TOBY S. COX

(864) 207-2527 tobyscoxsc@gmail.com linkedin.com/in/tobyscox https://github.com/t-s-cox

EDUCATION

CLEMSON UNIVERSITY — Clemson, SC
***Bachelor of Science* in Computer Science, Minor in Artificial Intelligence** — May 2027
***Bachelor of Science* in Mathematical Sciences, Minor in Physics** — GPA: 4.00/4.00

RELEVANT COURSEWORK

Data Structures and Algorithms (A) | Theory of Probability (A) | Discrete Mathematical Structures (A)
Introduction to Software Engineering (A) | Artificial Intelligence (IP) | Calculus of Several Variables (A)
Introduction to Ordinary Differential Equations (A) | Linear Programming (A) | Applied Data Science (A)
Machine Learning: Implementation and Evaluation (IP) | Linear Algebra (A) | Real Analysis 1 (IP)

EXPERIENCE

Undergraduate Teaching Assistant — Clemson University
CPSC 1020 (Computer Science II) — Fall 2024

- Leading twice-weekly lab sections with thirty students, covering topics such as Linux, C++ syntax, data structures and algorithms, file input/output, classes, and inheritance
- Holding office hours to provide individualized assistance to students
- Grading student submissions for a class of over one hundred students

SELECTED PROJECTS

Hardware-Aware Quantum Circuit Synthesis (REU) — Summer 2025

- Adapted diffusion models to generate hardware-aware quantum circuits
- Showed upwards of 8x improvement in circuit fidelity over current methods
- Accepted to ACM/IEEE Supercomputing Conference 2025

FABRIC Operations- Accelerating Innovation and Research (REU) — Summer 2025

- Used the FABRIC testbed for national, high-scale scientific computing
- Analyzed data transfer rates using iPerf3 across different congestion control protocols

Hands-On Quantum Computing (CREATIVE INQUIRY) — Spring 2025 – Present

- Formal verification of quantum algorithms using Isabelle/HOL
- Implementation of quantum algorithms in qBraid, using Qiskit library for Python

HackMIT (HACKATHON) — Fall 2025

- Leveraged YOLO and MediaPipe to create a real-time synthesizer from paper
- 1st place in Suno's "Best Musical Hack" category, out of ~300 total teams at the event

iQuHack (HACKATHON) — Spring 2025

- Implemented QUBO optimization on D-Wave's quantum computers
- Compared quantum performance in QUBO problems to classical computers

YQuantum (HACKATHON) — Spring 2025

- Extracted bitstrings from peaked circuits using BlueQubit's quantum simulators
- Used classical tensor network analysis to decode bitstrings as a comparison

Hacklytics (HACKATHON) — Spring 2025

- Applied computer vision and non-linear optimization techniques for location selection
- Utilized OpenCV, Python, JavaScript, HTML, Pandas, NumPy, GEKKO

SKILLS

PROGRAMMING LANGUAGES

- Python, C++, JavaScript, C, Java, R, Isabelle/HOL, HTML, CSS, TypeScript, Sage

SOFTWARE/PACKAGES

- Google Suite, Microsoft Office, AWS, Postman, TensorFlow, PyTorch, NumPy, Pandas, NodeJS

MISCELLANEOUS

- German, LaTeX/Overleaf, Unix/Linux

HONORS AND AWARDS

Brawley Sophomore Award (School of Mathematics) — President's List (Clemson) (Fall 2023 – Present)
Chase Family Scholarship — Clemson University Honors College (Fall 2023 – Present)