Jupyter, SageMath, NetworkX, etc.), SQL, Latex, C++, HTML, Shell, R
- **Operating Systems** – Linux, Windows, Mac OS
- **Theory** – Machine Learning, Deep Learning, Large Language Models (LLM), Data Science, Graph Theory, Combinatorics, Probability, Statistics, Robotics, Path Planning, Algorithms, Computational Geometry, Linear Algebra
- **Personal Interests** – Video/board games, foster failure dog dad, hiking, college football, woodworking