Dan Billmann

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Education

Stony Brook University **Aug. 2021 – May. 2023**
M.S. in Computer Science *Stony Brook, NY*

University of Cincinnati **Aug. 2012 – Apr. 2017**
B.B.A in Management Information Systems *Cincinnati, OH*

Experience

VideaHealth **May 2022 – Aug. 2022**
Machine Learning Intern *Boston, MA*

- Wrote training framework for segmentation model evaluating dental X-Rays using PyTorch and OpenCV.
- Compared validation performance between 3 lightweight CNN encoders to study total runtime.

Bloomberg LP **Jul. 2019 – Jun. 2021**
Data Engineer - Quality *Princeton, NJ*

- Authored and maintained proprietary Python packages that identified millions of potentially missing data points.
- Reduced pipeline runtime by 10 hours and reduced maintenance by half using the Factory pattern and multithreading.
- Collaborated with different teams of financial experts to design effective anomaly detection algorithms.

Bloomberg LP **Jun. 2017 – Jun. 2019**
Data Engineer *Princeton, NJ*

- Trained a bag-of-words model on 50,000 municipal documents on a Hadoop cluster using PySpark. Achieved 95% precision and 90% recall on 5 document types.
- Built a Python microservice to classify municipal documents in real time using Splunk for monitoring and alerts.
- Collaborated with municipal financial experts to design a document classifier to save $250,000/year on headcount.
- Awarded department Trainer of the Year in 2018 for training incoming hires on process analysis and quality check design.

Thesis

Non-Rigid Registration with Deep Learning and Conformal Harmonic Maps
C++, Python, Bash, Windows Batch *Stony Brook, NY*

Created a novel method of 3D facial registration using a facial detection model to identify the boundary of the face and a conformal harmonic map to optimize the edges between face vertices, a Möbius transformation to align the faces, and a KNN to compute the non-rigid mapping between faces.

Projects

Pylateral Facial Symmetry *Python, Numpy* **Fall 2022**

Implanted a plane into a face manifold to predict bilateral facial symmetry. Trained the model on the left half of the face and used the right half as the validation set. I used gradient descent with momentum to optimize the objective cost function as the difference between face halves.

Machine Learning Algorithm Analysis *Python, Scikit-Learn* **Fall 2021**

Analyzed the differences between Logistic Regression, Decision Trees, and SVMs by comparing algorithm performance across data sets to discover additional differences and trade-offs between algorithms.

Technical Skills

Languages: Python, C++, BASH, Julia, SQL
Developer Tools: VS Code, JIRA, AWS, vim, Docker
Technologies/Frameworks: GitHub, MeshLab, Spark, Hadoop, Splunk, OpenCV, PyTorch, Numpy, Pandas, Scikit-Learn

Relevant Coursework

- Machine Learning
- Computer Vision
- Discrete Differential Geometry
- Data Structures & Algorithms
- Big Data Analysis
- Probability & Statistics