Proposed Senior Design Projects for Spring 2025

January 9, 2025

Industry & Alumni Projects (Sp25)

	Title	Sponsor	Description
1	Thermal Puck 2	Marvin Windows	When building windows, one of the final steps is to run the window through an oven - similar to the way a pizza is run through a pizza oven. A Senior Design group in Fa24 designed a puck which monitors and records the temperature as the puck is run through the oven. In this project, a wireless link is to be added so that you see the temperatures inside the over in real time.
2	Inventory Display	Jeff Erickson	Create an updatred inventory display to be used in either AGHill 228 or the nre Offerdahl complex. • Mimic the parts inventory bins in ECE 331 using RGB LEDs • Include a user-friendly display • Includes 120 bins with some larger bins • Touch screen with drop down lists required • Blinking RBG LEDs to indicate the bin • Cell phone app Project is 90% programming and 10% hardware.
3	Mouse Gate	Roger Green	Design an device which opens and closes gates in a maze for a mouse. Also monitor when the mouse travels through a given gate.
4	no project (IP issues)	-	-
5	Irrigation Telemetry	AgriTech Innovations LLC	Modern pivot irrigation systems provide users with the ability to remotely monitor and control their operation, including features such as monitoring system voltage, water pressure, end-gun state, direction, speed, and software-controlled stops. This project seeks to retrofit older irrigation systems with this technology to provide management solutions to farms with systems built before these features were available. Design an IoT system to collect data from GPS, voltage, and pressure sensors from the irrigation system and send commands to the control panel via a wireless cellular link.
6	RFID Grain Delivery Management System	AgriTech Innovations LLC	When corn is sold, it can be delivered to a number of elevators to fulfill contracts. To track these transactions, drivers log their delivery using an RFID badge linked to data for their truck and details for the contract they are hauling for, which is printed to a ticket for the driver. The goal of this project is to advance this system design from prototype to production use by designing a PCB to combine all electronic components for improved outdoor durability and to extend its feature set to provide more insight on loads.
7	Egg-Bot 2	Jake Glower	Design a numerically-controlled robotic device which decorates an easter egg. By downloading or selecting a different file, motors spin the egg and draw patters such as NDSU on the egg.
8	Autonomous Car - Gas Leak Detector	Jake Glower	Design a device which can autonomously drive an small RC car. Add a program which has the car drive around, monitoring gas levels, and search to find the highest concentration. When found, radio back the GPS location of the gas leak.
9	The Pasture Feeder	Matt Rorda	Design a feeder for cattle. All cattle will be tagged with RFID. When a cow enters the feeder, food is delivered for the specific cow identified. When feeding, the weight of the cow, the time of day, and the time spent feeding will be logged. In addition, fly foot spray will be timed as well. All data should be accessible through a web site.
10	F150 Simulator	Jake Glower	Electric cars are quiet. Too quiet Design a device which measures acceleration and plays over the car radio the sounds an F150 truck would make with similar acceleration.