

THOMAS PATTON

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EDUCATION

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| Cornell University • Ithaca, NY
<i>Masters of Engineering • Computer Science</i> | August 2022 – May 2023 |
| Case Western Reserve University • Cleveland, OH
<i>Bachelors of Science • Computer Science • GPA: 3.80/4.0</i> | August 2017 – May 2021 |

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

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| Machine Learning Engineer – Cohere Health
Boston, MA | Mar 2021 – Aug 2022 |
| <ul style="list-style-type: none">Designed a scalable and transparent Optical Character Recognition pipeline to process uploaded clinical documents using Tesseract, AWS, Docker and Kafka. Pipeline operates 85% faster than its predecessor leading to a two million dollar operational savings in only six months of runtime.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 insurance creating massive savings while reducing burden on nurses.Independently trained 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.Worked in an agile-based team using Git, AWS, and Docker. | |
| Student Researcher – Center for Computer Imaging and Personalized Diagnostics
Cleveland, OH | Jan 2020 – Mar 2021 |
| <ul style="list-style-type: none">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
Cleveland, OH | Jun 2019 – Aug 2019 |
| <ul style="list-style-type: none">Created an algorithm using C/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

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| DCGAN Monet Project – Case Western Reserve University
<i>Cleveland, OH</i> | Nov 2019 – Feb 2020 |
| <ul style="list-style-type: none">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. | |

GRADUATE 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.*