



FERRIS STATE UNIVERSITY

College of Engineering Technology

COMPUTER NETWORKS AND SYSTEMS

&

ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY

SENIOR DESIGN PROJECTS PRESENTATIONS

APRIL 16, 2021

FERRIS STATE UNIVERSITY

FERRIS FORWARD

Welcome to the 30th annual Senior Projects Presentations of the Computer Networks & Systems and Electrical/Electronics Engineering Technology programs at Ferris State University. This year the presentations are brought to you virtually.

These presentations represent a small portion of the project management process including planning, executing, monitoring, and now finally the closing phase. Each phase has involved many administrative duties from writing proposals; determining and handling risks, schedules, budgets, and change management requests; producing status reports, this presentation, and at the conclusion of this course delivering a final report.

Please enjoy the presentations today as each student highlights their particular discipline.

“Around here, however, we don't look backwards for very long. We "KEEP MOVING FORWARD". Opening up new doors, doing new things, because we're curious... and curiosity keeps leading us down new paths.” ~ Walt Disney

Thank you for tuning in today,

Steve Johnson, Professor

PRESENTATIONS

1. MYDORM

2. WOOD SPLITTER UPGRADE

3. MIDI CONTROLLER

4. AUTOMATED ICE FISHERMAN

MYDORM

The purpose of MyDorm was to create a system interface that enables dorm-residing students to view/change room information and settings remotely. Intended as both a practical and convenient solution, the system is interfaced via the intuitive MyDorm website which functions as a theoretical extension of the MyFSU web portal that all Ferris students are already familiar with. The MyDorm website provides configuration options and status information for a student's dorm room light, window, door lock, room temperature, and network status. The website communicates directly with a series of local wireless microcomputers that send, receive, and enforce status updates via their respective electrical controls. Furthermore, the system's incorporation of sensing techniques enables detection and reporting of local changes occurring outside of the system's control to translate to status updates on the MyDorm website. Such a two-way communicative system design, when combined with the MyDorm interface, effectively allows the system to offer the convenience of remote dorm-room configuration and monitoring in real-time.



Abdullah Abdulwahab Albohassan – was born in Al-ahsa, Saudi Arabia. He received his associate degree in Mechanical from Saudi Petroleum Service Polytechnic (SPSP) in 2013. Also, he is a senior in the Electrical/Electronics Engineering Technology program at Ferris State University and plans on graduating in the spring of 2021. Albohassan worked 3 years' experience as a mechanical technician at ISCOA Industries & Maintenance, the subsidiary of SIEMENS. It is a leading business-oriented company in the Gulf region in the field of repair, maintenance, operation, and manufacturing of large electrical and mechanical equipment including steam and gas turbines, compressors, transformers, and motors.



Jeffrey Rase – was born in Howard City, Michigan and later graduated from Rockford High School in 2017. Growing up, his interests mainly revolved around the outdoors and music. It was not until his senior year of high school, after attending Kent Career Tech Center’s year-long IT program, that his passion for electronics was realized. In his free time, he enjoys outdoor recreational activities, playing the piano and guitar, as well as more digital pursuits such as gaming, programming, and pc building. He is a senior in the Electrical Computer Network System program and, after his graduation in May of 2021, he plans to pursue a career focused on embedded systems development.



Elizabeth Silkovski – is a senior in the Electrical/Electronics Engineering Technology program at Ferris State University. Her curiosity for electronics and technology was sparked at a young age, which lead her to pursue a degree in EEET. Her concentration has been focused on Industrial Automation and Digital Programing with a passion for Troubleshooting. Born and raised in Traverse City, Michigan, she spends her spare time exploring the outdoors, out on Lake Michigan, and spending time with family and friends. She currently works at Eckhart, Inc. and hopes to continue her work in the field of automation and PLC programming after graduation.



Jeremiah Vanderkam – is from Hopkins, Michigan and graduated from Hopkins High School. He is majoring in Computer Networks and Systems, with a minor in Information Security and Intelligence, and plans on graduating in Spring 2021, where he will be seeking a job as a Network Engineer. Jeremiah has earned his CCNA and Security+, and enjoys all things technology, experimenting with networking, programming, automation, and security in his free time. Some of his projects include a realtime tool to filter advertisements out of network traffic, an automated network speed monitor, and a personal VPN. He also enjoys the outdoors, tacos, and passionately pursues Christ in and through all of his hobbies.

WOOD SPLITTER UPGRADE

To reduce time spent and modernize the classic splitter an upgrade was needed. The most amount of time is spent on splitting the large diameter chunks into widths that will fit through the furnace door. The hydraulic machine now has 'two-handed operation' for safety. This means that the operator's hands are needed to actuate the splitter thus keeping them out of the way of the moving components. Now with more of these functions being automated, a secondary safety is needed. In which the ram is stopped quickly, and the stored energy is dissipated. Then to decrease the time spent on processing, our machine takes advantage of modern hydraulics for precise speed control and outflow of accumulators. So, this project means to reduce the time spent on splitting and make the equipment safer.



Mohammed Bashaykh – was born in Jeddah, Saudi Arabia. A senior in the Electrical/Electronic Engineering Technology program. He received his Associates from Technical and Vocational Training Corporation TVTC-Saudi Arabia, and an associate degree in Industrial Electronics Engineering Technology from Ferris State University. He was married in December 2018 and is a new father. Before he came to the United States, he worked as a Maintenance Technician at YORK Johnson Controls-Saudi Arabia. He enjoys diving, fishing, Auto Repair, swimming, and traveling. He will be graduating in the spring of 2021. Muhammad worked in volunteer jobs and part-time jobs from the age of 15.



Andrew Dratz – was born in Holland Michigan graduated from Hamilton High school. After pursuing an associate in tooling and manufacturing technology from Grand Rapids Community. Then working as a CNC machinist and die designer. Returned to school in 2016 with a new interest for electronics. Currently finishing bachelor's in electrical engineering while working as associate engineer for Cascade Engineering. In weekends of free time enjoys driving his powersports or improving them.



Andrew Reiffer – Andrew Reiffer was born and raised in Grand Rapids, MI. During his time in high school, he was exposed to robotics and engineering fields at West Michigan Aviation Academy. Once graduated in 2015, he attended Grand Rapids Community College, graduating with an associate's degree in Electrical/Electronics Engineering Technology. With a hunger for more Andrew transferred to Ferris State University to pursue a bachelor's degree in Electrical/Electronics Engineering Technology, where he is currently a senior. Outside of his school life Andrew enjoys spending time outdoors, skiing, boating, camping, and working.

MIDI CONTROLLER

The purpose of this project is to recreate a MIDI (Music Instrument Data Interface) Controller using an Arduino Due. The Arduino was chosen so that the controllers re-programmability would be more accessible. The Arduino is programmed to show up as a MIDI class compliant device in the DAW and the inputs will produce musical sequences through it. The MIDI Controllers' design is made to be more customizable for each user and to better enable a physically disabled musician. The Arduino allows us to design a wide array of inputs, to also better enable any user to be more musically inclined. The user will be able to access and alter parts of the code to further increase the customizability and accessibility of a musical device such as control changes and drums.



Daniel Lanternier – is a senior at Ferris State university who is majoring in Computer Networking Systems and minoring in Computer Science. His hobbies include games, finding out how things work, and puzzles, so naturally he enjoys programming and making code do something cool or useful. Daniel is familiar with C++, Python, Assembly, and GML. Also, he has the know-how to manage a network and make computers talk with each other. For the project, he'll be working to write and troubleshoot the code for the Arduino so that it can communicate with its I/O and the DAW.



Anastasia Nikulina – was born in Novosibirsk Russia and moved to America when she was 10. Currently is a senior in the Computer Network, and Systems program at Ferris State University with a GPA of 3.4. She had her Internship at Honeywell working as a Cyber Engineer in Columbus, OH. In her spare time she enjoys working out, meditating, and making podcasts. Is self-teaching how to make electronic music and how to use a MIDI which is what she is working on creating in her senior project.



Jakob Roach – was born on November 18th, 1998, in Ann Arbor, Michigan. He graduated from Cedar Springs High School in 2016 and entered college for a degree in computer engineering. His college career has since become a pursuit of a degree in IT and network engineering, obtaining summer internships at Penske Logistics (the IT branch of Penske Corporation) and Hackley Community Care. He has participated in a FIRST robotics competition at GVSU in the spring of 2017, his team winning 4th place out of 36 teams in the event and has expressed a passion for both coding new programs and improving existing concepts. Nowadays, Jakob enjoys spending his free time with friends, as well as on video games, reading, and writing.



Jared Whipple – Whipple was born in Grand Haven Michigan. He is an Eagle Scout from Troop 246 in Grand Haven. He graduated from Grand Haven High School in 2016 then started at Ferris State University in the EEET program. He took a gap year and worked at R.A. Miller Ind. learning about antenna design and RF communications then returned for an internship in the Summer of 2020. He also worked for Ferris' IT/TAC as a Student Audio Visual Technician for over 4 semesters. He is going on his third semester of being the SLA Instructor for EEET-114 and 124. He enjoys playing with computers, working on his car, and building projects with his 3D printer.

AUTOMATED FISHERMAN

The purpose of the Automated Fisherman is to allow the everyday outdoorsman/woman to be able to catch a greater number of fish while not having to constantly monitor and hold their fishing equipment. The Automated Fisherman greatly reduces the odds of multiple complications occurring that are caused by human error, such as the likelihood of an improper hookset along with the chances of a line break during reeling. The Automated Fisherman also allows for handicap individuals to enjoy the sport of fishing as well, with its' low base and easy to use controls. This project incorporates a Programmable Logic Controller, Human Machine Interface, and a combination of proximity sensors and environmental condition detectors as well. Using a 24V motor the connected reel can both feed line out to a desired depth along with reel line in with very little human interaction, and all the vital information can be observed at any time on the HMI.



Nathan Allen – is a senior in the EEET program here at Ferris State University. I originally am from Big Rapids and both of my parents attended Ferris State as well. I earned my associate degree in Industrial Electronics Technology in 2019 and will graduate with a bachelor's degree in Electrical/Electronics Engineering Technology at the completion of my summer 2021 internship. Currently I am working a co-op position for Shape Corp. in Grand Haven and plan on going into the industrial controls industry after graduation. In my free time I enjoy disc golfing, mountain biking, and learning about the latest electronics hitting the market.

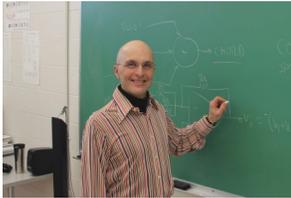


Riley Kutzli – grew up in Sparta, Michigan and graduated from Sparta High School in 2017. Growing up I always knew I wanted to be an engineer, but I was not sure exactly what field I would end up in. Here I am a senior in the EEET program at Ferris State University. After graduation I plan to work at Select Technologies in Rockford, Michigan where I completed my internship and was hired my sophomore year of college. I enjoy hunting, fishing, and anything outdoors.

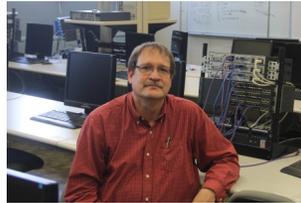


David Scharmer – is from Muskegon, MI, and graduated from Muskegon High School. I enlisted in the U.S. Navy as a nuclear machinist mate and served for 9 years. I am currently pursuing a Bachelor of Science degree in Electrical/Electronics Engineering Technology from Ferris State University. I am married with one daughter, and another on the way. In my free time I enjoy spending time with my family.

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