Christopher H. Greer, Ph.D

Basic Information

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Professional Experience

Children's Hospital Colorado Aurora, Colorado
Data Scientist Advanced **November, 2019 - Present**

I lead implementation of real-time machine-learning models into the electronic health record (EHR) providing clinical decision support. I provide expertise around software engineering and devops best practices, and pilot new technologies for clinical applications.

- Designed and built a pipeline for model implementation in the production EHR to predict: risk of complications from influenza, risk of septic shock, and risk of serious bacterial infection, (Epic, Python, Podman)
- Replaced existing process to analyize employee survey comments using ChatGPT in a Retrieval Augmented Generation (RAG) pattern, saving of 400 developer hours per year. (Python, Azure OpenAI Service & AI Search)
- Designed and built a process using a RAG pattern with ChatGPT to cohort patient using information contained in clinical notes, doubling the precision of existing methods. Eliminated 16 hours of manual chart-review per 1000 patients. (Python, Azure OpenAI Service & AI Search)
- Leveraged discrete event simulation with a hospital digital twin to build census projections used during the COVID-19 reponse and ongoing strategic planning. (Python, FutureFlow RX)
- Developed a risk stratification model for a serious hospital-acquired injury attaining 80% recall with 75% precision; results to priorize valuable nursing resources. (Python, R)
- Supervised junior team members to design and develop models predicting the risk of central-line associated bloodstream infections, likelihood of employee turnover, and a time series model of respiratory-season hospital volumes using epidemiology data. (Data Robot)
- Developed and implemented a data science planning process to efficiently allocate resources and provide visibility for stakeholders.
- Co-author on clinical trial results for the sepsis models. Spoke nationally to audiences on real-time implementation and MLOps pipelines for real-time EHR models.

Oracle Broomfield, Colorado
Principle Data Scientist **February, 2017 - November, 2019**

- Incorporated geolocation data into the Oracle Data Cloud Identity Graph. (Python, Spark, AWS EMR, Docker)
- Designed and built a privacy-preserving record linkage algorithm between incoming and fulfilled datasets, improving the quality of the match by 45%, scale by 30%, and standardizing the approach across 1000s of datasets. (Scala, Spark, EMR, Docker)
- Designed and built a graph-quality measurement algorithm using a Monte-Carlo approach, demonstrating a factor of ~ 6 improvement over deterministic graph approaches. (Scala, Spark, EMR, Docker)

KPMG Denver, Colorado
Sr. Associate Data Scientist **October, 2015 - February, 2017**

- Designed and build a document classification tool for end-users. Wrote a domain-specific language for ease-of-use. (Apache OpenNLP, Spark, Python, Elasticsearch)
- Used these tools for information security and control for KPMG as well as data separation for large, multinational clients across millions of documents hundreds of TB in size.

Skills

Data: Bayesian statistics, machine learning, natural language processing, Fourier signal analysis, MCMC, record linkage, visualization, large-language model prompt engineering, retrieval augmented generation (RAG)
Technology: Apache Spark, Python, MATLAB, C, SQL, git, BASH, Docker/Podman, Luigi, Azure DevOps, Epic electronic health record, Azure/AWS, Data Robot, Elasticsearch, R, Scala
Leadership: Experience organizing and leading workshops and collaboration meetings, Teaching and mentoring junior team members, Public speaking, Agile development, writing/publishing, 2020 Breakthrough Prize in Fundamental Physics Laureate for contributions to the Event Horizon Telescope.

Education

University of Chicago, Chicago, IL
- Ph.D., Astronomy and Astrophysics, 2012
- M.S., Astronomy and Astrophysics, 2004

Northwestern University, Evanston, IL
- B.A., Physics and Mathematics, 2002