Spencer M. Pollard

Master of Science Computer Science
Bachelors of Science Physics & Computer Science
California State University, Chico

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Education

•California State University, Chico *2024*
Bachelor of Science - Physics (Professional Physics) CGPA: 3.9/4.0
Bachelor of Science - Computer Science
Minor: Mathematics

•Oxnard College, Oxnard *2021*
Associate of Science for Transfer - Physics CGPA: 4.0/4.0

Awards

•Michael R. McGie Service Scholarship *August 2023*

•Physics Summer Research Institute (PSRI) Fellowship *June 2023*

•Chico STEM Connections Collaborative Fellowship *June 2023*

•Member of Sigma Pi Sigma Honor Society *April 2023*

•Member of Alpha Lambda Delta Honor Society *April 2023*

•Chico State Dean's List Recipient *2021 - 2023*

Experience

•Lead Undergraduate Research Assistant *June 2023 - Present*
California State University, Chico Chico, CA
- Led development of a mobile app for the "Physics of Music" course as a research assistant
- Responsible for all aspects: software development, platform choice, and UI/UX design
- Work closely with faculty mentors to manage the team, acquire new equipment, and aid individual team members with current tasks
- Demonstrated strong time and project management skills
- Mentor new team members to optimize application development

•Instructional Student Assistant *August 2022 - Present*
California State University, Chico Chico, CA
- Served as Instructional Student Assistant, providing valuable support to the Physics, Math, Earth and Environmental Sciences, and Computer Science departments.
- Conducted grading duties for the following courses: including second-semester non-calculus based electricity and magnetism physics, second-semester calculus, Environmental Sensing, and Advanced Algorithms and Complexities. Assignments were graded by ensuring accurate assessment and timely feedback for students.
- Fostered a supportive learning environment for students, promoting academic growth and success.
- Displayed excellent organizational and time management skills in handling multiple responsibilities efficiently.

•High School Geometry Teacher *September 2023 - Present*
North Hills Christian School Vallejo, CA
- Provide students with daily lectures, homework, and assessments to provide meaningful feedback for student development

Research Projects

•Mobile App for "Physics of Music" General Education Course *June 2023 - Present*
Mobile app for California State University, Chico's "Physics of Music" course
- Faculty Advisors: Dr. Joseph Pechkis, Dr. Hyewon Pechkis, & Dr. Bryan Dixon
- Funded by NSF ($399,927.00): Using Mobile Apps to Enhance Students' Learning and Scientific Reasoning Skills in General Education Physics Courses
- Tools & technologies used: Dart, Flutter
- This app combines audio features from preexisting apps in a more student-friendly and educative manner. This app supports single-tone generation, power spectrum distribution for signal analysis, as well as an audio filter to extract the underlying wave from noisy input signals.

•**Development of New Data Acquisition Software** *November 2023 - January 2024*

Development of New Data Acquisition Software for Lidar: Raman-shifted Eye-safe Aerosol Lidar System

- Faculty Advisor: Dr. Shane Mayor
- Funded by NSF: Collaborative Research: Theoretical and observational investigations of multi-point Monin-Obukhov similarity in the convective atmospheric surface layer
- Tools & Technologies Used: Python, Tkinter, PyQT5, NIMAX, NIDAQmx
- Current LiDAR system runs on a 20+ year old system running LabVIEW code that is administered remotely and we would like to move away from LabVIEW
- Responsible for writing interfacing software between National Instruments Data Acquisition peripherals in Python and writing a GUI application to display and monitor current data acquisition processes
- Interface Moog Animatics SmartMotors by building custom cables and reading manufacturer's documentation for motors to behave and respond to user interaction on front-end UI

Presentations

•"Development of a Mobile Application to Enhance Scientific Reasoning Abilities in a GE Course for Non-STEM Majors", S. Pollard, J. Pechkis, H. Pechkis, B. Dixon, American Physical Society Far West Section (2023)

•"Development of a Mobile App for "Physics of Music" Course", S. Pollard, J. Pechkis, H. Pechkis, B. Dixon, CSC^2 Research Symposium (2023)

Technical Academic Projects

•**OrganizeOrbit - Software Engineering** *June 2023 - July 2023*

Final project for California State University, Northridge's Software Engineering course

- Tools & technologies used: HTML, CSS, JavaScript, Google Firebase, NodeJS
- This web application is to be a simple, space-themed to-do list primarily for those with ADHD. The web application comprises of users creating a to-do list of their daily tasks which are preserved in Google Firebase for future reference.

•**Project E&M - Electricity and Magnetism** *January 2023 - May 2023*

Final project for California State University, Chico's intermediate E&M course

- Tools & technologies used: Java, Apache NetBeans
- This desktop application allows the user to graphically create a 2-D electric charge configuration and calculate the electric field at a point in space.

Personal Projects

•**Discord Game Server Manager** *2022*

Custom Discord bot to manage a video game server

- Tools & technologies used: Python, DiscordPY
- This Discord bot is hosted on an 8GB Raspberry Pi 4 whose purpose is to allow my friends to host and play a video game together without the need for a dedicated person to host the game. The bot stays online waiting for user input to start and stop the server as well as run administrative commands within the game.

•**Custom 9 Panel DDRxPIU Arcade Dance Pad** *January 2019 - May 2019*

Combination of two arcade dancing rhythm games' dance pads

- This is the combination of four panels from "Dance Dance Revolution" and five panels "Pump It Up" into a single nine-panel dance pad. The dance pad was constructed out of wood for the frame and acrylic for each button panel. The button presses were made from custom button panels connected to a USB encoder to convert the electrical impulses from the button presses to be registered as a HID-compliant peripheral.

Technical Skills and Interests

Languages: Java, Python, C/C++, SQL, LaTeX, Intel IA-32 Instruction Set, MATLAB, LabVIEW, BASH, OCaml
Developer Tools: Git/GitHub, Visual Studio Code, Apache NetBeans, Jira
Frameworks: Flutter
Cloud/Databases: MySQL, Hadoop, Google Firebase
Soft Skills: Time Management, Problem Solving, Project Management, Teamwork
Areas of Interest: Embedded Systems, Quantum Computing, Scientific Computation, Robotics, Mathematical Modeling, Fluid Dynamics, Condensed Matter Physics

Relevant Coursework

Computer Science: Algorithms and Data Structures: CSCI 311, Programming Languages: CSCI 315, Shell Programming: CSCI 344, Introduction to Databases: CINS 370, Software Engineering: COMP 380/L, Advanced Algorithms and Complexity: CSCI 411, Applied Quantum Computing for Computer Scientists: CSCI 420, Operating Systems: CSCI 440, Intro to Computer Networks: EECE 446, Computer Security: CINS 448, Web and Mobile App Development: CINS 467, CSCI Capstone: CSCI 490, Numerical and Parallel Programming: CSCI 551, Machine Learning: CSCI 581, Applied Graph Theory: CSCI 651

Physics: Intro to Modern Physics: PHYS 300, Analytical Mechanics: PHYS 301, Electricity and Magnetism: PHYS 302, Theoretical Physics: PHYS 314, Thermal Physics, PHYS 315, Electronics for Scientists: PHYS 327, Advanced Lab: PHYS 427, Quantum Mechanics I: PHYS 435A, Optics: EECE 450

Math: Ordinary Differential Equations: MATH 360, Intro to Data Science: MATH 385

Professional Service to Community

•**Physics Tutor,** Society of Physics Students *August 2023 - May 2024*

•**Activities Coordinator,** Society of Physics Students *August 2023 - December 2023*