


Tyler King

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education	Cornell University, Ithaca, NY B.S. in Computer Science GPA: 4.10/4.30		Aug 2021 – May 2024
coursework	Natural Language Processing*	Machine Learning	Linear Algebra
* = in progress	Computer Systems*	Discrete Math	Differential Equations
	OOP and Data Structures	Probability and Statistics*	Multivariable Calculus
publications	An Experimental Method for Studying Complex Choices (HCHI 2022) <i>Nikolos Gurney, Tyler King, and John H. Miller</i>		
	Generalizing Minimum Path Star Topology Algorithms  (arXiv 2021) <i>Tyler King and Michael Soltys</i>		
experience	USC Institute for Creative Technologies, Los Angeles, CA <i>REU Intern</i>		May 2022 – August 2022
	<ul style="list-style-type: none">• Converted human decisions metadata into image and graph formulations and preprocessed instances• Benchmarked deep learning architectures to achieve 59% testing accuracy on noisy human decisions• Developed a novel median batch normalization technique to stabilize noisy input data		
	McMahon Lab, Ithaca, NY <i>Research Intern</i>		January 2022 – present
	<ul style="list-style-type: none">• Created Python pipeline for analog optimization based on the simulated coherent Ising machine• Deployed coherent Ising machine hyperparameter tuning on wandb with Bayesian optimization Hyperband; achieved best performance of 99.9958% on 1 year vehicle routing problems• Modeled vehicle routing instances to make inferences on large-scale realistic systems		
	Cislunar Explorers, Ithaca, NY <i>Software Engineering Intern</i>		September 2021 – May 2022
	<ul style="list-style-type: none">• Developed computer vision pipeline to detect heavenly bodies (sun, moon, Earth) from a 6U satellite• Implemented robust Python unit tests for satellite dynamics modeling to achieve >80% coverage• Derived unscented Kalman filter equations for satellite attitude and trajectory estimation using \LaTeX; added structured noise into unscented Kalman filter to account for image pixelation		
	Notre Dame Nanophotonics, Notre Dame, Indiana <i>Research Intern</i>		May 2021 – September 2021
	<ul style="list-style-type: none">• Benchmarked quantum circuits and processors using IBM's Quantum hardware• Conducted error analysis on various implementations of Grover's (quantum search) algorithm via hardware (<i>ibmq_lima</i>) and noisy simulations (<i>qasm_sim</i>)• Leveraged MATLAB and Matplotlib to model results and cross-validate statistical significance		
projects	Hazardous Asteroid Detection		April 2022 – May 2022
	<ul style="list-style-type: none">• Used Google Colab to benchmark various machine learning models for hazardous classification of 4600+ asteroids; achieved a best performance of 99.68% with decision tree classification• Utilized correlation matrices and various normalization techniques to preprocess data		
	iQuHACK Hackathon		January 2022
	<ul style="list-style-type: none">• Created mini-game that involved rotating 2-qubit statevectors into correct positions• Deployed code on Microsoft Azure with IonQ's quantum computer using Qiskit as an SDK• Leveraged deep Q reinforcement learning to train a bot and implement versus mode		
	Optimized A* Pathfinding		March 2021 – May 2021
	<ul style="list-style-type: none">• Theorized a novel approach to A* pathfinding by using greedy predrawn paths• Achieved 6-fold speedup with comparable performance to classical A* pathfinding heuristics• Developed pygame GUI to allow user interaction and visualize pathing		
languages & technologies	Python, Java, Julia, R, MATLAB, Ruby, C PyTorch, Tensorflow, Keras, Git/GitHub, Jupyter, Conda, Sklearn, Pandas, NumPy, Matplotlib, Seaborn, Networkx, Qiskit, Azure, Sphinx, Jira, Excel, Linux, \LaTeX		