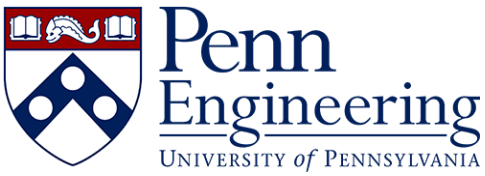


CIS 6800: Advanced Topics in Machine Perception

Instructor: Jianbo Shi (jshi@seas.upenn.edu)
TAs: Huzheng Yang (huze@seas.upenn.edu)
Katherine Xu (katexu@seas.upenn.edu)
Lectures: MW 12pm-1:29pm in BENN 401 (8/30 to 12/12)
Office Hours: Friday 2pm 466 Levine
ED Discussion: https://edstem.org/us/courses/45658/discussion/
Gradescope: https://www.gradescope.com/courses/595123

COURSE SUMMARY

The topics below should only be considered a rough guide to the content covered in this course.

WEEK	LECTURE PLAN	PROJECT SUMMARY
1	Perceptron / Convolutional Neural Networks	Project 1a (DL Basics)
2	Improvements to CNN Learning	Project 1b (DL Basics)
3	CNN Object Detection	Project 2a (YOLO)
4	Single-Stage Detectors	Project 2b (YOLO)
5	SOLO	Project 3a (SOLO)
6	Spatial Transformer Networks and Deformable CNNs	Project 3b (SOLO)
7	Anchor vs Anchor-Free Methods	Final Project Proposal
8	Transformers	Project 4a (FasterRCNN)
9	Variational Autoencoders	Project 4b (FasterRCNN)
10	Generative Adversarial Networks	Project 5 (Transformer)
11	Diffusion Models	Project 6 (GAN and VAE)
12	Architecture Zoo	Final Project Milestone
13	*Thanksgiving*	Project 7 (Diffusion)
14	Graph Convolutional Networks	
15	Exam	Final Project
16	Project Presentation	

Weeks begin on Wednesday, August 30, 2023.
Projects are typically due each Sunday at 11:59 p.m.

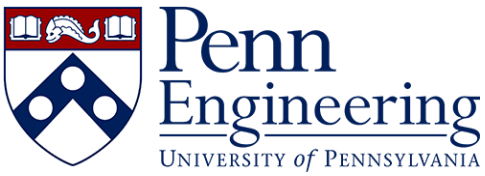
GRADING AND PROJECT LOGISTICS

In-Term Projects (45%) All in-term projects except the first may be completed either individually or in a team of 2 students. Each team will make one submission. As this course has a high project workload, we highly recommend forming teams to tackle these projects.
Each student will be given 5 free late days to be used however they wish throughout the semester, after which a 20% penalty will be applied per day. Free late days are counted on a per-student basis at the end of the semester (if a team makes a late submission, each member of the team may choose whether they want to use a free late day for themselves). Students are encouraged to use **ChatGPT**, but you need to make a summary of how you used it, and the code that you have copied from it.
The grades for the six projects are distributed as follows:

- Project 1 (DL Basics): 5%
- Project 2 (YOLO): 10%
- Project 3 (SOLO): 10%
- Project 4 (FasterRCNN): 5%
- Project 5 (Transformer): 5%
- Project 6 (GAN and VAE): 5%
- Project 7 (Diffusion): 5%

Final Project (20%) The final project will be completed in teams of up to 2 students.
The final project is composed of three parts:

- Project Proposal: 4%
- Project Milestone: 4%
- Final Report and Code: 12%



More details regarding the final project will be released soon.

Final Exam (30%) There will be a final exam scheduled during the final exam period.

Participation (5%) In class, Ed discussion participation.

Grading Scales and Curves Your final grade in this course will depend on your overall performance in the assignments and final exam. Your grade will not be adjusted based on the relative grades of other students. We believe you should be focused on your own learning journey, not be competing with other students. If you put in the effort to do all the assignments/exam and master the course topics, you will do well in this course.

COLLABORATION GUIDELINES

In the professional world of software development, collaboration-including using code that others have written -is both practical and ubiquitous.

However, to prepare for this professional environment, you need to foster your own software development skills so that you are both able to create your own code and evaluate the code of others. In the context of this course, independent work and evaluation is critical. **Do not collaborate with others on individual graded assignments unless it is explicitly indicated.** Inappropriate collaboration will be considered cheating and penalized under Penn's Code of Academic Integrity.

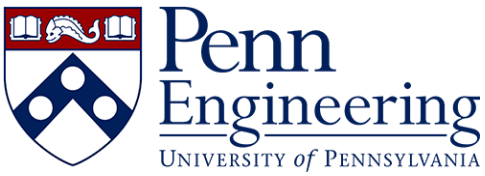
Discussion forums on Ed Discussion, recitation (Live Coding Sessions), and assignments designated as group projects are collaborative-please take advantage of those times to work with your colleagues.

Note: To avoid the potential of collaboration that leads to academic dishonesty, when in doubt always ask the instructor or TA first.

Do not cheat. **Searching for solutions online is the same as cheating.** You are encouraged to use **ChatGPT** on projects, but you need to make a summary of how you used it, and the code that you have copied from it.

You can further reference Penn's Code of Academic Integrity page on this subject matter, as well as the SEAS Graduate Student guidelines on the code of ethics.

If you want to post code on Ed Discussion that directly pertains to an assignment, please mark the post as private and visible to all instructors. Please limit such posts to reasonably short snippets of your code. If you feel a TA needs to read all your code, please book an office hour slot instead.



IMPORTANT DATES

Changes are italicized.

Project	**Due Date**
Project 1a – Deep Learning Basics	9/6
Project 1b – Deep Learning Basics	9/10
Project 2a – YOLO	9/17
Project 2b – YOLO	9/24
Project 3a – SOLO	10/1
Project 3b – SOLO	10/8
Project 4a – FasterRCNN	10/18
Project 4b – FasterRCNN	10/22
Project 5 – Transformers	10/29
Project 6 – GANs and VAEs	11/5
Project 7 – Diffusion	11/19
Final Project Proposal	10/15
Final Project Milestone	11/12
Final Project Report and Code	12/4
Final Exam	12/4
Final Project Presentation	12/11