KIRKWOOD P. DONAVIN – DATA SCIENTIST

XGBoost & Ensemble Methods, Natural Language Processing, Time-Series Forecasting

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SUMMARY

Data Scientist with 9+ years of professional experience solving complex problems and creating deep insights via machine learning and statistical analyses. Proven track record in optimizing models, testing alternate algorithms, and integrating data embeddings to improve prediction accuracy and performance. Works well independently and in teams with strong written & oral communication ability, and is a precise and talented coder.

HIGHLIGHTS

- **Expertise**: machine learning, natural language processing (NLP), and statistical analysis
- **Data Skills**: Querying, cleansing, visualizing, analyzing, predicting, forecasting, testing
- **Languages**: Python, R, SQL, and Bash
- **Toolsets**: XGBoost, Sci-Kit Learn, Pandas, TensorFlow, Docker, Prophet, Jupyter Lab, RMarkdown, Snowflake, Presto, BigQuery, SQLAlchemy, Git, GitHub, BitBucket, LookML (Looker)

EXPERIENCE

Data Scientist — DEPT Agency — Remote (SLC, UT) — 10 mos – Start: Mar 2024

Marketing data science for DEPT clients. Specialized in search engine ads, forecasting available ad impressions, and creating an ad-spend budgeting tool using prediction models based on historical data.

- **Search Engine Ad Impression Forecasting:** Took over responsibility for a TensorFlow ad impression forecasting LSTM model
- **Ad-Budget Recommendations:** Built an ad-budget recommendation tool using XGBoost ensemble models that demonstrated our client was overspending on ads by $100Ks in some ad categories
- **Statistical Consulting:** various colleagues and projects. Gave an internal presentation on p-values

ML Scientist — Bed Bath & Beyond — Hybrid (SLC, UT) — 1 yr 5 mos – Start: Aug 2022

Promoted to the ML team supporting sponsored ads as the junior scientist specializing in the application of XGBoost ensemble methods, and text embeddings to produce conversion (i.e., purchase) predictions. Proven track record in optimizing models, including testing XGBoost against a VowPal Wabbit production model, resulting in superior log-loss performance. Implemented text embedding, further elevating predictive accuracy.

- **Conversion Prediction:** Tested and produced several XGBoost models for conversion prediction that improved log-loss performance compared with Vowpal Wabbit production model
- **Textual Embeddings:** Integrated embeddings into conversion prediction models. Built a Sci-Kit Learn TFIDF + Singular Value Decomposition (SVD) embedding class and compared model performance improvements with a fastText model. The latter toolset was demonstrated to be the more performant approach.

Senior Data Analyst — Overstock — Salt Lake City, UT — 3 yrs 3 mos – Start: Jun 2019

Supplied analytics and statistical consulting for OSTK's internal search, sponsored products, and recommendations teams

- **Product Banners**: designed and built the data model that supports Overstock's first data-driven approach to product banner messaging (e.g., "Best Seller", "Top Rated"). In A/B tests against the prior manual system, our banners demonstrated a lift of $500K in profit annually
- **Statistical Analysis:** Supplementation of auto-gen. A/B test results with secondary metric t-tests, segment breakdowns, and linear models; Statistical consultant for product managers e.g., regarding stat. significance, power, & sample size
- **Analytics Infrastructure:** Leveraged SQL fluency across multiple database implementations (Presto, BigQuery, Python/sqlalchemy) and reporting platforms (LookML, MicroStrategy) to deliver decision-support dashboards tracking conversion, CTR, and friction metrics; managed my team's git repo of SQL scripts

BI Analyst I/II — Womply — Silicon Slopes, UT — 1 yr 2 mos – Start: May 2018

Was promoted to the level-2 role in order to focus on statistical analyses and report writing to answer larger BI questions

- **Data Modeling & Dash-boarding:** Modeled tables, pulled datasets using Presto SQL, AWS Athena, and Snowflake SQL, built Domo reports for various Womply business units
- **Statistical Analysis:** Statistical & graphical analyses using RMarkdown; contributor in large study *How online reviews impact small business revenue.* The results demonstrated that Google ratings are positively correlated to revenue, while Yelp ratings are not.
- **Python Programming:** Managed Python scripts running ETL processes for the Analytics team and the Finance team

Data Science Intern — New Belgium Brewery — Fort Collins, CO — 2 mos - Fall 2017

An internship and capstone project to conclude the Data Science Immersive program at Galvanize. Designed and implemented a neural network that took chemical measurements of beer batches supplied by New Belgium, and predicted whether a panel of company beer tasters would reject that batch for distribution

- **Inebriated Neural Network:** A model with a taste for beer. A multi-layer perceptron (MLP) neural network (`sklearn`) predicts beer tasters' disapproval using chemical measurements of New Belgium brew, identified ~ 4 out of 5 test cases when a batch would be rejected by the taste panel. Project URL: github.com/kdonavin/inebriated_neural_network

Economic Data Analyst — TechLink Center — Bozeman, MT — 2 yrs 1 mo – Start: Jun 2015

Principally involved with TechLink's economic impact studies regarding technology transfer and Small Business Innovation Research (SBIR) contract agreements between the Department of Defense and private industry

- **Data Wrangling:** Cleaned records with R, queried records from a Django database from 25,000 company survey records of DoD contractors and grant award winners
- **Statistical Consultant & Editor:** For 3 of TechLink's economic impact studies of DoD Small Business Innovation Research (SBIR) programs and licensing activity, the DoD used this research to defend program funding in front of the U.S. Congress
- **Independent Research:** linearly modeled the factors influencing commercialization within Air Force & Navy SBIR programs including company size, experience in the program, location in the US, and age of the small business grant

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EDUCATION

Data Science Immersive Certificate — Galvanize, Inc. — Boulder, CO — Dec 2017

M.S. of Applied Economics — Montana State University — Bozeman, MT — May 2015

Thesis: The Welfare Impacts of Engineers Without Borders in Western Kenya

B.A of International Relations — Cornell College — Mount Vernon, IA — May 2011