Michael Allen Cavins Jr.

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Education:

California State Polytechnic University- Pomona, CA - 2016- 2021

- Bachelors of Science, Computer Engineering

University Preparatory High School, Victorville, CA - Class of 2016

- High School Diploma

Awards:

- Dean's List: Fall 2020
- President's Honor List 2020-2021
- 1st place in Seaperch regionals 2015

Certificates:

- Deep Learning by DeepLearning.AI on Coursera 2023
- Obtain Confidential Security Clearance as of January 2023
- The Complete 2021 Flutter Development Bootcamp with Dart (App Development)
- Certificate CompTIA Security+ (SY0-501) (Cybersecurity Certificate)
- Electrical Systems: Communications and Data
- Become a PLC Developer; Learn Industrial Automation
- Electronics Foundations: Basic Circuits
- Electronics Foundations: Fundamentals
- Learning Virtualization (2014)

Work Experience:

Freelance Website Development/Electronics Specialist - TEC Controllers , Hesperia, CA - August 2024 - Present

- Created frontend for the website from the ground up using react, javascript, html, and css to be able to sell all products
- Developed backend react, javascript, html, and css and JSON code to keep track of login and inventory for the owner
- Implemented wire design to controllers to be able to use added soldered custom buttons on controllers

Freelance Python Developer - Twitch Streamers, Hesperia, CA - January 2024 - Present

- Developed Python scripts for Twitch Streamers to use a bot including a Text to speech for chat, bot reacts/response to chat messages, chat plays through messages, AI scripts for streamer to play with hand gestures, face emotions, and their voice to make a more reactive experience between the streamer and viewers
- Used JavaScript Object Notation (JSON) for easier user experience for streamer to turn Python scripts on/off
- Updated follow, subs, message and sound commands to help increase viewer count by double

Technician - SOV Security, Agoura Hills, CA - November 2021 - Present

- Installed, troubleshoot, and IP cameras, card readers, door/ceiling sensors, and CISCO servers. Demonstrated leadership by taking charge of 2 projects and collaborating on 7 others, consistently delivering ahead of schedule with one project yielding a net gain of over $3 million
- Lead testing for over 200 card readers, 100 cameras, and 30 12V-24V batteries finishing 1 week before the deadline with paperwork and complete work orders as soon as possible which consist of troubleshooting hardware/software issues keeping 100% of equipment working
- Originated documentation for troubleshooting in Google Docs and schematic wiring in EasyEDA for employees to

understand the system
- Promoted twice within 11 months due to my strong performance, reliability, and independence

Freelance Web Developer - Mama Loli's Mexican Food, Hesperia, CA - June 2021 - August 2021
- Created website in HTML, CSS, JavaScript, Node.js, and squareup so people can order online for the restaurant
- Maintained website with its layout (header, body, footer), added and fixed items, item descriptions, categories for items, and photos using HTML, and CSS to make the website more user friendly having a 12% increase in site traffic and +40% in sales

Delivery Person - Postmates, Pomona, CA - 2017
- Be able to deliver food on time.
- Was able to navigate to restaurants and to the delivery destination.

Projects:

Individual Project - Home Server using casaOS - July 2024 - August 2024
- Flashed Raspberry Pi imager on to an SD card to use as storage
- Using the command prompt, I downloaded casaOS for the server GUI and made login through IP address for the whole anyone using the same wi-fi router
- Can login on other devices to move/share files

Individual Project - AI/ML Basketball Analysis - May 2024 - July 2024
- Crafted Python code using YOLOv8/v5, OpenCV, pkl, numpy to be able to test trained models using Roboflow's API to be able to track players, teams, ball, and referees.
- Utilized python drawing to have ellipse and numbers under players and refs, and had triangles to identify the ball and who has possession of the ball
- Calculated distance players travel, how fast, camera movement, and team ball control

Individual Project - AI/ML Football/Soccer Analysis - January 2024 - April 2024
- Crafted Python code using YOLOv8/v5, OpenCV, pkl, numpy to be able to test trained models using Roboflow's API to be able to track players, teams, ball, and referees.
- Utilized python drawing to have ellipse and numbers under players and refs, and had triangles to identify the ball and who has possession of the ball
- Calculated distance players travel, how fast, camera movement, and team ball control

Individual Project - Reinforcement Learning AI for Street Fighter - July 2023 - October 2023
- Developed a Python-based reinforcement learning program using PyTorch, OpenCV, MAMEToolkit, gym, tensorboard, cv2, numpy, and Baseline to create an Artificial intelligence (AI). Implemented algorithms such as PPO and A2C with architectures NoisyNet, GRU, and RNN with the objective of training the AI achieve victory in the highest difficulty level of the game
- Conducted comprehensive evaluations of the AI's performance by implementing a testing model. This model quantified the AI's learning progress by adjusting rewards and penalties, allowing for a thorough assessment of 3,000 training attempts, running the program for 48 hours

Individual Project - Lane and Object Detection for Self Driving Car Program - June 2023 - September 2023
- Developed python code for real-time vehicle camera utilization with OpenCV to ensure precise vehicle positioning within the lane's center.
- Employed YOLO for object detection with an 80% confidence level, referencing the COCO dataset, and integrated the Deep Sort algorithm powered by PyTorch for tracking and identification of other vehicles, pedestrians, and relevant

objects
- Implemented a steering wheel interface to visually represent the car's turning movements, enhancing the visualization of the vehicles navigation

Individual Project - Cancer Prediction using Neural Network and Random Forest - March 2023 - April 2023
- Created two machine learning programs using Jupyter Notebook employing libraries such as sklearn, Tensorflow, NumPy, and Pandas. These programs effectively processed and classified RNA sequence gene expression data, distinguishing between 5 distinct types of cancers and facilitating comparisons within the dataset
- Conducted a comprehensive analysis between the Random Forest and Neural Network approaches, determining that Random Forest exhibited superior speed, achieving an accuracy of 94%, while Neural Network outperformed in terms of accuracy, reaching 96%. This analysis was complimented by the visualization of the results through the creation of a graph in MATLAB

Individual Project - Hands Free Real Time Translator - January 2023 - February 2023
- Developed a python-based Natural Language Processing (NLP) code capable of processing spoken English language input. The code interacts with the user by prompting for the desired target language for translation. Subsequently, it efficiently translated the spoken input i into the chosen language and articulates audibly, ensuring successful and effective communication
- Enhanced the applications functionality by incorporating multiple versions, including GUI's that have start/end buttons with English-to-single-language translation displaying words that were spoken and translated to give a better user experience

Individual Project - 2-Axis Solar panel Phone Charger - May2023 - August 2023
- Developed C++ code to command 2 servo motors for precise orientation adjustments of a solar panel comparing values from four photoresistors, resu;ting in a 98% success rate
- Achieved successful creation of a PCB design for a charging port, incorporating capacitors, resistors, and voltage regulator

Team Lead - Class Project: Automatic Refillable Water Tank, Cal Poly Pomona, CA - August 2019 - December 2019
- Coordinated group members to assigned tasks to make sure we were on schedule finishing the project 2 weeks before the deadline
- Headed the projects wiring design for the Ultrasonic Distance Sensor to connect to the driver and the pump so the components would not get wet, in the way of each other, and to be put in the most efficient way as possible
- Assisted the Arduino team using C code to make sure the C code makes the Ultrasonic Distance Sensor works and detects the liquid at the 95% mark of the tank

Research/Clubs:

Payload Lead - Autonomous Drone with Release of Payload, Pomona, CA - September 2020 - May 2021
- Utilized AutoCAD to design and create a 3D-printed payload box, pin, and holder system for a drone. This innovative solution enabled the drone to securely hold and release up to 10 pounds of cargo
- Developed wiring and C code in Arduino to orchestrate the servo motor, ensuring the accurate release of the payload at the designated locations, maintaining a margin of error of less than 5%
- Composed a comprehensive Gantt Chart using excel and Google sheets to outline the projects teams timeline allowing for successful completion of the project 3 weeks ahead of schedule

Battery Management System (BMS) Member - Formula Society of Automotive Engineers Electric, Cal Poly Pomona, CA - October 2019 - September 2020
- Led design and testing for the brake lights using EAGLE to ensure the car has functional brake lights

- Assisted with input for the battery design by researching and brainstorming with team to ensure a safe, secure, light, and functional battery for the car
- Collaborated with the whole team to make a powerpoint presentation in order to successfully obtain club funding of $20,000

Engine Electronics/DAQ team Member - Liquid Rocket Lab, Cal Poly Pomona, CA - August 2018 - August 2020
- Developed the control box wiring layout using PSPICE, soldering components to rocket/test stands and using LabView code to communicate with the sensors (e.i. Thermocouples, Pressure Transducers, Solenoids) to be able to collect crucial data for the rocket troubleshooting until we received high accuracy from the sensors
- Oversaw thermocouple portion of project; tested temperatures from below freezing to extreme hot temperatures calibrating until we received accuracies of ± 1°C and had to be finished a month before launch day

Team Member - SeaPerch, Victorville, CA - 2014-2016
- Successfully designed an underwater ROV (Remotely Operated Vehicle), soldering a custom made controller to our assembled designed vehicle to be placed in top 3 in multiple competitions and making it to regionals

Volunteer:

Voluntary Worker - Discovery Elementary School, Victorville, CA - 2015-2016
- Graded papers.
- Helped the students with their laptops.
- To be able to watch over the students.
- Was able to do what the teacher prompted me to do. (grade papers, helped the students, etc.)

Skills/Interests:

Skills Proficient in: Python / Arduino / C++ / Java / C / LabView / Verilog / MATLAB / HTML / CSS / Javascript / PIC Assembly / Dart / AutoCAD / SQL scripting / PSPICE / EasyEDA / FPGAs / microcontrollers / Electrical Schematic Design / Electronic Circuit Designs / Solder / VLSI / Linux / Windows / PCB (Printed Circuit Board) Design / PLC (Programmable Logic Controllers) Design / RSLogix 500 / Artificial Intelligence / NLP / Machine Learning / CNN / C# / VHDL / EAGLE / LTspice / VMware

Interests: Vinyl collecting, drama/action/comedy/horror movies and shows, video games, projects