

Project Assignment

- You can work on this in teams of up to 2 students.
 - You need to choose your topic by **7-20-2025**. Send me an email with your choice.
 - If you have any questions, please ask.
 - Due Date of the Progress report is **7-27-2025 by midnight**.
 - Due date of the final report is **8-6-2025 by midnight**.
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Objective

This assignment is designed for you to start in-depth research into a specific topic within the field of Computer Vision. You will select a research area from the list below and find a specific challenge and start the process to find a solution for it. This will help you engage with real-world case studies and scholarly work, preparing you to develop and evaluate computer vision systems.

Instructions

1. **Select a Topic:** Choose **one** research topic from the list provided below.
 2. **Find a specific challenge in the chosen area.**
 3. **Conduct Research:** Find and review current academic literature (peer-reviewed journal articles, conference papers, etc.) related to your chosen topic and found challenge.
 4. **Write the Paper:** Your paper should be a thorough summary and analysis of your topic and the challenge. It must:
 - Introduce and define the topic, explaining its importance to the field of computer vision.
 - Identify a specific major challenge, that does not have a solution or that have an incomplete solution, in the area.
 - Summarize the current state-of-the-art, key methods, and recent progress.
 - Discuss potential future research directions to solve the identified challenge.
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Research Topics

Choose **one** topic from the following areas:

- Generative AI and Synthesis in Computer Vision
 - Advancements in 3D Vision and Scene Understanding
 - Multimodal Learning: Bridging Vision with Language and Other Modalities
 - Computer Vision for Autonomous Systems and Robotics
 - Core Image and Video Processing Innovations
 - Emerging Machine Learning Paradigms for Computer Vision
 - Human-Centric Perception
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Deliverables and Grading

- **Submissions:**
 - **Progress report:** A word file following the included template that includes the introduction of the topic, Challenge definition, and initial literature review.
 - **Final report:** A Word file following the included template that included all needed parts on the project.
 - General instructions:
 - Do not change any formatting specified in the template.
 - Your final report should be at least 10 pages including all figures and references.
 - You should write the report in your own words.
 - **Grading:** This project work worth is **25% of your final grade**. You will be graded on the depth of your research, the quality of your analysis, clarity of writing, and proper use of citations.
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!! Important Course Policies

- **Academic Honesty and AI Usage:** Per the syllabus, the use of "Artificial Intelligence, chatbots, or other software that has the capacity to generate code, and textual answers is not allowed, and constitutes an instance of academic dishonesty (plagiarism)". All work must be your own. Any violation will be handled according to the syllabus, resulting in a 0 for the assignment on the first instance and a course failure on the second.
- **Late Submission Policy:** No late submission will be accepted.