Matthew Zhang

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EDUCATION

University of Illinois at Urbana-Champaign 3.98 GPA   *Expected Graduation 05/2024*
Bachelor of Science in Mechanical Engineering

WORK EXPERIENCE

Gecko Robotics (Pittsburgh, PA) - *Mechanical Engineering Intern*   *05/2023 - 08/2023*
- Prototyped a testing station for a robot sensor payload to verify functionality of ultrasonic probes
- Generated system requirements for the testing station according to needs from multiple stakeholders
- Integrated testing station electronics and connectors into a custom designed watertight enclosure
- Analyzed a cable-snag loading scenario and optimized robot mounting structure using an Ansys FEA model to increase yielding safety factor by 40% with minimal impact to stiffness and weight

Precision Planting (Tremont, IL) - *Mechanical Engineering Intern*   *05/2022 - 08/2022*
- Prototyped, designed, and fabricated components of automated soil sampling system over a period of 3 months to develop the product from an initial proof-of concept prototype to a released product
- Utilized Creo to design and develop drawings for manufacture of engineering prototypes
- Developed wear and endurance testing fixtures for pumps and shafts within an automatic soil analyzer

ACTIVITIES

iRobotics (Urbana, IL) – *Chassis Lead (2020-2023), Team Captain (2023-Present)*   *09/2020 - Present*
- Directed 10-member team to design and build 30-lb combat robots to compete in national competitions
- Developed a durable and weight-efficient frame while balancing manufacturing and budget constraints
- Machined, waterjet, and hand-manufactured aluminum robot structure and weapon assembly

Illini Solar Car (Urbana, IL) – *Mechanical Lead (2022-23)*   *09/2020 - Present*
- Engineering a high efficiency solar-powered vehicle to compete in long-distance races
- Led a team of ~30 by facilitating meetings, managing project progress, and setting team agendas
- Set vehicle design parameters accounting for competition regulations and performance requirements
- Designed vehicle's carbon composite structural chassis and analyzed strength using composite FEA tools

PERSONAL PROJECTS

3-lb Combat Robot   *07/2022 - Present*
- Built and competed with a 3-lb combat robot with a high-speed horizontal blade weapon featuring a self-made CNC milled clamshell chassis made from impact-resistant UHMW-PE plastic
- Integrated STM32 microcontroller with hobby RC electronics and programmed "smart" robot functionality including telemetry logging and drive control inversion based on IMU orientation

SKILLS

Engineering Software: SolidWorks (Certified SolidWorks Professional), PTC Creo/Pro-E, Siemens NX, Autodesk Inventor, Ansys Mechanical structural FEA, SolidWorks PDM, Creo Windchill
Programming: Java, MATLAB, Embedded C, C/C++, Python, OpenCV, ROS, Git
Other Experience: CNC and manual machining, Rapid prototyping, GD&T and ANSI drawing standards, Finite element structural analysis, Hardware design and programming of embedded systems, DFM of injection molded, sheet metal and machined components, Robotics programming and controls