Elias Nicolas

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SKILLS

Mechanical/Part Design: Solidworks, AutoCAD, Onshape
Simulation Tools: MATLAB, Simulink
AI/ML: LLamaIndex, scikit-learn, NLP, OCR, LLM's (Gemini, etc.)
PCB Design: Schematic Capture, Board Layout (KiCAD)
Lab Equipment: 3D Printers, Laser Cutters, CNC Mill, Multimeters, Circuit Design, Soldering, Oscillometers
Languages: Python, C++, MATLAB, Simulink
Data: Python, Matplotlib, Jupyter Notebook, Pandas, NumPy, scikit-learn
Version Control: Git, Github
Robotics Systems: Microcontrollers, R/C, FPV, sensors, motors, cameras
Mobile Robotics: Design, Programming, Troubleshooting, Leadership
Operating Systems: MacOS, Windows, Linux (Debian)
Other: Visual Studio Code, Microsoft Excel, Office 365 Suite, ESRI, ArcGIS

EXPERIENCE

University of Redlands Drone and Robotics Lab | Lab Assistant **September 2025 - Present**
• Assists in the development of various projects, including a smart rover integrated with Lidar, Computer Vision, GPS, and etc.
• Designs multiple drone chassis iterations in CAD such as Solidworks and Onshape, improving functionality by **15%**
• Collaborates with 8 team members in a long-term projects to develop Artificial Intelligence powered drones in partnership with the University of Redlands GIS Department

SEDS University of Redlands | Project Lead, Secretary **August 2024 - Present**
• Spearheads projects (Solidworks, MATLAB) for rovers, rockets, and robotic arms producing **10+ validated designs**
• Oversees **2 projects,** successfully coordinating with both the electrical and software teams to deliver a 4 DOF robotic arm and a 2 DOF rover camera
• Leads the mechanical subteam to deliver parts designed in CAD such as Onshape and Solidworks, yielding **50%** more team output compared to prior years

Extern | AI and Automation Extern, Outamation **May 2025 - July 2025**
• Configured AI workflows to automate document classification and data extraction using Python, NLP, and OCR tools
• Built RAG-based retrieval systems with LlamaIndex to enhance search accuracy in mortgage documents, leading to **60%** more efficiency
• Assessed top open-source AI models for document processing, recommending deployment and optimization strategies

PROJECTS

4DOF Mechanical Arm | Solidworks, Onshape, C++, Python, ESP32, KiCAD
• Built and configured custom mechanical components in Onshape and Solidworks, ensuring **4 DOF**
• Designed interchangeable heads for the Robotic Arm to complete various tasks (i.e. sweeping, grabbing, etc.)
• Implemented multiple inverse kinematics-based control methods, including a computer vision algorithm

Multiterrain Rover Project (SEDS) | Solidworks, MATLAB, C++, Python, OpenCV, Raspberry Pi, Sensor Fusion, CV
• Engineered rover **camera** in Solidworks and Onshape to provide live footage of ground missions
• Integrated Night Vision and a Laser Module for advanced tracking that's suitable recording in various environments
• Designed a **2 DOF** dashcam to provide a first-person POV livestream broadcast to our team of rover operators

EDUCATION

University of Redlands | GPA: 3.8 **Expected Graduation: April 2027**
Pursuing a Bachelor of Arts in Data Science and Bachelor of Science in Mechanical Engineering (3-2 Engineering Program); Mathematics and Physics Minor

Highlights: Redlands Chapter Secretary of Students for the Exploration and Development of Space, University of Redlands Robotics and Drone Lab, Volunteer Center Intern, Hispanic Serving Institution Student Leader, Philosophy Club, Dean's List, University of Redlands Achievement Award Scholarship