Roman Avelar
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Objective

Mechanical Engineer seeking a challenging position that will allow me to engage my skills in SolidWorks, MATLAB, FEA, Manufacturing, and Machine Design to develop innovative mechanical systems and solutions.

Education

California State Polytechnic University, Pomona - **3.57 GPA** *Expected May 2027*

Bachelor of Science (B.S.), Mechanical Engineering with Materials Engineering Minor

Relevant Coursework: Vector Statics, Newtonian Mechanics, Computer-Aided Computations Laboratory, Engineering Graphics and Visualization, Aerospace Special Study for LD Students

Experiences & Projects

Rocket Powered Lander *(Project Phoenix) - Cal Poly Pomona* *August 2024 - Present*

- **Mechanisms Lead Engineer -** Design and integration of thrust-vector control system for a liquid augmented solid rocket motor. Manufacturing/testing custom throttle actuation to control flow of nitromethane propellant.
- First successful throttleable static fire of a rocket engine in Cal Poly Pomona's history.

Mechanical Engineering Intern - *Engel & Company Engineers | Bakersfield, CA* *June 2024 - January 2025*

- Assisted with development of proprietary apparatus for **patent** under the mentorship of professional engineers.
- Designed mechanical components with CAD, manufactured using various polymers with additive manufacturing. Optimized cost efficiency by replacing steel parts with alternatives. **Quality** checked using tensile strength tester.

Electric Vehicle - *Independent Project Developer* *August 2021 - December 2024*

- **Go Kart**: Custom built electric powertrain and chassis, optimized steering geometry and vehicle **dynamics** for racing.
- **Motorcycle**: Dual-motor powertrain and LiFePO4 battery retrofitted to an existing motorcycle frame.

Custom 3D Printer - *Independent Project Developer* *July 2020 - November 2020*

- Designed, procured components/materials, and assembled a 3D printer machine of my own design. Utilized Fusion 360 to model assemblies. Fabricated the machine and configured electrical components. Applied principles of thermodynamics and heat transfer to prevent failure. 3D printed parts meet industry quality standards.

Founder - *Roman Milling & Engraving | Bakersfield, CA* *July 2021 - September 2021*

- Established a custom CNC milling business. Fulfilled **60+** orders for a local agriculture company. Proprietary components were critical in the production of over **8 million** units.

Tesla Coil - *Independent Project Developer* *January 2021 - September 2021*

- Experimentation using principles of electromagnetism and electricity. Peak output voltage in excess of **500,000**V producing **6-foot** electrical arc discharge.

Skills

- **Software**: SolidWorks, MATLAB, Simcenter Femap, Fusion360, Arduino IDE, 3D Printer Slicers, Python, C++, MS Office
- **Fabrication**: Welding, Soldering, Machining, Electrical Work, Additive Manufacturing, CNC Machines, Metals and Plastics Manufacturing Processes, Analysis of Rigid Bodies, Machine Design
- **Languages**: Proficient Spanish

Memberships & Affiliations

- **ASME** - Member - The American Society of Mechanical Engineers
- **SHPE** - Member - Society of Hispanic Professional Engineers
- **AIAA** - Member - American Institute of Aeronautics and Astronautics
- **FSAE E** - Member - Formula SAE Electric
- **CPPMC** - Vice President - Cal Poly Pomona Motorcycle Engineering Club