Raphael Poulain

PhD Student in Computer Science
439 Smith Hall, Newark, DE
816-616-6698 | rpoulain@udel.edu | www.rpoulain.github.io

Research Interests

Applied Machine Learning, Artificial Intelligence, Health Analytics, Deep Learning, Electronic Health Records

Education

University of Delaware — *Newark, DE*
Ph.D. in Computer Science — *2020 - Present*

EFREI Paris — *Villejuif, France*
M.S. in Engineering — *2018 - 2020*

EFREI Paris — *Villejuif, France*
B.S. in Engineering — *2015 - 2020*

Research Experience

healthy lAIfe Lab, University of Delaware — *Newark, DE*
PhD Student — *Sep. 2020 - Present*

- Utilizing Transformers and Electronic Health Records to perform a multi-target regression for primordial prevention of cardiovascular disease.
- Implementation of a single RNN and GAN-based model to predict obesity status at different time-points in the future.
- Participating in the BARDA COVID-19 Data Challenge (Ongoing).

Teaching Experience

CISC106, University of Delaware — *Newark, DE*
Teaching Assistant — *Fall 20 - Fall 21*

Work Experience

Euronext — *Paris, France*
Software Engineer Intern — *Mar. 2020 - Aug. 2019*

- Built a cartography tool of the Optiq Trading system that allow engineers to better visualize the architecture of the system.
- Designed the Graph Database Model from the choice of the technology to the model itself.
- Realized a WebApp using JavaScript to keep the database up-to-date automatically and to help visualize each connection between Optiq's programs.

Euronext — *Paris, France*
Software Engineer Intern — *Apr. 2019 - Sep. 2019*

- Built a cartography tool of the Optiq Trading system that allow engineers to better visualize the architecture of the system.
- Designed the Graph Database Model from the choice of the technology to the model itself.
- Realized a WebApp using JavaScript to keep the database up-to-date automatically and to help visualize each connection between Optiq's programs.

Publications

Peer Reviewed Conference Papers

M. Gupta, **R. Poulain**, TL. T. Phan, H. T. Bunnell and R. Beheshti. "Flexible-window Predictions on Electronic Health Records". Conference on Innovative Applications of Artificial Intelligence (IAAI), 2022

R. Poulain, M. Gupta, R. Foraker, and R. Beheshti. "Transformer-based Multi-target Regression on Electronic Health Records for Primordial Prevention of Cardiovascular Disease". IEEE International Conference on Bioinformatics and Biomedicine (BIBM), 2021

Projects

Portfolio Optimization *2020*

Portfolio creation following the Markowitz's Optimal Portfolio using the predicted returns of an LSTM-based network.

NHL Players' salaries Prediction *2018*

Developed a Random Forest Regression model to predict NHL Players' salaries given their in-game statistics and personal information.

Self Driving Cars *2018*

Programmed a parking lot simulation populated by autonomous cars to teach them how to park using a genetic algorithm.

Relevant Coursework

University of Delaware	Artificial Intelligence, Bioinformatics, Introduction to Data Mining, Advanced Algorithms, Game Theory, Theory of Computation
EFREI Paris	Numerical Analysis Applied to Finance, Financial Risk, Econometrics, Big Data for Finance, Advanced Databases, Deep Learning and Applications

Skills and Certifications

Programming	Python, R, Keras, PyTorch, Tensorflow, SQL, C / C++, Java
Machine Learning	Neural Networks, RNN, Transformers, CNN, GNN
Certifications	Coursera Deep Learning Specialization