

# P. Christopher J. Daigle

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[quantchris.com](http://quantchris.com) | [github.com/christopherdaigle/](https://github.com/christopherdaigle/)  
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Data scientist specializing in machine learning and software engineering • Army Veteran • Open source contributor • Leadership ranging from small team project management, running a startup, and lead pilot in Afghanistan • Comfortable with ambiguity and driving results with little oversight

## Key Skills

**Technology:** Python • R • Oracle SQL • Git & GitHub • Bash / Unix / Shell • Stata • MATLAB / Octave • Pandas • NumPy • SciKit-Learn • Plotly & Seaborn • PyTorch • Keras & Tensorflow • Markdown & LaTeX

**Quantitative:** Machine Learning • Statistical Analysis & Predictive Modeling • Supervised Learning • Unsupervised Learning • Natural Language Processing (NLP) • Dimensionality Reduction • Hypothesis Testing

## Professional Experience

**Pratt & Whitney** – *Manager, Data Scientist*

Jan 19 – Pres.

- Helped reduce cost by \$29 million by identifying the optimal allocation of 75,000+ distinct part numbers sold by 5,000+ vendors by creating an algorithm and engineering software
- Increased analysis speed critical to mitigating COVID-19 from 1.5 months to less than 1 minute by creating an algorithm, engineering an API, and deploying a web app resulting in continued global aviation operations
- Classified 90% of \$16 billion worth of misclassified jet engine components with NLP

**Boise Analytics** – *Data Scientist*

Dec 17 – Jan 19

- Assisted 43 non-profits and small businesses in solving data problems by applying data science solutions
- Increased company talent by interviewing 38 data analysts
- Increased capability by mentoring teams of 20 data analysts and scientists on data science methods

**University of Connecticut** – *Economics Instructor*

Aug 16 – Aug 18

- Instructed microeconomics and economic research methods to undergraduates

**Boise State University** – *Economic Researcher*

Jan 14 – May 16

- Mined and structured data from disparate sources to create unique datasets for novel research in economics
- Produced research in partnership with Yale's Agricultural Economics Department on proxies for measuring GDP with satellite imagery of night-time lights in China and India
- Measured returns to investment in education with hierarchical linear models (HLM) on panel (longitudinal) data for students in Idaho, partnered with Boise State University's Economics Department and Idaho Voices for Children

## Projects / Products

**Rebate Optimization Software Engineering** (proprietary software)

*Purpose:* increase rebates from suppliers, reduce spending, and reduce overall cost

*Outcome:* application to determine the optimal allocation of spending at the part level for 5,000+ vendors over 75,000+ jet engine components

*Technology:* Python, NumPy, Pandas, Oracle SQL, PyInstaller

*Award:* Special Award for Innovation at Pratt & Whitney – awarded to a maximum of 5 people a year

**Alternative Vendor Identification Software Engineering** (proprietary software)

*Purpose:* mitigate impact of COVID-19 on global flight operations

*Outcome:* application that identifies vendors having shared capability or sole source for repairs – performs for entire supply base in <1 minute what used to take 5 senior sourcing professional 1.5 months to analyze for a single vendor

*Technology:* Python, NumPy, Pandas, Oracle SQL, Flask

### **Commodity Classification Innovation** *Natural Language Processing, Classification* (proprietary software)

*Purpose:* identify jet engine commodities from purchase orders executed by global supply buyers

*Outcome:* model that classifies 90%, up from 60%, of \$16 billion worth of purchase orders

*Technology:* Python, SQL, Pandas, NumPy, NLTK, SciKit-Learn (sklearn), Tensorflow and Keras

*Machine Learning:* Multinomial Naïve Bayes, AdaBoost, Bagging, Random Forest, TF-IDF

*Performance:* 94% F-1 Score, 96% Recall, 93% Precision

### **Find Donors for Charity** *Supervised Learning* [quantchris.com/project/Donor-Classification/](https://quantchris.com/project/Donor-Classification/)

*Purpose:* maximize the likelihood of receiving donations by predicting if a person receives income exceeding 50k/year

*Technology:* Python, Scikit-Learn (sklearn), Pandas, NumPy, Seaborn, Plotly, PyCharm, Jupyter Notebook

*Machine Learning:* Ensemble Methods (ADABOOST, Random Forest, Gradient Boosting), Logistic Regression, KNN, Naïve Bayes, Grid Search, Feature Scaling (Standardization, Normalization, Logarithmic Transform), One-Hot-Encoding (OHE)

*Performance:* 87.26% Accuracy, 76.05% F-0.5 Score

### **Predicting Movements in Social Security Filings** *Supervised Learning*, [quantchris.com/project/sup-ss-move](https://quantchris.com/project/sup-ss-move)

*Purpose:* determine if movements in social security filings can be predicted from economic and financial indicators

*Technology:* R, R-Studio, Python, beautifulsoup, Pandas

*Machine Learning:* Logistic Regression, Limited Dependent Variable (LDV), Greedy Selection Methods (Backward, Forward, Sequential Replacement), Hypothesis Testing (Augmented Dickey-Fuller, Likelihood-Ratio Test)

*Performance:* 93% Accuracy; 92% F1-Score

### **Identify Customer Segments** *Unsupervised Learning, Clustering* [quantchris.com/project/unsup-cust/](https://quantchris.com/project/unsup-cust/)

*Purpose:* determine Bertelsmann Arvato Analytics' customer segments to optimize outreach through mailings

*Technology:* Python, NumPy, Pandas, Seaborn, SciKit-Learn

*Machine Learning:* K-Means, Dimensionality Reduction (Principle Component Analysis - PCA), Feature Scaling (Standardization, Normalization), Imputation

### **Predict Clothing Items** *Deep Learning, Classification* [tinyurl.com/DLCloth](https://tinyurl.com/DLCloth)

*Purpose:* create an application that can be trained on any set of labeled images to predict the contents of an image

*Technology:* Python, PyTorch, argparse, PIL, Scikit-Learn, Pandas, NumPy, Seaborn

*Machine Learning:* Artificial Neural Networks (ANN), Transfer Learning (VGG11), Dropout, Rectified Linear Unit (ReLU)

## **Education**

**MS**, Quantitative Economics (STEM), University of Connecticut, CT (Maj. GPA 3.95)

Dec 18

*PhD Course Work:* Microeconomic Theory I & II, Macroeconomic Theory I & II, Econometrics I & II, Industrial Organization I, Advanced Mathematical Economics

*MS Course Work:* Applied Econometrics II, Python Programming, R Programming, Big Data (Machine Learning), Convex Optimization with Python, Panel (Longitudinal) Data

**BA**, Honors degree, Economics with a Quantitative Emphasis; Minors: Mathematics & Applied Mathematics, Boise State University, ID (Cum. GPA 3.691)

May 16

Calculus I, II, & III, Differential Equations, Linear Algebra, Numerical Analysis, Probability & Statistics, Computational Mathematics

*Honors:* Econometrics, Money & Banking, Quantitative Methods, Senior Thesis

## **Certifications**

**Nanodegree**, Data Scientist, Udacity (In Progress)

**Certificate**, SAFe Scrum Master (SSM - 92474883-9992), Scaled Agile

**Nanodegree**, Machine Learning – Introduction, Udacity

**Certificate**, Natural Language Processing with Python, Udemy