Spring 2022 C-Day Winners

Graduate Capstone

- **1-st Place: GC-149 S'eyed'Kick: AI Powered Reading Assistant and Translator** (Graduate Capstone) by Allen, Stacie P, Barnes, Jessica, Hill, Chenelle, Pope, Lauren, Adejuwon , Adetayo A
  Department: Information Technology
  Supervisor: Dr. Xie
  Presentation | Poster | More Information
- **2-nd Place: GC-155 Runbook Automation** (Graduate Capstone) by Gamini, Harshitha K, Paidi, Nireesh, Seelamanthula, Sai Keerthi, Batchu, Prakash, Birgul, Furkan
  Department: Information Technology
  Supervisor: Ying Xie (instructor), Matthew Pinkston (GTRI)
  Presentation | Poster | More Information
- **3-d Place: GC-166 Mobile Edge Computing for Traffic Management Mechanism using HAPS (High Altitude Platform Station)** (Graduate Capstone) Rayapalam, Chaitanya Lakshmi*; Kuntla, Gayatri Sravanthi; Kulal, Shalaka R
  Department: Information Technology
  Supervisor: Class Instructor - Dr. Ying Xie Project Owner - Dr. Sumit Chkravarty Project Advisor - Dr. Animesh Yadav
  Presentation | Poster | More Information

Undergraduate Capstone

- **1-st Place: UC-152 Posture Change in Immersive Experiences Using a Wearable Chair** (Undergraduate Capstone) by Prather, Mason T, Bodien, Daniel
  Department: Software Engineering and Game Design and Development
  Supervisor: Dr. Sungchul Jung
  Presentation | Poster
- **2-nd Place: UC-156 Total Health Telemedicine Application** (Undergraduate Capstone) Clifford, Thomas A*; Gooch, Mionne; Capparelli, Nicolas G; Thompson, Darren
  Department: Computer Science
  Supervisor: Dr. Ken Hoganson
  Presentation | Poster
- **3-d Place: UC-161 CyberSecurity Capstone** (Undergraduate Capstone) Silwal, Magan*; Duncan, Ryan; Cronnon, Evelyn; Weaver, Scott; Eid, Ihad
  Department: Information Technology

Supervisor: Dr. Lei Li, Prof. Donald Privitera
Presentation | Poster

Graduate Research

- **1-st Place: GR-167 Non-Invasive Glucose monitoring system- GlucoCheck** (Graduate Research) by Pola, Priyanka, Falaiye, Oluwaseyi
  Department: Information Technology
  Supervisor: Dr. Maria Valero De Clemente
  Presentation | Poster
- **2-nd Place: GR-164 Rule-based table parsing** (Graduate Research) by Stansbury, Joel
  Department: Computer Science
  Supervisor: Dr. Jiho Noh
  Presentation | Poster
- **3-d Place: GR-232 Accident Prediction using Big Data Analysis using Ensemble Learning** (Graduate Research) Mhatre, Jui*; Achuta, Sai Harshitha; Polavarapu, Nikhitha; Nagandla, Dhanush; Saribala, Chandana
  Department: Computer Science
  Supervisor: Prof. Dan Lo
  Presentation | Poster

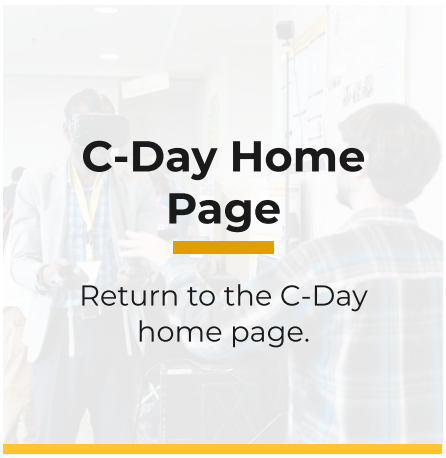
Undergraduate Research

- **1-st Place: UR-203 Subject Identification from Off-Angle Iris Image Using Machine Learning** (Undergraduate Research) by Chavarro, David E
  Department: Computer Science
  Supervisor: Dr. Mahmut Karakaya
  Presentation | Poster
- **2-nd Place: UR-191 Automated Image Colorization Through EfficientNet** (Undergraduate Research) by Cope, Troy W
  Department: Computer Science
  Supervisor: Dr. Mohammed Aledhari
  Presentation | Poster
- **3-d Place: UR-195 Replicating Touch With MQ Telemetry Transport (MQTT) And Circuit Python: A Case Study of Internet-of-Things (IoT) Application**)Undergraduate Research) Waymond, Damaris*
  Department: Computer Science
  Supervisor: Dr. Selena He
  Presentation | Poster

Spring 22 C-Day Program

Thursday, April 28, 2022

Location: Marietta Campus - Atrium (J) and Design 2 (I2) buildings



C-Day Home Page

Return to the C-Day home page.

Spring 2022 Winners

View the Spring 2022 C-Day winners.

Flash Session Presentation

Download the C-Day Flash Session Presentation.

TIME	EVENT
4:00 pm - 4:30 pm Atrium (J) building 1st & 3d floors	Student check-in: Atrium (J) building 1st floor lobby followed by set-up :Atrium (J) building3d floor (presenters only)
4:30 pm - 5:00 pm Atrium (J) building 1st floor lobby	Check-in judges, industry partners, Networking. Students, **bring your resume**.
5:00 pm - 5:35 pm Design 2 (I2) Auditorium	Welcome from the Dean Yenduri followed by Flash Session
5:35 pm - 6:20 pm **Atrium (J) building 2nd and 3d floors**	Judging of Student Projects Browsing
6:20 pm - 6:50 pm J-152 Atrium (J) building	Pizza and Networking. Students, **bring your resume**.

6:50pm - 7:00 pm Design 2 (I2) Auditorium	Recognition of Judges
7:00 pm - 7:30 pm Design 2 (I2) Auditorium	Presentation of Awards ◦ Best UndergraduateProject ◦ Best Graduate Project ◦ Best Undergraduate Research Project ◦ Best Graduate Research Project

Spring 2022 Presentations

Judges

Felipe Alequin - Security Operations Manager - Warner Bros. Discovery
Caroline Bracero - Wellstar Health Systems
Steve Cavanaugh - Retired - Retired PrintPack
Michelle Choi - Implementation Analyst - DataSeers
John Eidson - Alumni - Technology Consultant
Shilpi Ganguly - VP, IT & Cybersecurity - The Weather Group
Len Greski - Architecture Practice Lead - Leadingagile
Jonathan Green - Software Developer - Alumni/TVA
Andrew Hamilton - CTO - Cybriant
Kayla Heffron - Talent Acquisition - InComm
Wes Hogarth - Research Technologist II - GTRI
Cameron Johnson - Senior Business Information Security Officer - Alumni - Warner Media
Cutler Knupp - Haskell
Alan Lozano - SOC Manager - Cybriant
Colby Luther - Research Technologist I - GTRI
Matt Mackenny - GP
Keith McGreggor - Professor - GA Tech, School of Interactive Computing
Grayson McMichael - Technical Writer - DataSeers
Lloyd Middlebrooks - Alumni - Newell Brands
Sumaiya Farzana Mishu
Vivian Nguyen - Alumni - NYPIUA
Dami Ojo - Data Analyst - HoneyBaked Ham - KSU Alumna MSIT
Sahithi Reddy Nandyala - Software Engineer - NCR
Jason Rowe - GP
Dorren Schmitt - The Weather Group
Md Arabin Islam Talukder - Software Engineer - Alumni - WorkLlama
Keith Tatum - The Weather Group
Priyanka Velumani - Software Engineer - Alumni - NCR

Adam Wilkerson - HoneyBaked Ham
Vannel Zeufack - ETL Developer - Alumni - DataSeers

Rubrics and Acceptance Rate −

Best Project in Each Category Rubric

Undergraduate and graduate projects: scale 0- 10with 0representing "Poor" and 10representation "Exceeds Expectations"

- Successfully completed stated project goals and reported deliverables (0-10)
- Methodology/Approach: All required elements are clearly visible, organized, and articulated (0-10)
- Effective verbal presentation (0-10)
- Evidence of Rigor (0-10)
- Merit and Broader impact (0-10)

Games: scale 0 - 10 with 0 representing "Poor" and 10 representation "Awesome"

- TECHNICAL: Technically sound with appropriate visual & audio fidelity(0-10)
- GAMEPLAY: Engaging & Fun, with an intuitive UI. Rules of play are clear. Includes a win/lose state(0-10)
- ORIGINALITY: Sound, Art, Design, or Code(0-10)
- Evidence of Rigor (0-10)
- Merit and Broader impact (0-10)

Alumni's Choice Award Rubric

Alumni Judges will judge the Undergraduate Capstone projects to determine the “best” from those presented. Undergraduate Capstone Project titles start with the letters “UC –“ on their poster.

1. Team Approach: 20 pts (did the team work together effectively to meet goals)
2. Presentation: 20 pts (did the team sell the idea)
3. Use of Technology: 40 pts (is technology being used an effective way)
4. Feasibility/Impact for Business/Industry: 20 pts (doable/valuable/effective)

Academic courses undergraduate (e.g. capstones, games, innovative special topics projects, other course projects) (15) −

*** Project will be featured during the Flash Session**

- **UC-152 Posture Change in Immersive Experiences Using a Wearable Chair** (Undergraduate Capstone) by Prather, Mason T, Bodien, Daniel
  Abstract: The goal of this project is to develop methods to detect a user's posture in immersive experiences, particularly for standing position and sitting position. This will give developers a tool for changing a user’s

experience in relation to their current posture. For example, a user can walk to a car, sit down, and drive the car. Detecting this posture change will add a natural gesture-based trigger for making the experience more immersive.
Department: Software Engineering and Game Design and Development
Supervisor: Dr. Sungchul Jung
Topics: Games
Presentation | Poster

- **UC-153 Station 17** (Undergraduate Capstone) by Legg, Andrew, Miller, Linni, Byrd, Seth, Rigg, Benjamin, Maswanganye, Bonga
  Abstract: Station 17 is a classic style First Person Shooter, where you are sent to clear out a derelict space station on a foreign planet's facility. Utilize your archetypal weapons and handy grapple shot to take down all the creatures the hive mind can throw at you while navigating levels within the facility.
  Department: Software Engineering and Game Design and Development
  Supervisor: Dr. Michael Franklin
  Topics: Games
  Presentation | Poster

- **UC-156 Total Health Telemedicine Application** (Undergraduate Capstone) by Clifford, Thomas A, Gooch, Mionne, Capparelli, Nicolas G, Thompson, Darren
  Abstract: The Total Health Web Portal is a telemedicine application that allows users to orchestrate the process of a hospital visit without requiring anyone to leave their homes. The app assigns each user to 1 of 3 roles: client, doctor, or administrator. Clients are able to request appointments, upload documents, message their doctor, and join video calls for their appointments. The doctor may also message their clients and join video calls for their scheduled appointments. In addition, they may search through a list of their patients and dynamically add notes for each patient. Finally, the administrators have the responsibility of accepting/declining incoming appointment requests and managing accounts from within the database. The goal of the Total Health Telemedicine Application is to provide all participants with a way to effectively communicate and work in a single, convenient, and secure web portal.
  Department: Computer Science
  Supervisor: Dr. Ken Hoganson
  Topics: Software Engineering
  Presentation | Poster

- *** UC-158 Portable, To-Go, Security System** (Undergraduate Capstone) by Jelezarov, Luben, Varzari, Julia, Hixon, Zack, Noukimi, Marcelle, Al Bayati, Mohammed
  Abstract: Security is an element that every person on earth strives to attain. Having security of your home, family, and self is a challenge amongst the dynamic and unpredictable world. Security systems these days have done wonders in being able to secure a persons home and allow them to manage and react in case of an incident, however are rigid as they only secure your home, and once you leave, it's as if you're on your own again. Our device aims to bring the peace of mind and security of a home system with a person where ever they go. In the event of parking your car in a suspicious area? Set up the device and monitor your car via a livestream. Traveling and have to leave you bags unattended for a moment? Prop up the device and monitor on your phone. Our device allows for anybody to bring an extra set of eyes with them to be able to monitor their person or possessions, and even loved ones, all while using their phone with capabilities to react properly.
  Department: Computer Science

Supervisor: Dr. Ken Hoganson
Topics: IoT/Cloud/Networking
Presentation | Poster

- **UC-161 CyberSecurity Capstone** (Undergraduate Capstone) by Silwal, Magan, Duncan, Ryan, Cronnon, Evelyn, Weaver, Scott, Eid, Ihad
  Abstract: The purpose of this capstone was to form a cyber security team to help a small business, a restaurant, secure their server. As a team, we had to research any risks and generate a plan based on the information we found. We researched the best tools to use and configured them on to our server. In order to identify how secure our server was, a team was responsible to try to exploit the URL. It was our job to monitor the server for any potential threats/vulnerabilities.
  Department: Information Technology
  Supervisor: Dr.Lei Li, Prof. Donald Privitera
  Topics: Security
  Presentation | Poster

- **UC-172 Grizzly's Maw - Gameplay Trailer** (Undergraduate Capstone) by Harris, Allen J, Symone D. Reid
  Abstract: A brief gameplay trailer that includes a majority of mechanics that are currently implemented, and a voice over that explains the premise and appeal of the game. Gameplay video available here: https://drive.google.com/file/d/1bYP3Ef-tymRI4QvIQxoVWNwMvHJo86Ja/view?usp=sharing
  Department: Software Engineering and Game Design and Development
  Supervisor: Dr. Michael Franklin
  Topics: Games
  Presentation | Poster

- **UC-177 Day Easy Phone Application** (Undergraduate Capstone) by Birgili, Zeynep D, Lagares, Gabriel D, Martinez, Amadeus R, Perez, Luis A, Roby, Jeremiah D
  Abstract: DayEasy is a phone application that is designed to promote clean eating and workout habits by providing services such as a calendar, workout planner, hydration and calorie journal, pedometer, fasting timer, and a meal planner. The application will have the functions to: • The user will be able to create an account. • The user will be able to change their password when they forget it. This will be done by sending an email. • The user will be able to save their sign in credentials. • The user will be able to view their daily schedule. • The user will be able to create new tasks. • These tasks are repeatable. • The user will be able to add how much water they drink in oz/ml • The user can set a daily drinking goal. • The user will be able to see how many steps they have taken. • The user can set a daily step goal. • The user will be able to plan their workout by selecting various customized movements. • The user will be able to select a movement (possibly a GIF) and see information about it. • The user will be able to go to muscle option and select a muscle part they want to work on and plan their workout. • The user will be able to plan their meals by keeping a journal. This journal will include calories. • The user will be able to pick a customized meal plan based on dietary selections. • The user will be able to add up their calories. • The user will be able to set a daily calorie goal.
  Department: Software Engineering and Game Design and Development
  Supervisor: Dr. Yan Huang

Topics: Software Engineering
Presentation | Poster

- * **UC-185 GTRI: Analysis of Alternatives** (Undergraduate Capstone)
  by Coleman, Christopher, Kaur, Gurpreet, Duarte, Jonathan, Gamez Diaz, Erick, Foster, Samuel
  Abstract: The capstone project Analysis of Alternatives was where a group would research and test workstation deployment tools to see if they could fulfill the fifteen requirements that GTRI needs for a deployment tool. The project was broken down into four phases: planning, research, testing, documentation/recommendation. Planning phase was used to set up the pathway to follow to finish the project on time and meet every objective to the groups' best abilities. Then, in the research phase we used this phase to discover what three tools we would test. In the testing phase we tested three workstation deployment tools, to see if they could meet every requirement. Based on results from the testing phase we used this to help us come to a decision on what tool to recommend to GTRI. The Analysis of Alternatives capstone project, is a project in which a group will recommend a workstation deployment tool to GTRI based on their results in the research and testing phase of the project.
  Department: Information Technology
  Supervisor: Prof. Donald Privitera
  Topics: Enterprise Systems
  Presentation | Poster

- **UC-186 Plat-N-Run** (Undergraduate Capstone) by Holt, Alan J
  Abstract: For this project, I wanted to try and make a First Person game experience that had an extra layer of gameplay that many First Person experiences didn't have. With that, I added the function of letting the player throw out their own walls and therefore paths that they can make for themselves. Wall running, Characters and stats/achievements aid in the game loop of completing levels as fast as possible and seeing how well the player did to try and do better in another run.
  Department: Software Engineering and Game Design and Development
  Supervisor: Dr. Michael Franklin
  Topics: Games
  Presentation | Poster

- * **UC-188 IT MANAGEMENT DASHBOARD** (Undergraduate Capstone)
  by Kharel, Sam, Raheja, Robert, Hoganson, Kyle, Hooker, Jacob, Kim, Sky
  Abstract: This project lays the foundation for the continued collaboration of future students to build an open-source IT Dashboard through our sponsor at the Georgia Tech Research Institute. The goal is to work towards a functional dashboard that incorporates a complete toolkit for the management of day-to-day IT needs. Any company or individual should be able to obtain a copy of our project and format it to fit their needs. Our MIT License for the project will fall in line with these goals.
  Department: Information Technology
  Supervisor: Prof. Donald Privitera (Instructor) Mrs. Allison Boyle (Project Co-ordinator) Mr. Matthew Pinkston (GTRI Sponsor)
  Topics: Enterprise Systems
  Presentation | Poster | More Information

- * **UC-193 GoldMind** (Undergraduate Capstone) by Matos, Jacob D, Mazzoni, Roman M, Payne, Leroyia Y, Adams, DeVon

Abstract: A hand-drawn Rouge-lite game where you progress through procedurally generated rooms full of various enemies and bosses. Power yourself up by finding items in the Item Room, or buy yourself an upgrade from the Shop, if you have enough coin. Can you survive?
Department: Software Engineering and Game Design and Development
Supervisor: Dr. Michael Franklin
Topics: Games
Presentation | Poster

- **UC-194 Dream Catcher Combat Training** (Undergraduate Capstone)
  by Dodson, Ben D
  Abstract: Dream Catcher Combat Training is a challenge based game where the player will try go get the best score in 3 game modes across 3 maps. They'll swing, slash, jump, and dodge their way across each map on their way to get the best score they can.
  Department: Software Engineering and Game Design and Development
  Supervisor: Dr. Michael Franklin
  Topics: Games
  Presentation | Poster

- **UC-204 Locovents! Events in your Location.** (Undergraduate Capstone)
  by Basnet, Nrip S, Bodien, Daniel, Arundell, Andrew, McHale, Jackson, Miller, Ode
  Abstract: Locovents is the name of our android app-based project that will display to our users an interactive list detailing the local events going on in their area. Our goal for this project was to create a custom web scraper to display the any cool events that might be occurring in their respective area. This project was build using java and python along with android studios. With in the past 3 months we have worked rigorously to create a fully functional android app that scrapes the web and appropriately provides the user with relative information. This way our users will not have to look up any concerts or events that might be happening, all they would have to do is plug in their relative location.
  Department: Software Engineering and Game Design and Development
  Supervisor: Dr. Yan Huang
  Topics: Software Engineering
  Presentation | Poster

- **UC-223 GTRI: AOA** (Undergraduate Capstone) by Coffia, Damian G, Brooks, Elijah, Fleeman, Keegan, Richards, Sean
  Abstract: Our project focuses on analyzing alternative tools for workstation deployment using operating system imaging software. Our project conducts research on ten different tools available on the market, scoring each based on requirements given to us by a company. After evaluation, three tools are selected for implementation and testing. Once testing is concluded, our group will choose one of the tested tools to recommend for workstation deployment for the company by submitting a full hardware analysis detailing the steps taken to select the tool along with implementation steps for tool deployment.
  Department: Information Technology
  Supervisor: Prof. Donald Privitera
  Topics: Data/Data Analytics
  Presentation | Poster | More Information

- **UC-236 Energy Crisis 1994** (Undergraduate Capstone) by Prather, Mason T
  Abstract: Energy Crisis 1994 is an online multiplayer first-person shooter game. The format of the game is 4 versus 4 (with players or AI) in either King of the Hill or Payload competition. There are four playable characters at launch, each based on a unique role. The four roles are Tank, Assault, Recon, and Support. The game is inspired by Team Fortress 2, Overwatch, and Counter-Strike.
  Department: Software Engineering and Game Design and Development
  Supervisor: Dr. Michael Franklin
  Topics: Games
  Presentation | Poster

Academic courses graduate (e.g. capstones, games, innovative special topics projects, other course projects) (3) −

*** Project will be featured during the Flash Session**

- *** GC-149 S'eyed'Kick: AI Powered Reading Assistant and Translator** (Graduate Capstone) by Allen, Stacie P, Barnes, Jessica, Hill, Chenelle, Pope, Lauren, Adejuwon , Adetayo A
  Abstract: According to the Centers for Disease Control (CDC), roughly 12 million people in the United States above the age of 40 are visually impaired. In adults 18 years and older, visual impairment is one of the top 10 disabilities. It can have an enormous effect on one's independence and quality of life. Assistive technology through artificial intelligence (AI) can support the visually impaired in everyday life functions. Our application is specifically designed for reading text such as small print. After the user selects the language for translation out of 34 choices and takes a picture of the text with the app, the text is extracted from the image. The text is converted to speech and played to the user in audio format. The text is also enlarged and displayed on the screen. Overall, this app is a benefit to society through increasing the quality of life for the visually impaired.
  Department: Information Technology
  Supervisor: Dr. Xie
  Topics: Artificial Intelligence
  Presentation | Poster | More Information

- *** GC-155 Runbook Automation** (Graduate Capstone) by Gamini, Harshitha K, Paidi, Nireesh, Seelamanthula, Sai Keerthi, Batchu, Prakash, Birgul, Furkan
  Abstract: Runbook is common terminology used in every IT organization which is maintained in Excel for taking the components to production in a particular time frame after making an agreement with the business for the downtime of systems (Freeze Period). Runbook Automation is a web application for delivering and tracking deliverables to production. It acts as an interface between Infrastructure teams responsible for deployments and runbook coordinator, development teams, and Business Analysts. The application consists of a home page consisting of a Dashboard where the user can edit the profile, and other employee tracking details and timesheets. In Employee tracking, the details of the employees and their backgrounds are displayed. In Timesheets, the hours of the project and the runbook actions are displayed. In Access Management, different users are allowed to request access to perform daily activities. In Employee Performance, the feedback and achievements of the employer are shown. The Objective of the application is

to develop a web application using various technologies to bring all the stakeholders to a common page about the project execution and make them aware of top management activities ongoing in the organization. The Application will have an interface to tools for updating the status of Jobs in the application. The idea of the application will be provided to the project owner for approval before design and development. The scope of the project will include planning, design, development, testing, and documentation.
Department: Information Technology
Supervisor: Dr. Ying Xie
Topics: Software Engineering
Presentation | Poster | More Information

- **GC-166 Mobile Edge Computing for Traffic Management Mechanism using HAPS (High Altitude Platform Station)** (Graduate Capstone) by Rayapalam, Chaitanya Lakshmi, Kuntla, Gayatri Sravanthi, Kulal, Shalaka R
Abstract: Abstract MEC (Mobile Edge Computing) is a new paradigm to accelerate artificial intelligence (AI) applications by leveraging computing resources on the network edge, which can be used to improve intelligent transportation systems (ITS). HAPS is deployed in the stratosphere to provide wide coverage and strong computational capabilities. It is suitable to coordinate terrestrial resources and store the fundamental data associated with ITS-based applications. Performing task offloading and data caching at Roadside Units (RSUs) in a cooperative manner can reduce the heavy backhaul load and the retransmission of content downloading. Problem Statment In our project smart vehicles, Roadside Units (RSUs), and HAPS, are integrated to build a computation framework for ITS, where the HAPS & RSU's data library stores the fundamental data needed for the users (vehicles). We are analyzing, the computing offloading policy to minimize low-latency and high-bandwidth services minimize the network cost at the user equipment (UE) side, while satisfying the constraints of task offloading deadline, the cache capacity at HAPs, and the computing capability of MEC servers.
Department: Information Technology
Supervisor: Class Instructor - Dr. Ying Xie Project Owner - Dr. Sumit Chkravarty Project Advisor - Dr. Animesh Yadav
Topics: High Performance Computing
Presentation | Poster | More Information

Graduate Research (13) −

*** Project will be featured during the Flash Session**

- **GR-148 Effect of Vedic meditative practices on Heart Coherence: A scientific study using SmartHealth technology.** (Graduate Research) by Gopi, Sreekanth
Abstract:Vedic meditation techniques have been shown to improve well-being, mood, attention, mental focus, and stress tolerance in the past. Vedic rituals, meditations, and yogic breathing help in reducing the symptoms of mental disorders and their physiological effects. One of the most overlooked aspects of public health is mental health, and the costs of mental illnesses are highly underestimated. On a global scale, more than 25 percent of the population are affected by stress, anxiety, and depression disorders. Untreated

mental illness costs the United States up to $300 billion. Stress, a major cause of mental illness, affects all systems of the body as well, including the musculoskeletal, respiratory, cardiovascular, endocrine, gastrointestinal, nervous, and reproductive systems. Vedic practices, which improve Heart Coherence, have been shown to be useful in treating stress, anxiety, and attention issues in clinical research. Heart Coherence is a physiological state that indicates stress level. SmartHealth technology helps us measure Heart Coherence synchronously. It provides evidence of the practice and its effects on our internal state of mind. A pilot study was conducted among four participants to investigate a few chosen yogic meditation practices and its effects on their body by Heart Coherence. As they started practicing the meditations, positive feeling states rose that could be seen on the mobile app as a rise in Heart Coherence. When Heart Coherence increases, negative thoughts reduce leading to stress reduction. Among the various practices like Vedic rituals, Chakra and Marma meditation, Holotropic breathing, and KapalBhati breathing, it was found that Vedic Ritual was the most effective in raising and sustaining Heart Coherence. Moreover, previous studies show that breathwork improves Heart Coherence as well. Vedic meditation practices help raise Heart Coherence and improve mental and effectively physical health.
Department: Computer Science
Supervisor: Dr. Md Abdullah Al Hafiz Khan
Topics: Enterprise Systems
Presentation | Poster

- **GR-151 Performance Analysis and Review of Encrypted DNS Protocols** (Graduate Research) by Williamson, Matt
  Abstract: Data encryption has quickly become an essential service of the internet. When it was first developed, data encryption and privacy were not prioritized. However, as the internet has grown and globalized, ensuring data privacy has become a prevailing requirement for conducting all types of business over the internet. Since privacy was an afterthought in the early development of the internet, many technologies have been built on top of existing ones in order to rectify security holes inherent in design. One of the more recent areas where this is happening is Domain Name Resolution. Until recently, the mechanism of resolving domain names did not have any security or privacy functions built in. With the rise of big data and the never-ending thirst for more and more data, DNS resolution has been exposed as an area where data/privacy leaks were occurring. There are now competing mechanisms for encrypting DNS. I plan to explore two of the most common, DNS-over-HTTPS (DoH) and DNS-over-TLS (DoT). In particular, I plan to examine the performance of each method and compare/contrast them. However, performance alone can't be the ultimate identifier when comparing encryption methods. Therefore, I will also do a review of each method with the goal of determining how they function and where their strengths and weaknesses lie.
  Department: Computer Science
  Supervisor: Dr. Ahyoung Lee
  Topics: Security
  Presentation | Poster | More Information

- *** GR-164 Rule-based table parsing** (Graduate Research) by Stansbury, Joel
  Abstract: In this paper, we provide a rule-based algorithm for parsing out tabular data from images. Recent advances in Graph Neural Networks have provided significant improvement over previously attainable accuracy and still

outperform the best rule-based methodology. Nevertheless, light-weight pipelines, such as the model proposed here, have their utility in terms of ease of integration, low memory requirements, and no dependence on GPU availability. The proposed model achieves 22.3% accuracy on a subset of the PubTabNet dataset. The metric used to quantify accuracy refers to the ability to perfectly identify the number of column and row boundaries present in the image. Advantages over previous algorithms include relative invariance to hierarchical relationships and complete invariance to the presence of gridlines.
Department: Computer Science
Supervisor: Dr. Jiho Noh
Topics: Data/Data Analytics
Presentation | Poster

- **GR-167 Non-Invasive Glucose monitoring system- GlucoCheck** (Graduate Research) by Pola, Priyanka, Falaiye, Oluwaseyi
  Abstract: Diabetes is a metabolic disorder characterized by elevated blood sugar levels. Monitoring blood glucose levels on a regular basis is critical to maintaining balanced blood sugar levels. Unlike traditional methods where monitoring glucose levels is invasive and harmful, non-invasive glucose monitoring does not involve penetrating the human skin. In our research, we developed a non-invasive glucose monitoring device that does not require any blood sample. Our device is connected to Raspberry Pi that includes optical sensors such as a visible light laser and small camera. When a laser beam is directed towards human tissue, the prototype captures photos of the fingertip. By studying the images using the artificial neural network model, the absorption, reflection qualities, and analysis of the transportation of light across the finger can be used to estimate blood glucose concentration. As part of training and testing the neural network model, we are conducting experiments with 45 human subjects with IRB approval. We would be taking images of the fingertips and earlobes of these test subjects, associating the images with their corresponding blood glucose values, and training the neural network model with this image dataset. We would be evaluating the model's performance by testing it with new fingertip/earlobe images and validating the predictions. We created a mobile app that communicates with our Cloud InfluxDB database. Users can sign up for the app using their Facebook account or their email address. The user of the mobile application can see the most recent glucose estimation from our prototype. It's also set up to display data from prior measurements and graphically depict glucose changes over time.
  Department: Information Technology
  Supervisor: Dr. Maria Valero De Clemente
  Topics: IoT/Cloud/Networking
  Presentation | Poster

- **GR-175 Credit Default prediction of money borrowing companies using Pyspark framework** (Graduate Research) by KOTA, JITENDRA SAI, boyapati, mallika
  Abstract: Credit-lending companies have resorted to the use of Machine Learning algorithms in the recent past to predict the probability of default of a customer for future credit lending purposes. Most credit companies view this as a binary classification problem of predicting whether an individual would

default or not. Companies have been using models of Logistic Regression for a long time because of the explainability of the final feature set used in modeling. Explainability brings transparency to every stakeholder involved in the process. Other models like Neural Nets have achieved better accuracy scores, but the features generated by them are not easily comprehendible. By using the credit data of money borrowing companies collected by the credit bureau, Equifax over the last 10 years, we made use of the Pyspark Framework to come up with a model that can predict the reliability of a money borrowing company. After the data preprocessing phase, our predictors showed an accuracy of 97.73% using Logistic Regression and 98.58% accuracy using a Random Forest ensemble classifier. We were also able to identify a few predictors as the key performance indicators using the coefficients in Logistic Regression.
Department: Data Science and Analytics
Supervisor: Dr. Ramazan Aygun
Topics: Data/Data Analytics
Presentation | Poster

- **GR-181 Breast cancer patient survival prediction with clinical data and Computed Tomography (CT) image datasets** (Graduate Research)
by Mohammed, Malik Naik
Abstract: Breast cancer is one of the most common fatal cancers worldwide, with 12.5% of the new cases diagnosed in 2020. The Computed Tomography, commonly referred to as CT scan, is used to determine the breast cancer treatment and prognosis of the cancer as it is challenging to detect. Breast cancer is common in women, but sometimes can be seen in men as well. Although there are models to predict Lung Cancer using the Convolutional Neural Network or ConvNet (CNN) from the CT scans and clinical data, no such implementation has been applied to the CT scans of the breast cancer using the images as well as clinical data. The overall relative 5 year survival rate for breast cancer is about 90%. This means 90 out of 100 women are alive 5 years after they've been diagnosed with breast cancer. Currently, there is a need to accurately predict the survival and malignancy score for this type of cancer, to diagnose at the very early stage. This work develops a model to predict the survival outcome of the patient with the breast cancer and gives a survival score. Our model uses the Concordance Index (c-index) as the evaluation metrics and it achieved a c-index score of 0.635 on the test data (25% of the data) on the German Breast Cancer Study Group 2 dataset.
Department: Computer Science
Supervisor: Dr. Mohammed Aledhari
Topics: Artificial Intelligence
Presentation | Poster | More Information

- **GR-182 IoT Clusters Platform for Data Collection, Analysis, and Visualization Use Case** (Graduate Research) by Traore, Soin Abdoul Kassif Baba M
Abstract: Climate change is happening, and many countries are already facing devastating consequences. Populations worldwide are adapting to the season's unpredictability they relay to lands for agriculture. Our first research was to develop an IoT Clusters Platform for Data Collection, analysis, and visualization. The platform comprises hardware parts with Raspberry Pi and Arduino clusters connected to multiple sensors. The clusters transmit data collected in real-time to microservices-based servers where the data can be accessed and processed. Our objectives in developing this platform were to create an efficient data collection system, relatively cheap to implement and easy to deploy in any part of the world. Since we have completed the first part,

we are implementing a study case for a field used by the platform. Thus, we are implementing an environment monitoring technology base on weather data. For this study, the platform will collect real-time environmental data using sensors (Temperature, humidity, light and ultraviolet sensors, and other sensors). We are setting those sensors in relatively limited superficies due to resources problem. Next, we will use this data to find patterns in weather changes using Machine and Deep learning techniques since these environmental data come from a designated area. The main objective of this part is to find a weather pattern using collected data specific to this area. Data collected during this research and the IoT platform are available on campus for students to use for their class projects or future research. Currently, we are in the data collection process. We also evaluate the degradation and environmental effects on devices and sensors used. This study case is a needed step in the IoT Clusters Platform for Data Collection, Analysis, and Visualization research project. At the end of the project, the data collection framework will be efficient and cost less.
Department: Computer Science
Supervisor: Dr. Maria Valero
Topics: IoT/Cloud/Networking
Presentation | Poster | More Information

- ***GR-183 Deep Learning Search Engine** (Graduate Research) by Mohammed, Malik Naik, Atmakuri, Madhusudhan Rao, Kamgaing, Yves Junior Kwame, Gandi, Sai Charan
Abstract: Deep Learning Information Retrieval (IR) is a booming area of research. Research in this field focuses on retrieving the most relevant search results based on the meaning of the search result, not just the keywords. The state-of-the-art technologies generally involve taking existing deep neural networks (such as Universal Sentence Encoder, or Google's BERT), and training them to rank search results. However, some search engines make use of text matching algorithms (like Best Match 25). These algorithms work by taking into account the term frequency and other word patterns and work surprisingly well. The most common problem when it comes to Machine Learning is over-fitting. Even if the model gives better search results for programming-related questions, that doesn't mean that it'll work for searching the research articles. Generally, machine learning-based models are often slow and not scalable. In this project, we tackle all these problems by using the deep learning networks and approximate nearest neighbor search to implement the search engine that accurately ranks the search results based on the given query with a rapid and scalable solution. This model accepts not only text as input but also images as input. The image data is processed through the Image Captioning model that generates the text. This work uses the 200,000 Jeopardy! Questions and MS COCO datasets.
Department: Computer Science
Supervisor: Dr. Md Abdullah Al Hafiz Khan
Topics: Artificial Intelligence
Presentation | Poster | More Information

- **GR-190 DRL-FHSS: Dynamic Reinforcement Learning based Frequency Hopping Spread Spectrum Algorithm for Maximizing Data Rate and Minimizing Collision in Edge-enabled LoRaWAN** (Graduate Research) by Mhatre, Jui

Abstract: The Last decade saw new advances in LoRaWAN for IoT devices. Recent research in this field is as made it a game-changer for the IoT world. Lora, owing to its ability to establish a long-range communication using low power, has proved upper hand over its counterparts such as Wifi, Bluetooth, or cellular network. LoRa uses much lower bandwidth and as a result, network and power demands reduce. LoRa is suitable for short and periodic communications. But due to lower bandwidth and consequently lower transmission rates and low data volumes, it is not suitable for real-time communications. Frequency-hopping spread spectrum(FHSS) helps to rapidly switch frequencies and occupy larger spectral bands and increase overall data rate and throughput. It is observed that LoRaWAN defines 11 channels but uses only 3 channels frequently, thus keeping the other 8 channels underutilized. If all channels were utilized, the transmission rate would increase multifold. We have proposed a Dynamic approach, Reinforcement Learning-based Frequency Hopping Spread Spectrum (DRL-FHSS), a frequency hopping generation algorithm, to widen the occupancy of the spectral band. Our algorithm keeps a check on the frequency of used channels, overutilized and underutilized frequencies, and generates a strategy that allocates time slots and frequencies for all registered IoT devices in the network. DRL-FHSS learns its strategy based on the previous bandwidth utilization ratio. We introduce an edge-enabled LoRaWAN architecture that delegates the task of frequency hopping strategy generation to the edge server. Further, edge servers also notify transmitters and receivers in the network about the frequency hopping sequence. This also reduces the collision in the network since each transmitter is aware of busy frequencies in the network. Thus DRL-FHSS helps to improve throughput by increasing the transmission rate and lowering collision.
Department: Computer Science
Supervisor: Dr. Ahyoung Lee
Topics: IoT/Cloud/Networking
Presentation | Poster

- *** GR-196 Automatically Improve Writing for Research Papers Using Transformer Based Deep Learning** (Graduate Research) by Settisara Janney, Srivarna
  Abstract: Research papers are generally required to be written in English. It is quite a challenge for non-English speaking researchers to write high quality research papers. Our research focuses on designing, implementing and experimenting with novel transformer based deep learning strategies that can automatically improve the quality of writing for research papers in different domains.
  Department: Information Technology
  Supervisor: Dr. Ying Xie
  Topics: Data/Data Analytics
  Presentation | Poster

- **GR-210 Detection of Small Traffic Signs Using Image Super Resolution** (Graduate Research) by Rathgamage Don, Duleep
  Abstract: In this study, we propose a novel method to detect small traffic signs that appeared in dashboard camera images. Our method is a framework consisting of the following three distinct algorithms. Grouping Window, Super Resolution Generative Adversarial Network (SRGAN), and a two-stage cascade classifier. Potential regions of interest (ROI) are extracted with Grouping Window which is a sophisticated modification of the traditional sliding window technique. The ROI are upsampled and enhanced using SRGAN. Then

the traffic signs among high-resolution ROI are detected and identified by the two-stage cascade classifier of which the first stage filters the ROI that do not contain traffic signs and the second stage classifies the ROI that contains traffic signs into respective classes. The proposed method is capable of detecting traffic signs in the 5-8 square-pixel range. The detection of small objects in this square-pixel range is not generally addressed by state-of-the-art frameworks such as R-CNN and YOLO. We trained our method by using the German Traffic Sign Recognition Benchmark dataset (GTSRB) and tested it on random dashboard camera images containing small traffic signs. The experimental results on 15 random dashboard camera images show that our baseline model localizes 10 of the 23 small traffic signs belonging to the aforementioned pixel range and produces 70 false positives in total. Also, it classifies only one of the detected traffic signs correctly into 43 classes. We plan to improve our method by using image denoising techniques and comparing results.
Department: Computer Science
Supervisor: Dr. Mohammed Aledhari
Topics: Artificial Intelligence
Presentation | Poster

- **GR-214 Extracting Human Factors from Goods to Person Order Picks** (Graduate Research) by Norkham, Alan
  Abstract: This project aims to extract the Human Factors (HF) from Goods to Persons Order Picks (OP). We used live data from a known functioning site. The data was then cleaned and visualized. After many different approaches, a hypothesis was formed. We used a deterministic approach to the data and applied Time Series Analysis to an Auto Regression Model. The predicted results were yielded slight, but major differences in the initial visualization.
  Department: Computer Science
  Supervisor: Dr. Jiho Noh, Ph. D. (Academic) Dr. Thomas Potrusil (Industrial)
  Topics: Artificial Intelligence
  Presentation | Poster

- **GR-232 Accident Prediction using Big Data Analysis using Ensemble Learning** (Graduate Research) by Mhatre, Jui, Achuta, Sai Harshitha, Polavarapu, Nikhitha, Nagandla, Dhanush, Saribala, Chandana
  Abstract: Many country-wide internal roads and national highways have dim lights or no street lights all over the world. We usually observe some turns on roads more prone to accidents than other places. In our paper we used Logistic Regression and Decision Trees together build an Ensemble learning for predicting these accident zones. For validating the results, five evaluation metrics as Accuracy, Precision, f-measures, Re-call, and Area under the curve are used. State of the art model for the US accident dataset gives F1 a score of 57%. We are implementing using ensemble learning wherein logistic regression gives an F1-score of 53%
  Department: Computer Science
  Supervisor: Dr. Dan Lo
  Topics: Data/Data Analytics
  Presentation | Poster

Undergraduate Research (4) −

*** Project will be featured during the Flash Session**

- **UR-191 Automated Image Colorization Through EfficientNet** (Undergraduate Research) by Cope, Troy W
  Abstract: Automatic Image Colorization is the procedure of transforming a gray-scale image into a colored image without any human intervention. This field is highly researched and strongly applicable to the real world due to: historic importance, data generation/augmentation, and human satisfaction. The main objective of this research is to develop an artificial intelligence feature extraction method that implements color into a gray-scale image. To solve this problem, I relied on transfer learning through the EfficientNet model. The problem was treated in multiple parts, those being: the processing of images into features, feature extraction using the model, and then colorization via the luminosity channel. My model outperformed the base model marginally but saved vastly on the time constraint even within my limited resources. As stated in the baseline paper, the implementation of EfficientNet generates colored images without fail. However, a more complex model, as well as an even more complex cost function, is required to truly evaluate automated image colorization.
  Department: Computer Science
  Supervisor: Dr. Mohammed Aledhari
  Topics: Software Engineering
  Presentation | Poster

- **UR-195 Replicating Touch With MQ Telemetry Transport (MQTT) And Circuit Python: A Case Study of Internet-of-Things (IoT) Application** (Undergraduate Research) by Waymond, Damaris
  Abstract: This project investigates how haptics is currently being used to enable remote intimacy. Specifically, I attempt to use the MQTT protocol, along with wi-fi/BLE-enabled hardware running on Circuit Python, to replicate a kiss in real-time. Further, the lack of apps and/or tech that's inclusive the those who feel socially isolated but still yearn for intimacy served as motivation for this research. Primary methods included sentiment analysis done using the Twitter API along with the Textblob Python library based on queries including strings like "hickey" and "sensitive neck." Moreover, secondary research led us to Kissenger: a product by Emma Y. Zhang that serves as an example of how IoT is currently being used to address remote intimacy. This device, however, doesn't incorporate pressure/vacuum. My prototype will, as well as enable the transmission of pressure data sans an iPhone, thus adding value to the haptics space. Additionally, setup guides and sample code from Adafruit.com were the basis for constructing the device. Their submodules were integral in composing logical code that handles connecting with and publishing/subscribing data to feeds on io.adafruit.com, Adafruit's free pub/sub platform. Moreover, the hardware being used in this project includes: two microcontrollers equipped with a wi-fi enabled esp-32 chip, two I2C-capable pressure sensors, two 4.5V DC motors, solenoid air valves and the necessary drivers. Soldering was also required to connect headers to the sensors. But thanks to the QWIIC Connect feature on the Feather S2 mcu, I was able to simply plug in the wires coming from the sensor with little soldering, overall. Ultimately, this project is based on the hypothesis that two wi-fi/BLE-enabled devices can transmit/receive pressure data between one another with the help of a cloud broker. Doing so will mimic the vacuity of kissing and be a step towards the future of telepresence.

Department: Computer Science
Supervisor: Dr. Selena He
Topics: IoT/Cloud/Networking
Presentation | Poster

- **UR-203 Subject Identification from Off-Angle Iris Image Using Machine Learning** (Undergraduate Research) by Chavarro, David E
  Abstract: This research paper investigates the use of the Squeezenet Machine Learning Neural Network to identify a subject from off-angle iris images. Squeezenet is a convolutional neural network (CNNs) which contains 50x lesser parameters than Alexnet. It allows the model to be trained on the dataset on devices that have limited resources. The training dataset contains Iris images where the gaze angles are at 0 degrees, while the validation dataset uses off-angle images.
  Department: Computer Science
  Supervisor: Dr. Mahmut Karakaya
  Topics: Artificial Intelligence
  Presentation | Poster

- **UR-215 Cryptanalysis of Caesar Cipher with Answer Set Programming** (Undergraduate Research) by Omisore, Jonathan
  Abstract: Answer Set Programming is an emerging paradigm in logical and declarative programming that finds all possible solutions to a particular logic problem given certain constraints and is widely used in AI for knowledge representation and reasoning. Answer Set Programming has been applied for the cryptanalysis of the Caesar cipher. Using Answer Set Programming, words have been both encrypted and decrypted with the Caesar cipher through AI knowledge representation and reasoning. It is shown that Answer Set Programming is viable for the field of cryptography.
  Department: 0
  Supervisor: Dr. Seokjun Lee
  Topics: Security
  Presentation | Poster

Exploratory Projects (6) −

*** Exploratory Projects for C-day are not judged. This category is reserved for students who are still taking foundation courses (e.g. CSE 1321, IT 5443), and for teams with more than 5 members.**

- **eGC-171 Source Localization of Electroencephalogram (EEG) Waves with Convolutional Neural Network** (Exploratory Project) by Veeravenkatappa, Suma, Pola, Priyanka, Nambanoor Kunnath, Anupama, Macherla, Jyothshna, Ghandu, Bharath Reddy, Chakravarty, Sumit, Yadav, Animesh
  Abstract: This project investigates the use of deep learning for Heterogeneous robotics trajectory and communication planning which will be assisted by prioritizing by electroencephalogram (EEG) waves for the purpose of improvisation by different emotional responses of human subjects. The Convolutional Deep Learning model istrained to recognize EEG reading corresponding to different usage of the heterogeneous robots which are then used as an additional(imitation) input to the Reinforcement Learning based robotic operation. This project mainly focuses on delivery drone and aerial base station drone operations from source to destination considering energy

efficient path, shortest distance, charging points, and to avoid collisions. This investigation is also assessed if near real-time performance can be achieved for such approach. Such a system can be useful in many domains including unmanned driving, drone air corridor etc.
Department: Information Technology
Supervisor: Capstone Instructor : Ying Xie Project Mentor : Sumit Chakravarty, Animesh Yadav
Topics: Artificial Intelligence
Presentation | Poster | More Information

- **eUC-160 VirtuDoc - CS4850/01 - Group 5A** (Exploratory Project) by Pasencia, Julian A, Pruitt, James, Araujo, Anthony, Zhu, Bennett, Stancil, William L, Umar, Mohammad, Zenn, Joshua M
  Abstract: VirtuDoc is a web application that allows patients to communicate with their doctors virtually. Once A patient has logged in or created an account, they can schedule a virtual appointment based on a time, symptoms, and doctor. VirtuDoc will also give the ability to patients to connect with their doctor over text chat leading up to their appointment. Virtual web-conferencing connects patients with doctors at the scheduled time of appointment. Additionally, doctors are capable of linking and displaying video content to patients based on the situation. Patients will also have access to records including post appointment information displaying the patient medical history and current/past prescriptions. VirtuDoc is fully HIPAA-compliant. All connections across services in development and production utilize TLS and authoritative certificates to ensure HIPAA compliance. Our web app itself is built inside the Java spring framework and uses vanilla JavaScript and CSS3 on the front end. GitHub Actions and Heroku CI automatically deploy our web service as a Docker image to the Heroku cloud for deployment.
  Department: Computer Science
  Supervisor: Dr. Ken Hoganson
  Topics: Software Engineering
  Presentation | Poster | More Information

- **eUC-168 Telemedic Application** (Exploratory Project) by Jones, Yasha, Schneider, Nate, Nguyen, Martin, Fisher, Kate, Thapa, Shailesh, Lin, Mike, Huynh, Anh My
  Abstract: The project is a web portal for doctors and patients that can store chats, reports, requests for appointments, and host video calls. It is built in JavaScript and utilizes ReactJS, Zoom, NPM, and other third party softwares to run. This project is an undergraduate capstone project.
  Department: Computer Science
  Supervisor: Dr. Ken Hoganson
  Topics: Enterprise Systems
  Presentation | Poster

- **eUC-192 SmartChoice - Online Smart Retail for Food Delivery** (Exploratory Project) by Rios-Burrows, John M, Megginson, Samuel J, Shastry, Malvika, Shastry, Bhumika, Shadare, Isaac T, A, Munir, Waymond, Damaris
  Abstract: Our product is a website which extensively compares and analyzes food delivery fees from the top 3 online food websites which are GrubHub, UberEats, and Postmates and gives the best option for customers for their satisfaction. This encapsulates the idea of the Internet of Things in smart retail

because we are building a technology service that helps users get the best food delivery deals in a trillion dollar industry by improving user experience as well as saving time, energy, and costs in this busy world. Financial motivation is the leading incentive for customers and clients to use our website as it gives the best option in any location where you search for your restaurant as long as it's available on the food delivery websites. Since delivery fees vary greatly depending on the location, our website gives the foremost reason for customers to use it whenever they want any kind of food from fine dining restaurants to fast food places like McDonalds and Burger King. Materials and Methods Information from food delivery websites of Grubhub, Ubereats, and Postmates Python's Selenium packages for the web scraping and analytics to compare the different food delivery websites HTML, CSS, and Bootstrap for the graphical user interface and design of our website Javascript and PHP for the web requests and the integration between the different parts of our website
Department: Computer Science
Supervisor: Dr. Ken Hoganson
Topics: Data/Data Analytics
Presentation | Poster

- *** eUC-209 Remote Presence Robot** (Exploratory Project) by Goeden, Andrew, Zemzem, Hajar, Ahmad, Pamir, Dang, Tam M, Newson, Aaron, Song, Anna, Rehaan, Mohammed
  Abstract: A motorized robot that has a screen, microphone, webcam, and speaker to perform video chat capabilities and the ability to move about the environment. The robot will have customization functionalities to add a personal flair for the remote user. A remote user can access a web dashboard to control the robot as if they were in person. This will be good for sick or handicapped people. In addition to the standard web dashboard, we can incorporate a customization aspect for the host user to add filters to their image or stream audio (background blur, soundboard playback, etc.) The robot will be controlled by a remote user via a keyboard or controller to control its movements and interact with its surroundings.
  Department: Computer Science
  Supervisor: Dr. Ken Hoganson
  Topics: IoT/Cloud/Networking
  Presentation | Poster

- **eUR-159 A Systematic Literature Review on Dark Web** (Exploratory Project) by Sobhan, Shahriar, Williams, Timothy, Mathew, Edwin, Rodriguez-Cardenas, Juanjo, Wright , Jack, Hossain Faruk, Md Jobair,
  Abstract: The dark web is often discussed in taboo by many who are unfamiliar with the subject. However, this paper takes a dive into the skeleton of what constructs the dark web by compiling the research of published essays. The Onion Router (TOR) and other discussed browsers are specialized web browsers that provide anonymity by going through multiple servers and encrypted networks between the host and client, hiding the IP address of both ends. This provides difficulty in terms of controlling or monitoring the dark web, leading to its popularity in criminal underworlds. In this work, we provide an overview of data mining and penetration testing tools that are being widely used to crawl and collect data. We compare the tools to provide strengths and weaknesses of the tools while providing challenges of harnessing massive data from dark web using crawlers and penetration testing tools including machine learning (ML) techniques. Despite the effort to crawl dark web has progressed, there are still rooms to advance existing approaches to combat the ever-changing landscape of the dark web.

Department: Information Technology
Supervisor: Dr. Hossain Shahriar
Topics: Security
Presentation | Poster