Kyle Corbett

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EDUCATION

San Jose State University **San Jose, CA** *May 2025*

Master of Science in Physics

- **Awards/Honors:** Sigma Pi Sigma Honor Society

San Jose State University **San Jose, CA** *May 2023*

Bachelor of Science in Physics | GPA: 3.596

- **Awards/Honors:** Cum Laude, President's Scholar (2x), Dean's Scholar (2x)

PROJECTS

Condensed Matter Simulations

- Developed Monte Carlo simulations on periodic chain, square, and kagome lattice structures for the Ising, XY, and Fermi-Hubbard models using Python and Julia to benchmark different algorithms.
- Created interactive Ising and XY simulation applications using Python to teach students about model behaviors.
- Added functionality to the determinant quantum Monte Carlo package SmoQyDQMC for memory-stored results, greatly simplifying file I/O, decreasing runtimes by up to 77%, and preventing file-system-related crashes.

Yay Racing

- Designed, prototyped, and finalized a portfolio of over 30 unique tools, replacement parts, and custom solutions for the Z32 and AE86 platforms using SolidWorks, Simplify3D, and 3D printing technology
- Reverse-engineered discontinued, or difficult-to-source OEM parts to restore vehicle functionality.
- Developed methods for testing, iterative prototyping, and improving parts over time to ensure long-term reliability.
- Managed customer service interactions, orders, and distribution to ensure positive experiences for all users

PyConsult / PiConsult

- Developed a free, open-source, cross-platform Python implementation for interfacing with 1990s-era Nissans using the Consult I protocol via RS232 serial, written in Python using NumPy, PySerial, and Tkinter.
- Created a PyConsult-powered pocket-size comprehensive solution for end-user portable diagnostics and data logging for 1990s-era Nissans using Raspberry Pi, Python, and SPI displays to send, receive, and display data.

WORK EXPERIENCE

Research Assistant **San Jose, CA** *2023-Current*

- Developing Monte Carlo simulations for the Ising, XY, and Fermi-Hubbard models using Julia and Python, with packages Numba, NumPy, SciPy, MatPlotLib, and Jupyter Notebooks on a Slurm-operated HPC.
- Statistical analysis of models near critical temperature with an emphasis on speed, efficiency, and accuracy
- Scaling simulations to tens of thousands of sites and interpreting numbers of data points in the millions.

Teaching Assistant **San Jose, CA** *2023-2025*

- Instruction of Fundamentals of Physics, a non-calculus-based class covering mechanics, heat, and sound.
- Communicated physics concepts to classes of 25 students with little or no physics background.
- Coordinated with up to 25 other instructors and staff to ensure consistency between course sections.

Project Lead **San Jose, CA** *2024*

- Led a team of 6 undergraduate students in developing a comprehensive solution manual of over 100 pages for SJSU's Fundamentals of Physics course to aid new teaching assistants.
- Formulated a structure and procedure for ensuring quality and accuracy in student work

Instructional Student Assistant **San Jose, CA** *2023-2025*

- Supported students in undergraduate Modern Optics, graduate-level Electricity and Magnetism, and Mathematical Methods classes by hosting office hours and providing meaningful feedback on student work.

SKILLS

Python (NumPy, SciPy, Seaborn, Pandas, PyPlot), Julia, Wolfram Mathematica, LaTeX, SolidWorks, Git, HPCs, Slurm, lattice models, Bash scripting, WSL, Monte-Carlo simulation, automotive drivetrain & mechanical systems