# Tyler King


**contact**

ttk22@cornell.edu | linkedin.com/in/ttk22
(408) 838-0038 | github.com/tylertking


**education**

**Cornell University**, Ithaca, NY
B.S. and M.Eng. in Computer Science — Aug 2021 – May 2025
GPA: 4.08/4.30

**coursework**
∗ = in progress

| | | |
|---|---|---|
| CS 4820: Algorithms | CS 4780: Machine Learning | CS 6756: Robot Learning |
| CS 6850: Information Networks | CS 2800: Discrete Math | ECE 6210: Linear Systems |
| CS 2110: OOP/Data Structures | ENGRD 2700: Probability/Stats | ECE 4960: Dynamic Networks |

**publications**

**Experimental Method for Studying Optimal Human Decisions** (HCII 2022)
*Nikolos Gurney*, ***Tyler King***, and *John H. Miller*

**Generalizing Minimum Path Star Topology Algorithms** (arXiv 2021)
***Tyler King*** and *Michael Soltys*

**experience**

**NTT Research**, Ithaca, NY
*Research Intern* — May 2023 – September 2023
- Implemented a deep learning model via Neural ODEs based on coupled Kuramoto oscillators
- Developed a novel sparsification method for deep network regularization via locality pruning
- Deployed models on cloud in conjunction with WandB to perform hyperparameter optimization

**ExxonMobil**, Remote
*Research Intern* — March 2022 – present
- Leveraged non-classical computing for large-scale vehicle routing problems with thousands of depots
- Rewrote optimization code from Python in Pytorch to achieve an order of magnitude speedup
- Developed unit tests in Python to assert runtime and accuracy of simulated coherent Ising machine

**USC Institute for Creative Technologies**, Los Angeles, CA
*REU Intern* — May 2022 – August 2022
- Developed an experimental method to track human optimization in nonlinear environments
- Obtained thousands of datapoints via Amazon MTUrks to study human decisions under uncertainty
- Converted human decision metadata into image and graph formulations and preprocessed instances; leveraged deep neural networks to classify human vs. partial AI decisions in varied landscapes
- Current work on detecting AI assistance in abstract tasks is under review at AAAI 2024

**Cislunar Explorers**, Ithaca, NY
*Software Engineering Intern* — September 2021 – May 2022
- Implemented robust Python unit tests for satellite dynamics modeling to achieve >80% coverage
- Derived unscented Kalman filter equations for satellite attitude and trajectory estimation; added structured noise into unscented Kalman filter dynamics to account for image pixelation
- Modeled satellite dynamics given initial velocity/position and gravitational pull of heavenly bodies

**projects**

**Coherent Ising Machine Optimizer** — July 2022 – November 2022
- Helped develop cim-optimizer as a part of a ten million dollar NSF grant #1918549 following CI/CD practices
- Built up the Bayesian optimization Hyperband and random hyperparameter optimization suite for three variations of the coherent Ising machine that vary initial conditions of simulated dynamics
- Confirmed accuracy of external field coherent Ising machine by implemented dynamics from original amplitude heterogeneity correction paper in PyTorch and analyzing runtime and performance
- Wrote example usages of cim-optimizer in Jupyter Notebooks and integrated full documentation with Sphinx. All documentation was hosted on readthedocs and integrated as a pip package via PyPI

**Controlling N-link Manipulators** — August 2023 – September 2023
- Implemented forward kinematics for arbitrary 2-link manipulators via Lagrangian mechanics
- Leveraged LQR and iLQR to control system towards arbitrary target states
- Utilized approximate dynamics for forward kinematics to generalize to arbitrary N-link manipulators

**languages & technologies**

Python, Julia, Java, R, C, MATLAB
PyTorch, Tensorflow, Keras, WandB, AWS, Git/GitHub, Jupyter, Conda, Sklearn, Pandas, NumPy, Matplotlib, Seaborn, Networkx, Qiskit, Azure, Sphinx, Jira, Excel, Linux, LaTeX