Department of Electrical Engineering and Computer Science



6<sup>th</sup> Annual Capstone Design Day Friday, April 12, 2024 Sponsored by the ATT Corporation

At

Howard University INNOVATION CENTER Mackey Building, 2336 Sixth Street, Northwest Washington, DC 20059



## **Keynote Speaker**

### **Kelvin D. Sims** Senior Vice President of Bechtel Corporation



Kelvin Sims is a Senior Vice President of Bechtel Corporation. Since joining Bechtel as a college hire in San Francisco, Kelvin has held various positions of increasing responsibility on environmental, petrochemicals, mining, and energy projects across the globe. He's a proven leader, helping customers transition to meet clean energy demand and expand multi-modal transportation options around the world.

He has led the U.S. region responsible for its portfolio of power, communications, aviation, rail, and civil infrastructure projects. His team successfully developed and completed the Cricket Valley Energy Center in New York, as well as the Southfield Energy Center in Ohio, by implementing the most advanced and sophisticated technologies to convert natural gas to electricity. Also under his leadership, Bechtel completed the 695-megawatt Keeyask Hydropower Generation Station, advanced Edmonton's Valley Line – Light Rail Project, and secured the Metrolinx' Delivery Partner contract for the new 15.6-km Ontario Line.

Kelvin has worked on projects in seven countries and in the corporate office. He also had the distinct honor of working alongside Bechtel's chief executive officer and chief operating officer as their executive assistant from 2014 to 2016. His Bechtel experience covers assignments in every Bechtel business unit; this has provided him the global experience in project execution and management to deliver the most complex projects of our generation. Kelvin holds a bachelor's degree in marketing with a minor in international business from California's San Jose State University. He also serves on the advisory board for Howard University's School of Business and College of Engineering and Architecture.

## **Schedule of Activities**

8:30 am - 9:00 am	Registration and Breakfast
9:00 am – 9:15 am	<b>Welcome and Overview</b> Dr. John Anderson, Dean College of Engineering and Architecture
9:15 am – 3:00 pm	Capstone Design Presentations

# Session 1: Innovation Center – Electrical & Computer Engineering Projects (Parallel session)

9:15 am – 9:30 am

- **Team 1:** D2
- **Project Title:** Deliveroid Enhancement
- Mentor/Advisor: Charles Kim
- **Team Member(s):** Mohammed Akinbayo (CPE), LaDelwyn Mealey (EE), Anthony Berry (EE)
- **Project Goal:** To add on further enhancements to the deliveroid bot, including automated driving capabilities and computer vision.
- **Problem Statement:** The current robot is not able to drive automatically or detect/avoid obstacles which could lead to damage to the robot. The approach to this problem is to equip the robot with cameras and program in obstacle avoidance algorithms. This will allow the robot to drive on its own smoothly and avoid obstacles. The competitor to this approach would be to use motion sensors instead.

9:30 am – 9:45 am

- Team 2: PCC
- **Project Title:** Photonic MicroCavities with High-Q Resonances in PIC waveguides
- Mentor/Advisor: Eric Seabron
- **Team Member(s):** Reanna Jones (CpE), Dequane Nealy (EE), Johan Milele (EE), Brandon Sierra (CpE)
- **Project Goal:** Develop several unique microcavity PIC devices, and catalog strong modes to optimize NMC waveguide designs.
- **Problem Statement:** Inside photonic integrated circuits, microcavities, also known as waveguides, have a very simple design but constitute one of the largest components. Our approach involves developing several unique microcavity PIC devices designs, and cataloging strong modes to optimize. The benefit of this design is an increase in figures of merit including enhancement of light propagation and a clearer signal (1 or 0) for computing. An increase in these figures of merit for our design would make PICs more useful in devices that are sensitive to signals like sensors.

9:45 am - 10:00 am

- Team 3: Photon2
- **Project Title:** Phase Change Photonic Circuit

- Mentor/Advisor: Eric Seabron
- **Team Member(s):** Juwon Wharwood (CpE), Sabien Sykes (EE), Goodness Atanda (CpE), Victor Iyke-Osuji (CpE)
- **Project Goal:** To design a working phase change photonic system
- **Problem Statement:** Phase change systems are large with unpredictable delay issues. Therefore we propose the design of a smaller system while accounting for the longest possible delay during the design process. This device will maintain the benefits of a regular phase change system, such as high system responsiveness and power. While smaller systems sacrifice some power, cost of the overall system are reduced making it more appealing for consumer use in new avenues.

10:00 am - 10:15 am

- Team 4: UAV
- **Project Title:** Drone Competition
- Mentor/Advisor: Danda Rawat
- **Team Member(s):** Adebola Babatunde-Lawal (CpE), Emmanuel Igban (EE), Philips Akinbami (EE), Lauren Dewberry (EE)
- Project Goal: To build/design a drone that conforms to competition guidelines
- **Problem Statement:** People need to access moving ground objects with the use of an autonomous flying drone. We have come to a few conclusive ideas that would allow the drone to make autonomous decisions in determining who is an ally or an enemy on the ground level. Customers will use drones to perform tasks in dangerous environments for military use in targeting enemies from afar. Our project will allow people to access environments that could pose threats to them, which will allow them to avoid injuries/harm.

10:15 am - 10:30 am

- Team 5: UGV
- **Project Title:** Unmanned Ground Vehicle (Drone Challenge)
- Mentor/Advisor: Danda Rawat
- **Team Member(s):** Ernest Olopoenia (EE), Teminijesu Oyedele (CpE), Chidi Onyekwelu (EE), Oghosa Osaghae (CpE)
- **Project Goal:** To build/design an unmanned ground vehicle that conforms ro competition guidelines
- **Problem Statement:** The ground vehicle should be able to autonomously navigate through a predefined course, recognize and avoid obstacles in its path can communicate with a drone. We looked into adding features such as a GPS module, obstacle detecting sensors on each side of the vehicle, and Wi-Fi or Bluetooth modules. These features can help ensure a vehicle that always takes optimized routes, prioritizes a safe and smooth operation all while communicating and working with a drone. The vehicle uses the selected optimized routes, data from the sensors and drone to ensure it reaches its destination using the quickest available route, while avoiding any obstacles on the way.

10:30 am – 10:45 am

- Team 6: SLAM
- Project Title: Simultaneous Localization and Mapping (SLAM)
- Mentor/Advisor: Eric Seabron

- **Team Member(s):** Ahmad Abdur-Rahman (CpE), Karci Gibson (EE), Ayron Fears (CpE), Alayen Pratt (CpE), Robert Jones (CpE)
- **Project Goal:** Implementation of SLAM algorithm on an autonomous vehicle
- **Problem Statement**: We aim to introduce a new standardization of autonomous vehicular design using the ORB SLAM-2 algorithm on a Raspberry Pi and FPGA. Our implementation will drastically improve processing and executable timing in addition to SWAP-C-related trade-offs and overall human safety. It will further address the need for a hardware-centric design to optimize the precision, efficiency, and navigation that is constrained by software-based designs. Our approach will be able to map its environment at the necessary speed for commercial driving because of its hardware-driven design that utilizes principles such as pipelining in its operation.

10:45 am – 11:00 am

- **Team 7:** Power
- **Project Title:** Power Integrity Evaluation System
- Mentor/Advisor: Su Yan
- **Team Member(s):** Anu Upadhyaya (CpE), Joanne Ukawuilulu (EE), Hridweek Karki (CpE), Kemar Jordan (CpE)
- **Project Goal:** Design a system to measure power voltage fluctuation and power distribution network noise.
- **Problem Statement:** Mitigating Power Delivery Network (PDN) noise is essential for efficient power distribution and to ensure proper functioning of electrical systems present in modern electronic devices. Our approach is to design a power delivery network for a common circuit found in modern electronic devices and a power integrity tester for that circuit, then test, simulate, and fabricate PCBs for it. Our design ensures proper identification and evaluation of different noises in the power delivery network of the specific circuit thereby resulting in optimal power integrity for the system. It's a better evaluated study of the specific circuit with a precise validation system for debugging that will be beneficial to other engineers while incorporating that specific circuit to other complex systems.

### Session 2: Innovation Center - Computer Science Projects (Parallel session)

9:15 am – 9:30 am	Team 1: AWS Minority Business Project 1
	Project Title: AWS Minority Business Project 1
	Faculty Advisor:
	Team Member(s): Amir Bredy, Christian Nicolas,

Ryan Jingwi, Ali Abdus-Shakoor, Geoffrey Stewart **Problem Statement:** Minority-owned businesses are vital for the economic and social wellbeing of minority communities and the nation as a whole. However, many minority-owned businesses face challenges such as lack of visibility, access, and support from potential customers and partners. As a result, many customers who want to support minority-owned businesses may not be able to find them easily or conveniently. This creates a gap between the supply and demand of minority-owned businesses, which limits their growth and impact. **Project Ceal:** Our web (mobile and will bridge this gap by matching prospective customers

**Project Goal:** Our web/mobile app will bridge this gap by matching prospective customers to existing minority-owned businesses. Our app will allow customers to find a business via multiple methods, such as proximity, keywords, image, voice, or recommendations. Our app will also enable customers to rate, review, and share their experiences with minority-owned businesses on social media. Additionally, our app will allow business owners to register and

claim their businesses on our platform, and provide them with various tools and resources to enhance their visibility and performance. Our app will leverage the AWS Minority Business project to provide a secure, scalable, and reliable solution for our users.

9:30 am – 9:45 am **Team 2:** Distracted Driver Project 1 **Project Title:** Distracted Driver Project 1 **Faculty Advisor:** Dr. Todd Shurn **Team Member(s):** Danielle McIntosh, Ujjwal Adhikari, Jeremiah Lewis, Prem Raj Oli

**Problem Statement:** The escalating crisis of distracted driving represents the most significant threat to road safety in the United States today. With the widespread adoption of smartphones and the increasing prevalence of digital distractions, drivers are more frequently engaging in risky behaviors such as texting, browsing, and using apps while driving. This surge in distracted driving has led to a stark increase in traffic accidents and fatalities. In 2017, cell phone use while driving was linked to approximately 1.5 million crashes in the USA, emphasizing the urgent need for effective interventions. The DC Driver app aims to address this issue by providing drivers with feedback on their driving behavior, including scoring for harsh maneuvers and distractions, to encourage safer driving practices. **Project Goal:** The success of this distracted driving app hinges on its ability to effectively monitor and improve driver behavior, provide real-time alerts, reduce accident rates, and ultimately contribute to safer roadways. This app should silence notifications from 'distracting applications' (such as social media and messaging apps) while the user is driving, sound an alarm if the user is exceeding a speed limit, flash a bright light on the user's device if the user looks away from the road for too long, and report the user's driving behaviors. It should also prioritize user privacy and comply with relevant laws and regulations regarding data collection and usage. The app should not only serve as a deterrent to distracted driving but also empower users to take responsibility for their actions and prioritize safety while on the road.

9:45 am – 10:00 am **Team 8:** Distracted Driver Project 2 **Project Title:** Distracted Driver Project 2 **Faculty Advisor:** Dr. Todd Shurn **Team Member(s):** Danielle McIntosh, Jeremiah Lewis, Daniel Webster, Riana Battick, Aneika Stewart

**Problem Statement:** The escalating crisis of distracted driving represents the most significant threat to road safety in the United States today. With the widespread adoption of smartphones and the increasing prevalence of digital distractions, drivers are more frequently engaging in risky behaviors such as texting, browsing, and using apps while driving. This surge in distracted driving has led to a stark increase in traffic accidents and fatalities. In 2017, cell phone use while driving was linked to approximately 1.5 million crashes in the USA, emphasizing the urgent need for effective interventions. The DC Driver app aims to address this issue by providing drivers with feedback on their driving behavior, including scoring for harsh maneuvers and distractions, to encourage safer driving practices. **Project Goal:** The success of this distracted driving app hinges on its ability to effectively monitor and improve driver behavior, provide real-time alerts, reduce accident rates, and ultimately contribute to safer roadways. This app should silence notifications from 'distracting applications' (such as social media and messaging apps) while the user is driving, sound an alarm if the user is exceeding a speed limit, flash a bright light on the user's device if the user looks away from the road for too long, and report the user's driving behaviors. It

should also prioritize user privacy and comply with relevant laws and regulations regarding data collection and usage. The app should not only serve as a deterrent to distracted driving but also empower users to take responsibility for their actions and prioritize safety while on the road.

10:00 am - 10:15 am

Team 4: Team Minority 2 Project Title: AWS Minority Businesses Faculty Advisor: Mr. Karl Dinang Team Member(s): Deontae Smith, Imani Coleman, Doron Reid, Mariah Holloway, Amy Nyemah

**Problem Statement:** Accessing and supporting minority-owned businesses remains a pressing challenge in addressing the racial wealth divide. Despite the significance of this issue, there is a lack of effective platforms that connect customers with these businesses, particularly those owned by Black entrepreneurs. This project aims to develop a comprehensive web/mobile application using Amazon Web Services (AWS) to bridge this gap by matching prospective customers with minority-owned businesses. The challenge lies in creating a user-friendly and secure platform that facilitates the discovery of such businesses through various methods while ensuring trust, authenticity, and fraud prevention.

**Project Goal:** Our product seamlessly connects customers with minority-owned businesses, facilitating discovery through powerful search options, personalized recommendations, and user-generated ratings and reviews that can be easily shared on social media. Business owners can register their enterprises or claim existing listings, while automated and human fraud detection ensures trust and safety. With additional features like analytics for business users, our platform is designed to foster inclusivity and support local communities by linking those seeking diverse businesses with the unique enterprises that make them thrive.

10:15 am – 10:30 am	

Team 5: Cigna Project 1
Project Title: VetWell Connect
Faculty Advisor: Ms. Holly Doyle
Team Member(s): Sydnie Sewell, Pierce Medy, Uche Osuji, Joshua Akhimieona and Munir Adeyola

**Problem Statement:** Veterans, individuals who have selflessly served their nation, often face unique and complex healthcare needs stemming from their military service. While there are established healthcare systems in place, many veterans encounter significant challenges in accessing the healthcare services and support they require. These challenges include long wait times, bureaucratic hurdles, geographical limitations, and difficulty in navigating the various resources available.

**Project Goal:** Our solution for Cigna is a comprehensive application designed to address the healthcare needs of veterans, offering a seamless and user-friendly experience. With features like easy appointment scheduling, mental health support, and streamlined access to care coordination, our mission is to significantly improve the efficiency of veteran healthcare. By providing a convenient platform, we empower veterans to proactively manage their wellbeing, fostering a positive impact on their overall quality of life and honoring their dedicated service to the nation.

10:30 am – 10:45 am	Team 6: Scanner Bot
	Project Title: Amazon Robotics 2
	Advisors: Ms. Suzan Iloglu and Mr. Howard Smith

#### **Team Member(s):** Peter Gansallo, Melidem Nwokolo, Ayomide Okeshola, Sarim Faruque, Darius Tollett

**Problem Statement:** In package warehouses, one of the more strenuous positions is that of package handlers moving numerous boxes out of trucks. This important and fast-paced role in the process of bringing the product to the customer has many points of error between strain and injury on the employee as well as damage to products. According to the U.S. Bureau of Labor Statistics (BLS) data, there were thousands of non-fatal injuries reported in the warehousing and storage industry each year.

**Project Goal:** We have designing a robot capable of entering package trucks, scanning packages for inventory, and reporting their location and product information for further processing throughout the warehouse. The robot has the perception & motion capabilities necessary to record and process objects between locations.

10:45 am – 11:00 am

**Team 7:** AWS Business Minority Project 3 **Project Title:** AWS Business Minority Project 3 **Advisors:** Mr. Gerard Spivey and Mr. Oluwaseun Ademuwagun

**Team Member(s):** Yasmin Senior, Traven Reese, Chad Toomer, Aniya Wilson, April Murphy

**Problem Statement:** At Howard University, students face various financial pressures, leading many to leverage their unique talents to earn extra income—a phenomenon known as the "Howard Hustle." From homemade meals to original clothing brands, students are eager to grow their small businesses but often struggle to connect with potential customers due to limited visibility and reviews. Our mission is to bridge this gap by creating a mobile application that facilitates connections between student entrepreneurs and the campus community, enabling these businesses to thrive.

**Project Goal:** Introducing our exclusive web application tailored for the vibrant Howard University community. Serving as a centralized marketplace, our platform showcases a diverse array of student-owned businesses conveniently located on campus. Whether you're seeking fashionable attire, professional services, or creative hair styling, our app streamlines the search process, making it effortless for students to discover and support their peers' entrepreneurial ventures. Beyond campus borders, our app welcomes non-students to engage with and explore these enterprises, fostering a culture of collaboration and community support. Committed to elevating the visibility and success of our student entrepreneurs, we're dedicated to promoting Howard University's spirit of innovation and entrepreneurship.

11:00 am – 11:15 am

Team 3: Robotic Arm Tweakers
Project Title: Amazon Robotics Project 1: Robot Arm for
Medicine Transportation
Faculty Advisor: Mr. Howard Smith and Mr. Armon Shariati
Team Member(s): Adebola Ajayi, Farouk Balogun, Chinonso Okafor, Yoofi Williams, Subomi Bashorun

**Problem Statement:** Amidst the challenges posed by the COVID-19 outbreak, the medical sector faces a pressing issue—the heightened risk of healthcare professionals contracting the virus during patient interactions. This concern is substantiated by a 2021 survey conducted by the Kaiser Family Foundation and The Washington Post, emphasizing the urgent need for change. Specifically, the observed 18% COVID-19 infection rate among frontline healthcare workers, in contrast to 14% in non-healthcare working U.S. adults, accentuates the necessity

for addressing this challenge. The adjustments in hospital protocols during this period further highlight the crucial demand for a safer and more efficient method of delivering medications and essential supplies to patients, particularly those susceptible to highly contagious diseases.

**Project Goal:** Our project centers on configuring a robust robotic arm with precise object manipulation capabilities, specifically designed to revolutionize medicine dispensing in hospitals. The primary goal is to enhance both the quality of life for patients and the overall efficiency of medical processes. By utilizing this innovative robotic arm, we aim to minimize unnecessary interactions between patients and healthcare professionals during the medication dispensing process. The robotic arm, equipped with a camera, will be capable of identifying medicines left for a patient and facilitating a seamless handoff to the intended recipient. This approach eliminates the necessity for physical contact between the person delivering the medicine and the patient, especially if the patient is in an isolation room. By reducing direct contact, we mitigate the risk of spreading highly contagious diseases such as COVID-19, making the medication delivery process safer and more efficient.

11:15 am - 11:30 am

Team 9: NeXTGen TV Project Project Title: NeXTGen TV Project Faculty Advisor: Mr. John Clark Team Member(s): Teshi Waruingi, Rachel Ibihwiori, YaSin Abdul-Musawwir, Emmarah Kouadio

**Problem Statement:** ATSC 3.0 is a next-generation broadcasting standard that enhances television with 4K HDR video, improved audio, and data transmission capabilities for interactive apps, program guides, and future advertising services. After FCC approval in 2017, ATSC 3.0 has been in the process of being rolled out by individual broadcasters and consumer products to reach coverage in 80% of the United States. The broadcast industry is in a critical state where adopting ATSC 3.0 is essential to stay ahead of the curve as the media industry evolves. ATSC 3.0 brings impressive advancements to the table, but there remain untapped areas within broadcasting that can be advanced and reimagined by making use of this innovative technology. The challenge this brings is learning how to utilize ATSC 3.0 in conjunction with other technologies to transform traditional broadcasting, adapt to the changing expectations of viewers, and unlock its full potential to deliver content that aligns with modern standards. The proposed solution to this challenge will be delivered at the NAB Show, an event that fosters collaboration and innovation in broadcasting, where attendees expect to see the optimization of industry resources in an innovative approach to new technologies. By solving this challenge, NextGen TV could reach more households across the country and bring broadcasters closer to the goal of 80% nationwide coverage. **Project Goal:** We will develop a conceptual product for NextGen TV to explore the capabilities of the ATSC 3.0 broadcast standard. Our product will be a demonstrable project that supports the broadcast industry using AWS tools and services in addition to broadcast technology. By collaborating with students from the Howard University School of Communications we will utilize our diverse range of skills to deliver an innovative product and present it at the NAB show in April 2024. Through the Technology Apprenticeship Program, we will receive AWS Cloud Practitioner training and certification, learn broadcast system architecture and integrations, attain Certified Broadcast Technologist status, study current trends in Broadcasting Technology and Engineering, and successfully reimagine the future of broadcasting and communications with our final product. This will be a full-stack project with iterative development of an app or physical product supported by AWS and ATSC 3.0.

11:30 am - 11:45 amTeam 10: AWS Business Minority Project 4Project Title: AWS Business Minority Project 4Faculty Advisor: Ms. Gina KovitchTeam Member(s): Thaddeus Hunt, AzandriaHudson, Mae Kyaw San, Michael Obi, AnniaMatthews

**Problem Statement:** An inclusive and varied marketplace is essential in today's diverse and interconnected world. Despite significant progress in racial equity, minority-owned businesses still face unique challenges such as gaining visibility, connecting with target audiences, and ethnic bias. These issues directly impact the racial wealth divide and unemployment rates in America. In 2009, the median White US household's wealth was \$113,149 versus \$5,677 for the median Black household. Additionally, the consumer is impacted by limiting their ability to support these businesses or find care curated for them. **Project Goal:** Our solution is an innovative and user-friendly e-commerce platform that helps minorities discover and connect with minority-owned businesses in their communities. We will provide sellers a space to set up their online storefronts, list products, and manage transactions. By implementing a robust search and filtering system, users can discover a variety of products from different minority-owned businesses.

11:45 am - 12:00 amTeam 11: Amazon Robotics Project 3<br/>Project Title: Amazon Robotics Project 3<br/>Advisor: Dr. Taskin Padir<br/>Team Member(s): Amira Crump, Andre Williams,<br/>Asaad Martin, Dorien Casey-Franklin, Onwuosiuno<br/>lkhioda

**Problem Statement:** The robotics industry has undergone significant advancements, leading to transformative automation solutions across various industrial and commercial sectors. However, despite these advancements, the healthcare community continues to grapple with the reality of patient harm during medical treatment. In recent years, there has been a growing awareness of adverse events associated with medication administration, particularly within hospital settings. These adverse events pose significant risks to patient safety and well-being. Addressing this issue is crucial for improving healthcare outcomes and reducing the incidence of preventable harm. By leveraging robotics technology, there is an opportunity to enhance medication management processes in hospitals, thereby minimizing the occurrence of adverse events and improving patient care quality. This project aims to explore how robotics can be utilized to mitigate medication-related risks and promote safer healthcare practices within hospital environments. Through innovative automation solutions, we strive to contribute to the advancement of patient safety in medical settings. **Project Goal:** This Capstone Project aims to create a self-driving robot that can safely transport medication around a hospital. Our goal is to design an autonomous medication dispensing robot that operates without human intervention. The robot will be activated by voice commands and will move medications from the pharmacy to patients and back again, without the need for physical contact. Key features of the robot include secure verification using patient wristband scanning, automated dispensing and proper storage of medication, recording delivery information for accuracy and accountability, integration with hospital health record systems for seamless communication, emergency assistance capability, and a built-in sanitation system to maintain patient safety and hygiene. We prioritize the adaptability of the robot to individual patient needs by regularly updating care plans. Our focus is on creating a reliable solution that enhances efficiency and safety within hospital

environments.

12:00 pm – 1:00 pm	Lunch
1:00 pm – 1:45 pm	Remarks and Introduction of the Keynote Speaker Kelvin Sims, Senior Vice President of Bechtel Corporation.
1:45 pm – 2:00 pm	Team 13: AWS Connect 1 Project Title: Amazon Connect Agent Screen Recording Faculty Advisor: Ms. Rosa Thomas and Mr. Matthew Reid Team Member(s): Sara Braddock, Najah Greene, Yafet Tedla, David Oluyomi-Lords, Rachel Reese

**Problem Statement:** Supervisors cannot currently view recordings of call center agent interactions with the customers of their businesses. This shortcoming can result in customer dissatisfaction, unmet compliance objectives, and inadequate training for new employees. Our project aims to develop a full-stack solution that allows Contact Center Supervisors to search and browse Amazon Connect Agent Screen Recordings. Supervisors having access to these recordings can lead to an increase in the quality of customer experience and improved training for new agents.

**Project Goal:** Our project addresses a critical gap in Amazon Connect, a prominent cloud contact center on AWS. Supervisors cannot currently review call recordings between agents and customers, leading to potential customer dissatisfaction and compliance issues. Our full-stack solution offers an intuitive interface for Supervisors to search and browse Amazon Connect Agent Screen Recordings, enhancing the quality of customer experience and facilitating better training for new agents. Leveraging AWS services and hosted on GitHub, our solution is secure, collaborative, and designed to elevate Contact Center capabilities in compliance, training, and customer service.

2:00 pm – 2:15 pm

Team 14: AWS Connect 2 Project Title: AWS Connect 2 Faculty Advisor: Ms. Rosa Thomas and Mr. Matthew Reid Team Member(s): Asha Anderson, Joshua Clemons, Brian Paul, Esau Hutcherson

**Problem Statement:** According to Forbes subpar customer service costs businesses around 75 billion dollars annually. Poor customer service has been directly correlated with negative performance for a company. Furthermore, 93% of customers are likely to repeat purchases with companies that offer satisfactory customer service. Numerous services constitute customer service however one of the most popular ones is call centers wherein customers can interact directly with customer-facing agents. Contact center's efficacy is evaluated on numerous data points including wait times, customer agent knowledge, and overall customer courtesy. Currently, contact centers face the problem of constantly trying to collect measurable data from customer feedback to improve their customer-facing relations. Due to this contact centers have to take on the tedious task of collecting reliable data through post-chat/call customer satisfaction surveys.

**Project Goal:** We will create a software web application to visualize and analyze survey data. Furthermore, our app will generate real-time data insights and customizable multichanneled post-chat surveys based on real-time customer data. This will be a full-stack project creating a dynamic frontend app to display various quantitative data in a cohesive format with a backend supported by Amazon's data services. This will allow Amazon to evaluate the performance of customer-facing agents and allow the business to address the concerns of unsatisfied customers.

2:15 pm - 2:30 pmTeam 15: Calendar Syncing ProjectProject Title: Calendar Syncing ProjectFaculty Advisor: Dr. Harry KeelingTeam Member(s): Guy Lingani

**Problem Statement:** In today's fast-paced digital age, individuals and organizations rely heavily on various digital calendar platforms such as Gmail Calendar, Outlook, Apple Calendar, and more to manage their schedules, appointments, and events. However, a significant challenge arises due to the fragmentation of these calendar applications, making it difficult for users to seamlessly synchronize and manage their events across multiple platforms. This often leads to missed appointments, scheduling conflicts, and inefficient time management.

**Project Goal:** Our innovative calendar synchronization solution bridges the gap between disparate digital calendar platforms, such as Gmail Calendar, Outlook, and Apple Calendar, offering a streamlined approach to managing schedules, appointments, and events across multiple systems. By integrating with each of these platforms, our solution automatically synchronizes events in real-time, ensuring that users have consistent and up-to-date information at their fingertips. This eliminates the risk of missed appointments and scheduling conflicts, enhancing efficiency and productivity for individuals and organizations alike. With an intuitive interface and robust backend architecture, our solution simplifies the complexities of calendar management in today's fast-paced digital age, making it easier for users to focus on what truly matters.

2:30 pm – 2:45 pm	

Team 12: GamED+U Project Title: Farmers Market Advisor: Mr. Damola Idowu Team Member(s): Kennedy Thompson, Logan Ross, MonTrell Nelson, Jamul MacNear

**Problem Statement:** Presently, there is a shortage of compelling and interactive educational methods for instructing K-12 students on diverse subjects. Games, known for sustaining motivation towards goals, offer an avenue to engage learners actively. By enabling students to progress at their own pace and enjoy the process, games have the potential to enhance critical thinking, motivation, creativity, and teamwork. Our objective is to develop a video game that seamlessly integrates crucial academic content, fostering enjoyable learning experiences for students.

**Project Goal:** The goal of this project is to create an engaging educational game focused on practical math learning. The game, set in a simulated farmer's market, challenges players to enhance their business by solving math problems related to giving change and managing the virtual enterprise. The goal is to provide students with a hands-on and enjoyable experience that strengthens their mathematical skills within a real-world context.

2:45 pm – 3:00 pm	DEMO/POSTER PRESENTATION
3:00 pm – 3:30 pm	Awards
3:30 pm	Adjourn