Resume

Collin Dougherty

November 17, 2024

1 Quick Hits

Why me for this role:

- Demonstrated drive for efficiency and knack for delivering at past jobs

- Demonstrated ability to solve wide variety of problems

- SAT 1590 / ACT 35

- Patriotism, long line of government service in family

- Experience with and disdain for bureauocracy at multiple University jobs

- Urgency and passion for problem at hand. If we don't cut spending, US will go the way of Rome

- Long standing interest in US gov / politics / fiscal situation

2 Overview

Collin Dougherty is an Eastman Scholar, Big Red Scholar, Chancellor's Scholar, Craig Dickinson Memorial Scholar and was named one of Omaha's 10 most outstanding young teens in 2018.

M.S.; Mathematics, University of Nebraska-Omaha, 2025
B.S.; Mathematics, University of Nebraska-Lincoln, 2022
B.S.; Psychology, University of Nebraska-Lincoln, 2022
Minor; Statistics, University of Nebraska-Lincoln, 2022

Website
collindougherty.com

Software Languages / Skills
Python, R, full stack stuff when it's needed; Machine learning and AI focused

3 Experience

Research Data Analyst, University of Nebraska Medical-Center (2022-Present)

- *Pipeline*: Developed a Shiny app enabling non-statistical researchers to conduct advanced analyses on government cancer databases, incorporating machine learning and survival analysis. The National Cancer Database in particular is notoriously difficult for first time researchers. This tool significantly accelerated research pace in UNMC surgical oncology department.

- *Uncovering Conflicts of Interest from Big Pharma to Researchers / General Surgeons*: Utilized open source Open Payment Database to uncover massive potential conflicts of interest in payments from big pharma / biomedical companies to researchers and general surgeons. Researchers often severely underreported potential conflict of interest general / non-specific payments. Repeated analysis for researchers, general surgeons, surgical oncologists, physician assistants and nurse practitioners. Multiple resulting publications.

- *XGBoost modeling revealed Breast Conservation Therapy offers better survival than Mastectomy*: Demonstrated with novel propensity matching approach using xgboost that BCT is superior to mastectomy in select patients. Largest and first of its kind study.

- *Demonstrated non-inferiority of forgoing Sentinel Node Biopsy in early stage small T-size breast cancers*: Utilizing XGboost to account for risk factors, demonstrated that forgoing SLNB is not inferior in terms of 5 year survival for select breast cancer patients. Findings will potentially spare millions of women from lymphadema cases as complication of biopsy.

- *Analysis of Revenue and Research Productivity over Time in Major Research Institutions*: Analyzed the level of spending and it's relationship to academic productivty at major US institutions.

- *How many Sentinel Nodes should we excise in patients with melanoma?*: Uncovered optimal number of SLN to remove in melanoma patients to minimize false negativity rate without increasing complications.

- *Operating Room Scheduling Optimization at Nebraska Medicine*: As a side project, revealed significant shortcomings in planned pilot OR scheduling method, causing Nebraska Medicine to cancel the trial and retain the current system. Utilizing operations research and ML methods to streamline further.

Nebraska Cornhuskers, Data Science Intern (2019-2022)

- *Transfer portal web app*: Constructed a web app for Nebraska baseball team to evaluate transfer portal candidates, utilizing data scraping from various online sources. Massively streamlined and automated the process, saving coaches hundreds of hours.

- *xStats*: Developed a model to predict expected batter stats by accounting for "luck" factors, aiding in more informed playing time decisions.

- *SDS*: Created a machine learning model to quantify batter swing decision quality, influencing playing time decisions. Adapted from Yankees in house model.

Projects

- *HuskerBot*: Created a Twitter bot using openai's GPT-4 via API and tweepy to summarize and tweet daily Husker news.

- *collindougherty.com*: Created my personal website from scratch using CSS, HTML, JS.

- *Swarm Learning*: M.S. Project to replicate 'Swarm Learning for Decentralized and Private Clinical Machine Learning'. Demonstrated ability to train large convolutional neural networks on NIH x-ray data in a decentralized, private manner.