Zachary Abboud

(309) 415-3921 | zrabboud@gmail.com | LinkedIn | Portfolio

EDUCATION

Bradley University | *Peoria, Illinois* — Cumulative GPA: 3.36
Bachelor of Mechanical Engineering and Data Science Minor — Graduation: May 2024

WORK EXPERIENCE

Komatsu America Corp. | *Design Engineering Intern* — May 2023 – August 2023 | Peoria, IL

- Created **3-D models** and **technical drawings** for mining truck components, using **Creo PTC**, ensuring adherence to Komatsu Engineering Standards (KES) and **SAE/ISO standards**.
- Conducted geometric dimensioning and tolerancing **(GD&T) analysis** for mining truck components and tooling, ensuring proper fit and function of parts within tolerance limits.
- Maintained accurate **engineering documentation**, including 3D models, technical drawings, and bill of materials, to facilitate seamless communication between cross-functional groups.
- Conducted **dynamic motion simulation analysis** of frame rollers during engine assembly to ensure rollers remained secure and offered design enhancements to eliminate any risk of failure.
- Engineered **spray protection brackets** for all active model trucks, mitigating the risk of pressurized hydraulic fluid spraying onto the muffler, significantly enhancing overall safety standards.

Caterpillar Inc. (Contract) | *Electronics Lab Technician Intern* — Nov. 2022 – May 2023 | Peoria, IL

- Enhanced operational efficiency by designing, building, and documenting engine control module (ECM) testing setups to support a large R&D division of Caterpillar.
- Provided on-site technical support for remote employees from CAT India utilizing **ECM-testing** rigs, ensuring proper testing procedures and prompt issue resolution.
- Created comprehensive **wiring diagrams** and **documentation** for ECM-testing rigs, facilitating their utilization by multiple users and streaming the testing process for engineers.

Sam's Import Auto Repair | *Automotive Diagnostic Manager* — Oct. 2018 – Nov. 2022 | Peoria, IL

- Developed **CANBUS** analysis software using **Simulink**, designed explicitly for pre-OBD2 vehicles to assist technicians in monitoring, diagnosing, and repairing vehicular systems.
- Created VIN decoding software in **Java** tailored for BMW vehicles, providing vehicle specifications information to facilitate accurate part ordering, leading to **cost savings** of over **$5,000 annually**.
- Built and deployed a strategic application that achieved an **$85,000 boost in part profits** by identifying the most cost-effective suppliers for specific parts and streamlining the procurement process.
- Programmed and implemented a **VBA**-based invoicing and data analysis application, optimizing the invoicing process, automating calculations, and streamlining data transfer, saving five labor hours a week.
- Designed, manufactured, and installed a supercharger coupler using **Creo** and 3-D printing for use in a supercharged engine, effectively addressing rattling at idle due to a defective spring-loaded isolator.

TECHNICAL SKILLS

Computer-Aided Design (CAD) and Simulation

- Developed **3-D models** and **2-D drawings** using Creo Parametric (Pro-E), AutoCAD, and SolidWorks.
- Performed modal, structural, and thermal **FEA** simulation to optimize designs in Creo Simulate and Abaqus.

Electrical and Software

- Developed **data collection**/automation software in Java, Python, and Visual Basics for Applications (VBA).
- Basic experience using Windchill PDM and SAP for product management and development.

Mechanical

- Performed basic **fabrication** and machining tasks using lathes, CNC machines, and stick welding.
- Advanced auto repair and diagnostics skills with knowledge of drivetrain and **electronic control systems**.

ADDITIONAL EXPERIENCE

Society of Automotive Engineers (SAE) | *Control Systems Designer* | Bradley University

- Designed and implemented an Ackermann steering system using **MATLAB** simulation and **Creo** modeling to maximize the energy efficiency of the vehicle while ensuring precise steering control.
- Conducted finite element analysis (**FEA**) on vehicle chassis to reduce weight while maintaining optimal **load distribution** to enhance vehicle stability and performance.

Bradley MSA | *President* | Bradley University

- Led Bradley MSA as President, honing **leadership abilities** by creating events to promote student activity.
- Implemented effective communication strategies to provide information and updates to members.