

STEVEN ELLIOT PAV

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SUMMARY

Ph.D. mathematician with strong statistical and coding skills, 10 years quantitative finance experience.

SKILLS

Numerical analysis, optimization, multivariate statistics, portfolio optimization, algorithms, scientific computing, discrete mathematics, probabilistic methods, stochastic processes, time series analysis.

Working knowledge of financial statistics, linear algebra, regression, classification, kernel methods, machine learning, and optimization. Familiar with latent factor methods, ICA, NMF, PLS, robust statistics, bootstrap estimators, sum-stable distributions, shrinkage estimators, basic NLP.

R, Matlab, C, SAS, Python, Perl, SML-NJ, C++; Bash, GNU Make, git, svn; Ubuntu, Gentoo, docker.

EXPERIENCE

Senior Quantitative Financial Analyst

May 2016 - Present

Bank of America

San Francisco, CA

Developed a transition model for forecasting losses on a portfolio of 38 million U.S. consumer credit card accounts for CCAR stress-testing. Documented the model, worked with the Model Risk Management team to gain approval of the model, and supervised execution of the 2017 CCAR forecasts.

Lead Data Scientist/Quantitative Social Engineer

September 2015 - March 2016

CoreCast/Alchemy

San Francisco, CA

Applied quantitative techniques to optimize return on investment on a portfolio of film rights. Scraped and gathered data, architected databases, linked data from numerous sources, posed and answered research questions in the realm of film metrics.

Quantitative Strategist

July 2008 - July 2015

Cerebellum Capital

San Francisco, CA

Designed and implemented backtest, execution, and research infrastructure in Matlab and C for a daily trading system on single name equities and volatility futures at a quantitative hedge fund. Created, coded, and analyzed machine learning quantitative strategies. Devised methods to correct for overfit bias in the backtesting and strategy development process. Solved a wide range of prediction and analysis problems with a mix of statistical theory, experimentation, simulation, and production coding.

Quantitative Analyst

January 2007 - May 2008

Convexus Advisors

San Francisco, CA

Refined, coded, and executed a technical trading system on U.S. equities at a boutique hedge fund. Developed and analyzed technical and fundamental models using kernel-based machine learning methods. Designed and implemented a backtesting simulator to evaluate trading models.

Senior Research Scientist

July 2005 - Dec. 2006

Nellcor / Tyco Healthcare

Pleasanton, CA

Devised methods for noninvasive estimation of blood analyte concentration. Successfully communicated highly technical information to nontechnical audiences, including attorneys and management.

EDUCATION

Ph.D., M.S., Mathematics, **Carnegie Mellon University**, Pittsburgh, PA, 2003.

M.A., Mathematics, **Indiana University**, Bloomington, IN, 1999. 4.0 GPA.

B.A., Mathematics, *B.S.*, Ceramic Engineering Science, **Alfred University**, Alfred NY, 1996. 4.0 GPA.

WORK IN PROGRESS

- S. E. Pav, ‘A Short Sharpe Course,’ http://www.gilgamath.com/pdfs/a_short_sharpe_course.pdf, 2017.
- S. E. Pav, ‘Safety Third: Roy’s Criterion and Higher Order Moments.’ *Arxiv e-print*, <http://arxiv.org/abs/1506.04227>, 2015.
- S. E. Pav, ‘Inference on the Sharpe ratio via the Upsilon distribution.’ *Arxiv e-print*, <http://arxiv.org/abs/1505.00829>, 2015.
- S. E. Pav, ‘Bounds on portfolio quality.’ *Arxiv e-print*, <http://arxiv.org/abs/1409.5936>, 2014.
- S. E. Pav, ‘Asymptotic distribution of the Markowitz portfolio.’ *Arxiv e-print*, <http://arxiv.org/abs/1312.0557>, 2013.

SOFTWARE

- S. E. Pav, ‘SharpeR: Statistical significance of the Sharpe ratio.’ R package version 1.1.0, <http://cran.r-project.org/web/packages/SharpeR>.
- S. E. Pav, ‘MarkowitzR: Statistical inference on the Markowitz portfolio.’ R package version 0.1502, <http://cran.r-project.org/web/packages/MarkowitzR>.
- S. E. Pav, ‘PDQutils: PDQ functions via Gram-Charlier, Edgeworth and Cornish-Fisher approximations.’ R package version 0.1.4, <http://cran.r-project.org/web/packages/PDQutils>.
- S. E. Pav, ‘sadists: Some Additional Distributions.’ R package version 0.2.2, <http://cran.r-project.org/web/packages/sadists>.
- S. E. Pav, ‘madness: Multivariate Automatic Differentiation.’ R package version 0.2.4, <http://cran.r-project.org/web/packages/madness>.
- S. E. Pav, ‘fromo: Fast Robust Moments.’ R package version 0.1.3, <http://cran.r-project.org/web/packages/fromo>.
- S. E. Pav, ‘BWStest: Baumgartner-Weiß-Schindler Test of Equal Distributions.’ R package version 0.2.0, <http://cran.r-project.org/web/packages/BWStest>.

SELECTED PATENTS

- S. E. Pav, ‘System & Method for Unmixing Spectroscopic Observations with Nonnegative Matrix Factorization,’ [US 8140272](#).
- S. E. Pav, ‘Wavelength Selection & Outlier Detection in Reduced Rank Linear Models,’ [US 8112375](#).
- 7 others in the field of non-invasive monitoring of physiological parameters.

SELECTED PUBLICATIONS

- M. Lachanski, S. E. Pav, ‘[Shy of the Character Limit: “Twitter Mood Predicts the Stock Market” Revisited.](#)’ *Econ Journal Watch*, 14(3), pp 302-345, 2017.
- S. E. Pav, ‘Moments of the log non-central chi-square distribution.’ *Arxiv e-print*, <http://arxiv.org/abs/1503.06266>, 2015.
- S. E. Pav, ‘SRCEK: A Continuous Embedding of the Channel Selection Problem for weighted PLS Modeling.’ *Arxiv e-print*, <http://arxiv.org/abs/1310.2557>, 2006.
- S. E. Pav, ‘Numerical Methods Course Notes,’ https://bitbucket.org/shabbychef/numas_text/overview, 2005.

Several others in the field of unstructured mesh generation.

PROFESSIONAL ACTIVITIES

- Invited talk at Startup.ML Machine Learning in Trading Conference, 2016: “[Guarding Against Broken Backtests and Questionable Research in Quantitative Strategies.](#)”
- Invited talk at Bloomington Data Collective, 2016: “[Backtesting: war stories and cautionary tales.](#)”
- Invited talk at Thalesians Seminar, 2015: “[Portfolio inference and portfolio overfit.](#)”
- Lightning Talk at R in Finance 2015: “[Portfolio Cramér-Rao bounds.](#)”
- Talk at R in Finance 2014: “[Portfolio inference with this one weird trick.](#)”
- Invited talk at USF Seminar Series in Analytics: “[Dude, where’s my alpha?](#)” 2013.