Trevor Olsen

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WORK HISTORY

- **Freddie Mac**, Tysons Corner, VA, Senior Data Scientist, (08/2022 to present)
  Constructing models to predict the value of homes and national/state/county level housing market indices. Won first place in the 2023 Q1 Hackathon which revolved around school/house matching using GIS data
- **University of South Carolina**, Columbia, SC, Graduate Assistant, (08/2016 to 12/2021)
  Instructed or graded for 18 courses and conducted research. Earned an average evaluation score of 4.75/5
- **Partners for Minorities in Engineering and CS,** Columbia, SC, Workshop Leader, (06/19 and 06/20)
  Organized and led curriculum which inspired >85% of the students to further investigate STEM career options
- **Miami Dade College**, Miami, FL, Adjunct Faculty, (05/2015 to 08/2016)
  Taught classes including Financial Mathematics and Calculus. Helped students get into top 10 universities
- **University of Miami**, Coral Gables, FL, Tutor, (08/2014 to 05/2015)
  Guided struggling athletes in math courses, improved test scores by as much as 40%

PROJECTS

- **House Price Prediction:**
  - Leveraged transactions spanning decades to create a multilayered predictive model
  - Increased accuracy by 2% in the predefined testing regions
  - Implemented a geospatial lookup algorithm that runs in constant time
  - Created indices that mimic existing housing indices requiring less data and computational resources
- **NCAA March Madness Bracket Predictor:**
  - Assembled 20 years of data with web scraping before pre-processing using Pandas
  - Predicted the correct winner of each game 75% of the time using predictive models (ex. Logistic Regression)
  - Utilized a Bayesian optimizer to tune the hyper-parameters
- **CS Dissertation:**
  - Developed more than 10 intelligent sampling methods which revamped existing results and solved novel problems in the domain
  - Implemented in C++ with additional Python and Shell scripts to automate over 5000 simulations
  - Reduced the time to generate a solution by 90% compared to the best-known existing algorithm
- **Math Dissertation:**
  - Analyzed over a billion graph isomorphism classes, organized classes by maximized attributes and generalized structures
  - 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 (GPA: 3.8/4)
- **PhD in Mathematics** (2020), University of South Carolina, Columbia, SC (GPA: 3.6/4)
- **M.S. in Computer Science** (2020), University of South Carolina, Columbia, SC (GPA: 3.8/4)
- **M.A. in Mathematics** (2015), University of Miami, Coral Gables, FL (GPA: 3.3/4)
- **B.S. in Math and CS** (2013), Palm Beach Atlantic University, West Palm Beach, FL (GPA: 3.4/4)
- **A.A. in Liberal Arts** (2011), Inver Hills Community College, Inver Grove Heights, MN (GPA: 3.0/4)

SKILLS & STRENGTHS

- **Programming Experience** – Python (Jupyter Notebook, Scikit-learn, Matplotlib, Seaborn, Plotly, Pandas, Numpy, SageMath, XGBoost, LightGBM), SQL (MySQL, PostgreSQL), Latex, C++, Visual Basic .NET, Java, HTML, Shell, R
- **Operating Systems** – Linux (Ubuntu), Windows, Mac OS
- **Theory** – Graph theory, combinatorics, probability, statistics, robotics, path planning, algorithms, computational geometry, computational mathematics, machine learning, predictive modeling, data science, abstract and linear algebra
- **Skills on the Whetstone** – Deep learning (PyTorch and theoretical principals), cloud computing (fundamentals, Amazon AWS and Azure), big data processing (Apache Spark, PySpark)