Alexander Ov

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Objective

Highly motivated computer engineer seeking opportunities to employ my skills in creation of software, embedded systems, robotic, or machine learning applications.

Skills

C# | C++ | C | SQL | Python | PHP | System Verilog | Git | JavaScript | Arduino | Object Oriented Programing | FPGAs | Microcontrollers Sensors | Agile | Project Management | Leadership | Algorithms | CRUD | Verilog | Embedded Systems | Version Control | UML Discrete Structures | Relational Databases | MongoDB | Machine Learning | Computer Vision | YOLO | Robotic Operating System

Education

Computer Engineering, B. S **California State Polytechnic University, Pomona** **GPA: 3.15** **08/21 – 05/24**

Relevant Coursework: Data Structures and Algorithms, Discrete Structures, Operating Systems, Computer Architecture, Software Engineering, Network Forensics, C/C++, Advanced Digital Circuit Design with Verilog, Electrical Circuit Analysis, Microelectronic Circuits, Digital Logic Design, Signals and Systems, Microcontrollers, Control Systems, TCP/IP Networking, Network Forensics, Software Engineering

Work Experience

Academic Director **Magikid Robotics Lab** *Diamond Bar, CA, USA* **03/20-06/23**

- Led 4 teams to World Championships winning awards by teaching PID and algorithms increasing robots speed by 60%.
- Improved programming literacy by 30% by developing curriculums that use Python, JavaScript, and design principles.
- Increased female enrollment by 25% during the spring semester by leading workshops that introduced girls to coding.
- Collaborated with teams to develop and execute joint projects.
- Streamlined research saving 60% of analysis time using a custom web scraper that analyzed data, trends, and patterns.

Projects

Mechatronics Lead Engineer **BANSHEE UAV** *Pomona, CA, USA* **08/23– Present**

- Led a team of engineers to devise, develop, test, and maintain a robotics arm system to extract and store LiPo batteries.
- Developed stepper and DC motor control algorithm improving the system's accuracy, speed, and efficacy by 30%.
- Developed an algorithm to autonomously detect motion, reducing debugging time by 200% and motor stalling by 10%.
- Taught and created a git guide for team members new to version control.
- Utilized deep reinforcement learning to optimize robotic arm movement.
- Created depth sensing computer vision program using OpenCV to detect and determine the position of arcuo markers.
- Presented at one local and one state conference demonstrating findings and research to industry professionals.

Backend Engineer **Icebreak** *Pomona, CA, USA* **08/23– Present**

- Implemented a social media platform that connects university students to their associated clubs' events.
- Developed fundamental CRUD API routes for events using JavaScript with Prisma.
- Created error and exception handlers to prevent bad user requests to enhance user experience.
- Wrote documents detailing the goal, design, and implementation of ideas to facilitate communication and collaboration.

Software Engineer **Smart Irrigation System** *Pomona, CA, USA* **01/23-05/23**

- Developed a smart irrigation system using sensors, LCD displays, and relays to control outputs based on input readings.
- Integrated temperature sensors, moisture sensors, and photoresistors with a microcontroller to monitor sensor readings.
- Programmed microcontroller algorithms in C++ to control pumps based on sensor readings for individual plant watering.
- Designed and implemented a continuously rotating state LCD display to show sensor data and system status.

Embedded Systems Engineer **Shift Cipher Encryption FPGA** *Pomona, CA, USA* **08/22– 01/23**

- Implemented an encryption algorithm in Verilog using interface data, user defined shift amount and input switches.
- Defined the shift itself by the onboard switches, giving the user the ability to choose the shift amount and direction.
- Produced encrypted data written to RAM, then processed by the VGA module displaying encrypted data in real-time.
- Wrote a Python script to automate implementation of new characters to the ROM list.
- Documented the design process for a Caesar cipher using IEEE reports, presentations, and UML diagrams.

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Lead Engineer **Automated Cat Tree** *Riverside, CA, USA* **08/17-05/18**

- Designed an automated cat toy with ARM processors driving various peripherals: motors, encoders, and limit switches.
- Issued troubleshooting, root cause analysis, and resolution.
- Maintained compliance within project constraints.
- Prepared labor and material estimate for project presentations and proposals.
- Created automated processes through the creation of maintainable, supportable, and testable code.

Lead Design Engineer **King High Robotics** *Riverside, CA, USA* **08/17-05/18**

- Created layouts of assemblies and detailed parts of mechanisms, structures, and products using Autodesk Inventor.
- Wrote, reviewed, and implemented changes to engineering drawings.
- Designed drawing preparation using Autodesk Inventor software.

Certifications/Honors

- 1st Place Research, 38th CSU Student Research Competition
- Exemplary Project, Cal Poly Pomona Student Research, Scholarship & Creative Activities Conference
- Additive Manufacturing State Champion, SkillsUSA
- Autodesk Inventor Certification, Autodesk
- Electronics, Engineering Principles, Engineering Technology, Manufacturing Technology, and Robotics Certifications from Certiport

Publications

1. M. Hoang, A. Ov, S. Chen, D. Huynh, Y. Karwal, S. Ahmed, N. Kim, J. Vega, S. Nunna, M. Nastase, H. Song, B. Lam, S. Dobbs, and Z. Yu. (2024). Design of Autonomous Battery Swapping for UAVs. IEEE/ASME International Conference on Advanced Intelligent Mechatronics (IEEE AIM)

Conferences

2. M. Hoang, A. Ov, W. Zhu “Battery As iNtegrated Structure High Endurance Experimental UAV, Robotics”, presented orally at the 38th CSU Student Research Competition, April, (2024) https://studentresearch.calpoly.edu/38th-annual-california-state-university-student-research-competition
3. M. Hoang, A. Ov, W. Zhu “BANSHEE UAV”, presented orally at the CPP 12th Annual Research, Scholarship & Creative Activities Conference (RSCA), March, (2024) https://www.cpp.edu/cppsrc/current-conference/program/presenter-directory.shtml#
4. A. Ov “YOLOv8 Benchmarking”, presented orally at the CPP 12th Annual Research, Scholarship & Creative Activities Conference (RSCA), March, (2024) https://www.cpp.edu/cppsrc/current-conference/program/presenter-directory.shtml#