THOMAS PATTON

tjp94@case.edu | linkedin.com/in/thomas-patton-281901152/ | github.com/thomaspttn

EDUCATION

Case Western Reserve University • Cleveland, OH   August 2017 – May 2021
Bachelors of Science • *Computer Science/Artificial Intelligence* • GPA: 3.80/4.0

PUBLICATIONS

Mehdi Alilou, **Thomas Patton**, Pradnya Patil, Nathan Pennell, Kaustav Bera, Amit Gupta, Pingfu Fu, Vamsidhar Velcheti, Anant Madabhushi. *"Quantitative Lung Airway Morphology (QuaLM) features on chest CT scans are associated with response and overall survival in lung cancer patients treated with checkpoint inhibitors"*. Journal for Immunotherapy of Cancer 2021. November 2021.

WORK EXPERIENCE

Machine Learning Engineer – Cohere Health   Mar 2021 – Present
Boston, MA

- Developed Natural Language Processing pipelines using SpaCy to extract clinical evidence from a patient's documents. These pipelines allow patients to be automatically approved for procedures creating millions of dollars in savings for insurance companies and massively reducing healthcare burden.
- Independently designed, developed, and deployed a Convolutional Neural Network in TensorFlow to recognize submitted document templates. This application allows for the automatic sorting of faxes and attachments giving large savings in processing time and cost.
- Used NumPy, Pandas, Scikit-Learn, and PySpark to analyze large sets of medical data and perform exploratory analysis.
- Worked in an agile-based team using Git, AWS, and Docker. Used medical coding systems such as UMLS, CUI and ICD-10.

Student Researcher – Center for Computer Imaging and Personalized Diagnostics   Jan 2020 – Mar 2021
Cleveland, OH

- Implemented a post-processing algorithm which takes CT scans whose lung boundaries have been corrupted by COVID-19 and automatically corrects them. This algorithm is part of a fully-functional pipeline using Python and OpenCV which automates the lung segmentation imaging process for radiologists.
- Implemented machine learning feature analysis on quantitative lung morphology features to predict lung cancer patient's response to immunotherapy (see publication).

Software Engineering Intern – NASA Glenn Research Center   Jun 2019 – Aug 2019
Cleveland, OH

- Created an algorithm using C and OpenGL which takes spaceflight parameters for the International Space Station and generates a visualization indicating the spacecraft's orientation in flight. This provides insight to how self- shadowing occurs on the solar panels during orbit - an invaluable resource to the power analysis team at NASA to assist with solar panel and battery development.

PROJECTS

DCGAN Monet Project – Case Western Reserve University   Nov 2019 – Feb 2020
Cleveland, OH

- Learned critical machine learning skills like hyperparameter tuning and neural network design by creating and training a Generative Adversarial Network with images of Monet's Paintings in PyTorch and TensorFlow. Network generated images were very reminiscent of Monet and were entirely novel. This project was perfect for channeling my passion and curiosity into an unfamiliar topic and resulted a visually impressive final product.

RELEVANT COURSEWORK

- **Machine Learning**: A deep dive into algorithms for machine learning: their design, analysis and implementation. Studied different learning settings, including supervised, semi-supervised and unsupervised learning. *Fall 2020.*
- **Computational Intelligence**: Focused on algorithms for neural network design and implementation. Studied convolutional and recurrent networks and their implementations in MATLAB and TensorFlow. *Fall 2020.*
- **Computational Perception**: An introduction to the information processing and computational algorithms that underlie perception. The course focuses on vision and audition but also covers other senses and various types of perceptual processing in biological systems. *Spring 2021.*

EXTRA CURRICULAR ACTIVITIES

- **Zeta Psi International Fraternity:** Served on the judicial board for four years. Resolved member disputes and developed academic plans of action for brother advancement with a commitment to forging academic excellence and life-long bonds of brotherhood.

- **Varsity Cross Country and Track:** Athlete for four years. Team qualified to the NCAA National Meet in 2018 and 2019. Regularly mentored incoming and junior members of the team.
- **Hesiod Financial:** Co-founded a student-run financial group with an emphasis on algorithmic analysis and teaching.