Zakaria Sakkal

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EDUCATION

University of Minneasota Twin Cities **Sept 2022 - May 2026**

- Bachelor of Mechanical Engineering GPA: 3.6

EXPERIENCES

Phillips and Temro Industries **May 2024 - August 2024**
Mechanical Design Engineering Intern

- Designed and tested vibration fixtures; validated results with ANSYS simulations.
- Performed lab testing on connectors to reduce insertion force from 100N to under 75N per GM standards, experimenting with pin size, grease, and seals.
- Designed a PCB enclosure for the EvoCharge charging tower and performed thermal simulations to ensure effective cooling.
- Tested battery warmers in cold chambers, analyzed setups, and presented data.

UMN Formula SAE Team **Sept 2022 - Present**
Powertrain Team member

- Perform comprehensive heat management, including pressure drop calculations, mass flow calculations, pump selection, and sizing radiators based on dynamometer testing.
- Used SolidWorks to create 3D models and engineering drawings for FSAE race car components.

Outboard Suspension Lead

- Optimized suspension system design by integrating load cell data into Ansys simulations, achieving a 19% mass reduction while maintaining reliable safety factors.
- Conducted load cell testing to calculate forces through all suspension links and determine maximum loads under worst-case scenarios.
- Enhanced suspension tunability with Ackermann and camber brackets for precise Ackermann, camber, and mechanical trail adjustments, optimizing handling performance.

Maze Navigating Robot

- Integrated DC motors, Servo motor, and Ultrasonic sensor, to construct a maze navigating robot.
- Integrated sensor feedback into the decision-making process, allowing the robot to rotate the servo, scan for obstacles, and determine obstacle-free directions.
- Optimized Arduino code for efficient control of DC motors, servo, and sensor interactions.

Tutor **Sept 2023 - Present**
Tutoring and Academic Success Center (TASC)

- Tutored undergraduate students in math, physics, and chemistry at TASC.
- Provided one-on-one and group tutoring, enhancing students' understanding of complex subjects.
- Monitored and tracked students' progress, adjusting tutoring strategies to ensure improvement.
- Instructed students on formulating effective search strategies, equipping them with the skills to navigate their assignments successfully.

SKILLS

SolidWorks	Ansys	C++
PTC - Creo	CFD	MATLAB
3D printing	Data Analysis	Arduino