COLIN SWANEY

</> PROGRAMMING

GENERAL
Python
C
UNIX
CUDA
HPC

SCIENTIFIC + DATA
MATLAB
R
PostgreSQL

MARKUP
LaTeX
HTML
CSS

✏ COURSEWORK

DATA SCIENCE
Big Data Analytics
Computer Intensive Statistics
Computational Intelligence
Nonlinear Optimization

ECONOMICS
Microeconomics
Econometric Theory
Applied Econometrics

EDUCATION 🎓

PHD, FINANCE
University of Iowa — 2012-2017

MS, MATHEMATICS
University of Iowa — 2009-2011

BS, MATHEMATICS
Kansas State University — 2005-2009

EMPLOYMENT 💼

DECISION SCIENCE INTERN
Conversant, Chicago, IL — Summer 2016
- Created a model of real-time bidding (RTB) process.
- Predicted RTB outcomes by simulating the model.
- Identified costly errors in RTB process.
- **Tools**: PostgreSQL.

GRADUATE ASSISTANT
University of Iowa, Iowa City, IA — 2012-2017

TEACHING ASSISTANT
University of Iowa, Iowa City, IA — 2009-2011

RESEARCH ⚗

HIGH-FREQUENCY TRADING ↗
- Wrote a Python package to process high-frequency trade data.
- Utilized a computing cluster to reconstruct terabytes of order book data.
- Applied machine learning methods to predict short-run asset returns.
- **Tools**: Python, MATLAB, HDF5, HPC, principal component analysis

IMAGE PROCESSING ↗
- Implemented a customized self-organizing map algorithm.
- Optimized model parameters using high-performance computing cluster.
- Wrote a CUDA kernel to simultaneously classify all pixels in an image.
- Surpassed existing neural network classifiers in a skin-detection task.
- **Tools**: MATLAB, CUDA, HPC, neural networks.

MUTUAL FUNDS ↗
- Constructed a SAS dataset of actively-managed mutual fund returns.
- Wrote R scripts to estimate a statistical model of fund performance.
- Validated the results using Monte Carlo experiments.
- **Tools**: R, SAS, expectation-maximization algorithms, bootstrap estimation.