**IT Capstone Projects - Spring 2019**

Presentation Day Guide

Date: April 26th, 2019

1. **Overview: Two undergraduate sections and two graduate sections.** 123 Students and 29 Projects in total. 11 graduate capstone projects and 18 undergraduate projects. 24 projects will be presented at J Building in this session. 5 graduate capstone projects will be presented at project sponsors’ sites.
2. **Reception:** 7:30am-8:00am. Breakfast and reception.
3. **Poster Session:** 8:00AM to 8:50AM, J Building, 3rd Floor.
4. **Formal Presentation Session: 9**:00AM – 11:00AM**,** this session is for detailed report of student projects. Each team will have up to 25 minutes to present the project plus 5 minutes for Q&A.
5. **Note for Evaluators:**
6. All project evaluations will be done through Google forms which are available at [msit.kennesaw.edu/capstone](http://msit.kennesaw.edu/capstone). The undergraduate and graduate projects have separate evaluation links.
7. The evaluation links will be sent to you by email. All project teams will be asked to include the evaluation link in the first page of their slides (scannable QR code for smartphone and the actual link). The room coordinator can also assist in getting the links to you.
8. Please make sure your smartphone/laptop has good connection so that you can submit your evaluation. If you need help to connect to Kennesaw Guest Wi-Fi, please ask the room coordinator for assistance.
9. You only evaluate the projects presented in your assigned room. Please also visit your assigned projects during the poster session. Please visit the posters not in your assigned room if you have extra time.
10. Please pay attention to following evaluation items during poster and presentation session.

* *Poster design*: the quality and creativity of the poster, including style, layout, content, readability, media use, etc.
* *Team talk in poster session*: how well does the team communicate with the audience?
* *Presentation slides and content*: quality of presentation slides and content; covered major aspects of the project in a logical flow.
* *Presentation skill and performance*: how well did the team talk to the audience about the project and answer questions? Does the team demonstrate confidence and enthusiasm?
* *Overall impression on the quality of the project* such as completion of the project goals and deliverables; quality of the solution and work; application of appropriate technologies, practices, and methods
* *Overall impression on demonstrated good project experiences* related to soft skills, including communication, team work, dealing with challenges, learning, research, documentation, project management, etc.

1. **Room and Evaluators Assignments**: full-time faculty members are assigned projects; part-time faculty and IAB members can feel free to choose the presentations you are most interested in.

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| **Room #** | **Assigned Full-Time Faculty Evaluators** | **Project # and Starting Time** |
| J110 | **Prof. Chi Zhang (room coordinator)**, Prof. Susan Vande Ven, Prof. William Forsyth; | **Project U01**: 9:00AM  **Project U02**: 9:30AM  **Project U03**: 10:00AM  **Project U04**: 10:30AM |
| J131 | **Prof. Halstead-Nussloch (room coordinator)**, Prof. Zhigang Li,Prof. Ming Yang; | **Project U05**: 9:00AM  **Project U06**: 9:30AM  **Project U07**: 10:00AM  **Project U08**: 10:30AM |
| J132 | **Prof. Hossain Shahriar (room coordinator)**, Prof. Rebecca Rutherfoord, Prof. Dawn Tatum; | **Project U09**: 8:00AM  **Project U10**: 8:30AM  **Project U11**: 9:00AM  **Project U12**: 9:30AM |
| J152 | **Prof. Jack Zheng (room coordinator)**, **Prof.** Richard Windland , Prof. Shirley Tian, | **Project U13**: 8:00AM  **Project U14**: 8:30AM  **Project U15**: 9:00AM  **Project U16**: 9:30AM |
| J260 | **Prof. Meng Han (room coordinator),** Prof. Seyedamin Pouriyeh, Prof. Ying Xie | **Project U17**: 9:00AM  **Project U18**: 9:30AM  **Project G01**: 10:00AM  **Project G02**: 10:30AM |
| J262 | **Prof. Svetlana Peltsverger (room coordinator),** Prof. Lei Li | **Project G03**: 9:00AM  **Project G04**: 9:30AM  **Project G05**: 10:00AM  **Project G06**: 10:30AM |

1. **Capstone Project List**

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| **Graduate Capstone Projects** | | |
| **#** | **Description** | **Sponsor** |
| G01 | **Interactive Visualization of Food Insecurity**: this project advances an interactive web-based tool that allows a user to click on a country to get information about its policy strengths and weaknesses from the perspective of a social market economy. The user can then simulate policy changes and see how this policy change changes the economic growth trajectory. | Dr. Marcus Marktanner. KSU-ICAT |
| G02 | **Modern Disaster Analysis Applications of Social Media**: the aim of this project is to bring together diverse research communities such as information retrieval, data mining and machine learning, natural language processing, computer vision, computational social science, and human computer interaction, to potentially contribute towards building AI-based next-generation Information Processing Systems for an effective utilization of social media data for disaster response and management. | Dr. Meng Han. Partnered with LexisNexis |
| G03 | **When to buy airline tickets:** the goal of this project is to find the best time to buy an airline ticket. Airline ticket prices vary depending on how soon the flight is. Using attributes of a specific flight such as airline, departure date, return date, trip duration, departure city, arrival city, flight distance, etc. try to predict the optimal date to purchase a ticket. For instance, it is generally true that the farther in advance you buy a ticket the cheaper it will be. However, this is a very simple heuristic which may not be true. In this project you will try to determine the relationship between purchase date, flight date, and flight cost. Additionally, you will try to build a predictive model so that a user can choose a specific flight and be given an optimal date to purchase the ticket. | Mr. Hayden Erickson. Home Depot |
| G04 | **Case study on newly implemented IT Service**: The Business Intelligence department at Organization A has undergone challenges with user acceptance, data quality and performance issues. This project aims to conduct a case study on the effectiveness of the newly implemented IT service using the principles of ITIL framework. Specifically, this study will focus on the impact of the service before and after the implementation, success factors of implementation and lessons learned. | Mr. Ligil Abraham. Liaison of project owner. Anonymous company |
| G05 | **Distributed WiFi Availability Monitoring**: wireless has become a critical IT service, however the ability of providers to monitor the service has not matured at the same rate. The emergence of low-cost wireless devices has created an opportunity for building a system that aggregates data from a large number of distributed data collectors. While it is easy to monitor the devices that provide the wireless service, it is difficult to determine the user experience. This project is to develop a low cost and scalable solution that monitors the campus WiFi network from an end-user's perspective and collects information and statistics that can be used to form a picture of the end user experience on our WiFi network. | Mr. Giberto Miralla. KSU-UITS |
| G06 | **Contact Relationship Management (CRM)**: The US Department of State has encountered challenges with user acceptance, data quality and performance in its existing disparate (and thus largely incompatible) mailing list systems. Many of the existing systems are outdated or don't fully meet the needs of US Embassies and Missions. An IT service (CRM - Contact Relationship Management) has been implemented to address those challenges. It provides a central repository for all posts and domestic offices to store their contacts, and is actively being developed and improved by the Department itself, and thus has the potential to provide a more agile way to address the individual and collective needs of the different offices. In this project, we will assess CRMs shortcomings based on the pros and cons of the old systems and compare to user experiences with CRM | Mss. Molly Moran. US Department of State. |
| G07 | **Suggest (Guess) Dishes for Restaurant Customers**: the goal of this project is to find creative ways to engage customers, based on your intensive data analysis of the online ordering data for qMenu. For example, your research can be finding/suggesting customer' s favorite dishes. Self-driven is the key to be successful for this position, but we have PhDs and economics experts in house to help at any time. | Mr. Gary Sui. eMenu Inc. |
| G08 | **Intelligent Extraction: Finding Needle in a Haystack**: competitor's data or New logo data is often found as an unstructured text file. Extracting information from unstructured text and converting them into useful structured format is close to finding needle in a haystack. This project is to develop a process that will: 1). Be able to parse and extract payroll related information from unstructured text file; 2). Convert the original unstructured data into structured one; 3). Automatically verify the information in the converted structured dataset match the original data source. | Dr. Raji Balasubramaniyan. ADP. |
| G09 | **Parking Maintenance Portal**: this project is to develop a Web portal for maintaining parking space and maintenance information for GA Tech Parking and Transportation. | Mr. Joseph Richardson. GA Tech Parking & Transportation. |
| G10 | **Multi-Factor Authentication Analysis**: in this project, the student will conduct an analysis on the application of multi-factor authentication on business organizations and government institutions. The tasks of this project includes: 1) understand MFA and it's pros/cons; 2) Research the MFA legislation; 3) Research the applications of MFA in government agencies; 4) create a implementation plan for an MFA solution in a mid-size business organization. 5). Present the findings to GTA Executive leadership. | Ms. Anna Abbott. Gerogia Technology Authority. |
| G11 | **Impact of External Social Factors on Corporate Security Breaches**: the goal of this project is to find out if there is a relationship between a company's external activities (Political or Social), the company's internal activities (business process/purpose), and their chances of being breached. Breaking down various company profiles and their external exposure, students would create a correlation model to see what factors, if any, increase or decrease the likelihood of cyber-attacks and then build a predictive model to test the hypothesis. | Mr. Stephen Nemeth. Home Depot. |

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| **Undergraduate Capstone Projects** | | |
| **#** | **Project Description** | **Sponsors** |
| **U01** | **Data Science Insights for Wholesale Business:** Insights garnered from advanced analytics can enable companies to anticipate and react to changes in demand, available inventory, environmental conditions, transportation costs, supplier capabilities and customer requirements, ensuring improved productivity and the timely delivery of products and services. Many industry is growing by different strategies include but not limited to the on-line channel development, supply chain optimization, and improved customer services. In this project, we are going to dig into the industry particularly for the wholesale giants for investigating their development and product lines for the most innovative insights. | Dr. Meng Han |
| **U02** | **AI and Social Media for Disaster:**  This is a collaborated project with Dr. Meng Han and LexisNexis Expert.  Several research studies have shown that social media information is useful for disaster response and management, if processed timely and effectively. The aim of this project is to bring together diverse research communities such as information retrieval, data mining and machine learning, natural language processing, computer vision, computational social science, and human computer interaction, to potentially contribute towards building AI-based next-generation Information Processing Systems for an effective utilization of social media data for disaster response and management.    HPCC will be used for the data processing and storage, the expert from LexisNexis will bring the domain and the most valuable advising for the project. | Dr. Meng Han |
| **U03** | **Investigating marginalized and vulnerable communities from social media:** This project is to investigate issues in relation to empowering marginalized and vulnerable communities in the digital age and the creative design and use of emerging technologies to promote social innovation. The intersection between digital information worlds and vulnerable communities is a critical research area within information sciences and human-computer interaction. The goal is to try to understand their concerns, issues and develop better ways and policies to help them. Student will collect the social media data from vulnerable communities from specific forums, such as immigrants, refugee, LBGTQI, homeless, and elderly. And then they will perform the social media data analysis to find the main digital disadvantages for vulnerable communities and the needs and behaviors of these communities will be investigated too. | Dr. Shirley Tian |
| **U04** | **Exploring OpenMRS (Open Medical Record System):** Through this project, students will have the hands-on opportunity to build their own OpenMRS platform based on the open source code. And also, they will have better understanding of health information technology. Students will have in-depth understanding of how the health care system works by doing research of the source code, such as how to connect the platform to the database and how to change the back-end settings. And the demo data set, students will enhance their database knowledge from the real-world. Learn how to design a database and how to reduce the redundancy from the database design. | Dr. Shirley Tian |
| **U05** | **Optimize Capstone Project Proposal and Registration Process:** This project is simplifying the processes of calling Capstone Project Proposal from the sponsors. To digitalizing the proposal submission and registration process, this project aims to provide a sustainable platform for future capstone projects in CCSE and KSU.    This is the first phase of a larger capstone project management system that consists of four main components:  1. Project application and proposal submission  2. Student preference and team assignment  3. Project progress tracking  4. Project evaluation.    The website will enable the sponsors to input their proposal Online and the students can find all the proposed projects from the web page and then choose the projects by their preferences, such as first, second, and third preferred projects. The big scope is to create a completed website for capstone projects for undergraduate students and graduate students in IT department. | Dr. Shirley Tian |
| **U06** | **Web Development: Automatic Scheduling and Selection in Capstone Project:**  Team selection/assignment in IT Capstone Project has been increasingly challenging due to record high numbers of students and projects in recent semesters. Every student has his/her project/teammate preference. The instructor usually spends hours trying to assign students to projects and to make everyone happy. Thus, in this project, we are trying to design and implement an algorithm to automate this task and also to reach a near-optimal solution. We also plan to make it a web-based application such that more people can use this product.  This project is the second phase of a large capstone project management system that consists of four main components:  1. Project application and proposal submission  2. Student preference and team assignment  3. Project progress tracking  4. Project evaluation | Dr. Shirley Tian |
| **U07** | **Capstone Project Progress Tracking:** As the enrollment in the IT programs keep growing, the number of the capstone projects need to offered each semester increases significantly. Managing large number of projects has become increasingly difficult for capstone class instructor. This project is one part of a larger capstone project management system that consists of four main components:  1. Project application and proposal submission  2. Student preference and team assignment  3. Project progress tracking  4. Project evaluation  This project aims to create a web-based sub-system for better management of the capstone projects progress tracking (#3 above). The team will work closely with other three teams to develop the above mentioned subsystems so that they can be assembled/integrated to help the IT department manage the capstone process. | Dr. Zhigang Li |
| **U08** | **Capstone Project Evaluation System:** As the number of capstone projects grow each semester, it has become increasingly difficult to organize and manage the capstone projects evaluation process. This project is one part of a larger capstone project management system that consists of four main components:  1. Project application and proposal submission 2. Student preference and team assignment 3. Project progress tracking 4. Project evaluation  The goal of this project is to develop a web-based capstone project evaluation sub-system (#4 above). | Dr. Zhigang Li |
| **U09** | **Using AI to identify wood grain patterns:** AI, particularly machine learning, has been widely used nowadays for image processing and pattern recognition. One well-known example is the use of AI for facial recognition, which are readily available on modern cellphones. During this project, students will research, explore and experiment with machine learning algorithms and find out if they can be used to identify the wood grain patterns from different species. To confine the scope of the project, students will collect images of wood grains from three common wood species commonly found in hardwood stores and use machine learning algorithms to identify the patterns. | Dr. Zhigang Li |
| **U10** | **Interactive Visualization of War:** The project is to advance an interactive web-based tool that allows a user to click on a country to get information on how conflict-ridden the country is and its policy strengths and weaknesses from the perspective of secondary school enrollment. The user can then simulate the economic impact of the outbreak of war and peacebuilding efforts through the education channel. Results will be presented through visualizations. Data sets will be prepared by the client.  Major work and expected outcome  - analyze data and simulation rules provided by the client  - conduct econometric analysis underlying the visualization  - design the best way to present data and simulation results through web based visualization (using a JavaScript visualization library like Google Charts) | Dr. Marcus Marktanner |
| **U11** | **Linux Distro for Bioinformatics:** Bioinformatics is a combination of computer science and biology. Genomic testing in understanding the pathology of cancer relies heavily on the utilization of multidisciplinary approaches from bioinformatics. Students will participate in a project to build a Linux-based academic operating system to accelerate discovery processes in basic research and clinical diagnosis for training and analysis purposes. This project provides an opportunity for students to learn about Linux administration and open-source development by integrating various software packages into a specialized distribution for computational biologists. In addition to traditional installation methods, this specialized Linux distribution should be capable of desktop and cloud-based virtualization (XSEDE, Amazon EC2, Microsoft Azure, and Google Cloud). This distribution will be able to sustain regular updates/upgrades without any impact on the functionality of scientific software. | Dr. Tsai-Tien Tseng |
| **U12** | **Active Directory Account Password Strength Assessment:** As a part of our security program, Covenant Transport Services wants to provide coaching to our employees on creating and using strong passwords by finding weak passwords configured in our Active Directory services. | Mr. Brent Page |
| **U13** | **Complete website for people age 40 and older:** This project is to build a website to help people over 40 to find rental rooms and roommates. The base of the project has been done, but there are things that need to be changed and improved. | Ms. Susan Asher |
| **U14** | **Magic Eraser:** The goal of this project is to create a video editor with some intelligent behavior. Specifically it will allow the user to automatically remove unwanted items from a scene. Optionally it could allow the user to pull out specific items and remove everything else similar to a green screen. We believe the students can accomplish this by combining two existing neural networks in a novel way. Specifically using a mask-rcnn, the user will be presented with objects it has identified in the scene. Viewing the segmented video, the user can select an item they want to remove. Using the selected mask from the mask-rcnn network the students can feed each frame into an autoencoder trained for the task of image in-painting. The auto-encoder will essentially "paint over" the selected objects using the contextual information of the image to fill in the gaps. If done well this software could greatly speed up video editing time and essentially create automatic special effects. | Mr. Hayden Erickson |
| **U15** | **Website Development - Trucking and Hauling Company:** The goal of this project is to build a website for booking/scheduling of a truck company. Effective web design concepts, solves the needs of both businesses and consumers in a creative way. This project is to create a fairly simple user friendly website from start to finish that also should be optimized for mobile devices. | Mr. George Johnson |
| **U16** | **Distributed Honeypot network with centralized analytics:** Background: As organizational networks have become more complex and distributed, visibility into malicious activity has become more difficult and expensive. Organizations need a low cost and scalable solution to fill this gap.    Problem Statement: Many organizations lack insight into malicious network activity outside of critical IT service areas.    Objectives: Develop a low cost and scalable solution that creates detection points around the organization which creates statistics that can be used to form a picture of threats. | Mr. Chris Gaddis |
| **U17** | **Owl Map:** Have you ever had trouble finding your way around the KSU Kennesaw or Marietta Campus? Trouble reading the outdoor KSU Maps? Bad with directions? Owl Map is a native mobile app that helps students navigate to any building or place on the KSU campuses. This project is essentially the digitizing of the KSU Maps. For the scope of this project, we will focus on one platform, iOS or Android, depending on the team's capabilities. The application should utilize the latest native map SDKs provided with each platform. The application would need to provide high accuracy latitude and longitude coordinates for each building and place on the KSU Campus. The application should provide a scrollable, searchable list for each building on the campuses. | Mr. Antonio Allen |
| **U18** | **AWS IoT architect:** This project, we will architect how to use AWS IoT from locally generated data to IoT. We will create local weather station from Raspberry-Pi and sensors like temperature, rainfall, and wind sensors then send that data to Amazon Web Services Internet of Things. Then, we will connect to different AWS Services like AWS Kinesis Analytic to AWS Lambda services to S3. from here, we will create data visualization from the live data. | Mr. Ibrahim Mohamed |