Bryan P. Dannowitz

Data Scientist, Physics PhD, Generalist

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TL;DR

I have a track record of working on challenging problems in the fields of particle physics and predictive modeling. In seeking out a varied set of endeavors, I have been able to develop contrasting, yet complementary skill sets. Inventiveness and intellectual freedom motivate me, and I have only ever experienced this in the wake of truly difficult problems. As an employee, I use this motivation to actively seek out such opportunities and deliver clean, creative, effective solutions.

Experience

2019 – Pres. **Centene Corporation**, *Data Scientist III*.

- Clayton, Mo
  - Project: Pre-Pay Claims Editing Suite
  - Project: Interest Prediction
  - Refactoring
  - asdf
  - asdfasdf
- Python, Jupyter, Git, Scikit-Learn, Docker, CI/CD, Bash, Oracle, MongoDB

2016 – 2019 **Bayer Crop Sciences**, *Data Scientist*.

- Creve Couer, Mo
  - Project: Geospatial regionalization of agricultural markets, utilizing GIS algorithms, graph analytics, and unsupervised clustering methods. These regions are currently deployed and utilized at the core of the business.
  - Project: Agricultural pest modeling, utilizing time-series environmental data from disparate sources. Constructed a unified modeling pipeline for regression and classification pest predictions.
  - Project: Individually managed an intern on an NLP, sequence modeling, imbalanced classification problem with 100+ classes. Final product applied to service ticket system, potentially saving ∼1000 man-hours.
  - Co-authored a unified Data Science Best Practices policy, along with rollout and training plan. Adherence bolsters the integrity and stability of data products. Conducted company-wide hackathons.
- Python, Jupyter, Scikit-Learn, Keras, Git, Docker

2009 – 2016 **SeaQuest Experiment**, *Research Assistant*.

- *Fermi National Accelerator Laboratory*, Batavia, Il
- *University of Illinois at Urbana-Champaign*, Urbana, Il
  - Trained a classification model to predict systematic unknowns for periods with malfunctioning sensors. This salvaged valuable data-taking, equivalent to $75k.
  - Implemented a responsive *Flask*-powered Python web front-end for live experimental visualizations.
  - Developed Python ETL framework for the retrieval, cleaning, merging, and analysis of data.
  - My analysis provided the first significant measurement of an outstanding physical mystery since 1993.
- Python, Git, Bash, C, SVN, LaTeX

Skills

- **Machine Learning Principles:** Choosing the right metric for evaluation. Deliberate data partitioning and model validation. Model selection, model tuning, understanding when more data will/won't help. Creating a unified pipeline to process expected inputs. Model health monitoring practices, covariate drift detection.
- **Deep Learning:** Knowing if, how, and when to apply dense, convolutional, and/or sequential models to the problem at hand. How to take advantage of pre-trained models for similar tasks.
- **Software Best Practices:** Consistent, modular, linted code. Thorough self- and external documentation. Versioned with a deliberate branching strategy. Thoughtful and consistent unit-testing and code review.

Education

2009 – 2016 **Ph.D. in Experimental Physics**, *UIUC*, Urbana, Il.

Dissertation *Nuclear dependence of proton-induced Drell-Yan dimuon production at 120GeV at SeaQuest*

2004 – 2008 **B.S. in Physics**, *New Mexico Institute of Mining and Technology*, Socorro, NM.