

# MSML 650 Cloud Computing

## Fall 2025 Term Project

Students will work in teams to build, deploy and demonstrate an AWS application or service of their choice. Each team will have 4 or 5 students. Students who want to be part of the same team (or form an entire team) should use the discussion board during the first week of the course to indicate their preference. Teams will be finalized and announced by the instructor during the second week.

Each team will choose a topic and send a summary of what they will do to the instructor by Week 4. The summary should clearly describe the problem that will be solved by the AWS application or service (i.e., what it will do) and how it will be tested (i.e., success criteria). Some sample topics are listed below. Each group can choose and expand on any of these topics; they are also encouraged to come up with their original idea on a different topic.

- Scalable, serverless publishing platform where users can create, read, update, and delete blog posts without managing servers.
- Online e-commerce storefront with user authentication, product listings, and checkout flow, showcasing cloud-based authentication and database integration.
- Real-time communication app for group chat among authenticated users, demonstrating an event-driven, low-latency cloud architecture.
- Highway traffic monitoring from video feeds and detecting events like traffic violations, accidents and heavy traffic.
- Automated voice-to-text transcription for converting audio to text and storing for subsequent analyses.
- IoT traffic simulator and visualizer, which simulates IoT devices publishing data and then captures and creates live visualization of various metrics.
- URL validator that identifies benign and malicious (e.g., phishing, containing malware, etc) URLs.
- Real-time credit card fraud detector that monitors credit card transactions and flags abnormal transactions as potential fraud.
- DoS attack detector/simulator, that simulates normal and abnormal traffic patterns, detects DoS attacks, and automatically mitigates.
- Network traffic monitor that ingests (simulated) traffic streams, detects abnormal traffic patterns and triggers alerts.

Each team will provide a status update on their project by Week 9. The status update will summarize what has been done up to date, any significant hurdles encountered so far, and the remaining work to finish the project.

At the end of the project each team will:

- Prepare a presentation (slides) that describes the problem solved, approach, and results. Submit the presentation and a link to an operational demo by the deadline. (Check Canvas for the deadline to submit.)
- Make a 10-minute presentation to the class during the last lecture and answer any questions from the audience.
- Each team member will individually fill out and submit a peer evaluation form for each of the other team members.

Students may use any resources to complete their project and presentation, provided that they credit and cite any used resource. It is permitted to use AI tools such as ChatGPT and Copilot for researching the project topic, brainstorming on ideas, or preparing your presentation. However, when using AI tools, please keep in mind that you are responsible for the accuracy, completeness and quality of the work. Use of an AI tool must be cited in your final presentation just like any other resource.

When preparing your presentation, please keep in mind that your audience is a highly technical group that may not have much familiarity with the topic but would like to learn “how it works.” Please consider maintaining a balance between a high-level overview of your goals and a deeper dive into technical details adequately. Also, providing good illustrative examples and wrapping up with a conclusion always makes a better presentation.

Grades for the term project will be assigned out of a total of 40 points. The grading criteria that apply the same to each student in a group are as follows:

- Timeliness of the project topic and status update submissions (4 points).
- Correct operation of the application/service (10 Points).
- Accuracy and completeness of the technical content in the submitted slides (8 Points).
- Clarity of the presentation to the class in explaining the subject and answering questions (8 Points).
- If submission deadline for the slides is missed, 5 points will be deducted for each day it is past due.

The criteria that may apply differently to each student in a group are as follows:

- Peer evaluation by other students in the same group (10 Points).
- If submission deadline for a peer evaluation is missed, 1 point will be deducted for each day per form that is past due.

Summary of deliverables (check Canvas for precise deadlines):

- Teammate preferences – does not affect the grade (Week 1)
- Summary of the project topic (Week 4)
- Status update (Week 9)
- Presentation slides and a link for demo (prior to Week 15)
- Peer evaluation form for each teammate (prior to Week 15)
- Verbal presentation to class (Week 15, during lecture)