50.035 Computer Vision

Schedule (2024)

NOTICE: Items are tentative, there will also be updates. Please check this calendar frequently

L1: Monday 9.30am to 11.30am; 2 hour @ 2.404
L2: Tuesday 8.30am to 10.30am; 2 hour @ 2.404

Practical session: Wednesday 9.30am to 10.30am; 1 hour @ TT10 TT9 (Building 1 level 4)

Quiz 1 (5% of total):
08-Oct, 2024 (Tuesday) in class (Week-04)

Quiz 2 (5% of total):
12-Nov, 2024 (Tuesday) in class (Week-09)

Exam (30% of total):
03-Dec, 2024 (Tuesday) in class (Week-12)

Quiz 1 (Week-04):

- **Cover Week-1 to Week-3 materials, and Problem sets.**
- **The quiz is closed-book. You cannot refer to the course slides/notes. Only one A-4 cheatsheets (two sides) are allowed.**

Quiz 2 (Week-09):

- **Cover Week-1 to Week-8 materials, and Problem sets.**
- **The quiz is closed-book. You cannot refer to the course slides/notes. Only two A-4 cheatsheets (two sides) are allowed.**

Exam:
03-Dec, 2024 (Tuesday) in class (Week-12)
Venue: To be decided

- **Cover Week-1 to Week-11 materials, and Problem sets.**
- **The exam is closed-book. You cannot refer to the course slides/notes. Only three A-4 cheatsheets (two sides) are allowed.**
- **Mid-term exam of past year (Topics are not exactly the same as this year; for reference only).**
- **Video recordings of past year (Topics are not exactly the same as this year; lecture attendance is strongly recommended).**

Grading:

Lab assignment and homework (two sets)	13%
1D Design Project	45%
Quiz (two quizzes)	10%
Exam	30%

Participation	2%

Homework late penalty: 50% for late submission, and 0% if more than 1 week after the due date.

Important: Attending the exam, submission of 1d design project are the necessary conditions for passing the course.

Week	Topics	Material	Problem Set	1D Project	Quizzes and Exam
1	• Overview • Image filtering and convolution • Image classification • Softmax and Cross-entropy loss	Week-01 Slides		**1D Project release** **Project Example** **Check off 1: Students are required to form a team (4 students per team), decide the track and prepare a 0.5 page writeup for their project: initial project idea, background, and how Computer Vision is relevant.**	

				Due date for checkoff-1 **22 Oct 2024, 23:59** **Please submit the 0.5 page writeup to eDimension**	
2	• Deep neural networks • Convolutional neural networks (CNN) • Advanced network architectures • Numpy, OpenCV	Week-02 Slides Numpy and OpenCV tutorial in colab	Release Problem set 1 Due date for Problem Set 1: Part 1: 09-Oct-2024 23:59 Part 2: 16-Oct-2024 23:59	**Team registration**	

3	• Gradient descent • Backpropagation • Gradient vanishing and exploding	Week-03 Slides			
4	• Backpropagation (continued) • Semantic segmentation	Week-04 Slides			**Quiz 1**
5	• Object detection • R-CNN • Fast R-CNN • Faster R-CNN • Object detection with YOLO	Week-05 Slides			
6	• Attention in CV • Vision Transformer • Advanced Vision Transformer	Week-06 Slides			

7	**Break**				
8	• 1D project Check-off			**1D Project: Check-off 2 presentation** **Presentation order**	
9	• Generative Modeling • Generative Adversarial Nets (GAN)				**Quiz 2**
10	• Diffusion Model • Foundation Model				
11	• Advanced topic in Foundation Model • Large Multimodal Model				

12	• Revision • Exam				**Exam:** **03-Dec, 2024 (Tuesday) in class (Week-12)**
13	• **Project Week**			Project presentation and demonstration Project presentation date/time: Project presentation order Due date for project report and code: 13-Dec, 2024 23:55	
14	**No Lessons**				
