

# Syllabus

## Advanced Computer Vision

Course Name	Course type (credit/hours)		전선(3/3)		Course code	
	Target students Division/major/grade		/		Opening semester	
	Class time and classroom		월16:30~18:00 (팔407) 목16:30~18:00 (팔407)(팔407)			
Reference to this course	Related basic courses					
	Recommended concurrent courses					
	Related advanced courses					
Instructor	Name (title/division)					
	Office Room Number		Office phone Number	2632	e-mail	wjhwang@ajou.ac.kr
	Office hours		Homepage address			
Teaching Assistant	Name (title/division)					
	Office Room Number		Office phone Number		e-mail	

### 1. Introduction

One of AI part is Computer Vision and Computer Vision has become ubiquitous in our society, with applications in search, image understanding, apps, mapping, medicine, drones, and self-driving cars. Core to many of these applications are visual recognition tasks such as image classification, localization and detection. Recent developments in neural network (aka "deep learning") approaches have greatly advanced the performance of these state-of-the-art visual recognition systems. This course is a deep dive into details of the deep learning architectures with a focus on learning end-to-end models for these tasks, particularly image classification.

### 2. Course Objectives

### 3. Class types and activities

#### 4. Teaching Method

This course consists of lectures and presentation & discussion. The lecture is based on the well-known deep learning class, which includes the fundamental theory on the deep learning-based computer vision methods. The students will be encouraged to present latest CVPR/ECCV/ICCV/NIPS/ICLR/ICML papers during the semester.

#### 5. Knowledge and ability required for taking this course

#### 6. Method of Evaluation

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance			
midterm exam			
final exam			
quiz			
presentation			
discussion			
homework			
etc			

1. Class participation: 10%
2. Mid-term: 50%
3. Presentation: 30%
4. Assignment (tentative): 10%

## 7. Textbooks

Main/Sub	Title	Writer	Publisher	Publication year
주교재	Deep Learning	Goodfellow, Ian	MIT Press	2016

## 8. Lecture Schedule

Week	Lecture contents	Lesson type	Remark
1	Introduction to Neural Networks	Lecture	
2	Neural Network Basics	Lecture	
3	Introduction to Convolutional Neural Networks	Lecture	
4	Deep Learning Programming	Lecture	
5	CNNs for Classification	Lecture	
6	CNNs for Detection, Tracking, and Segmentation	Lecture	
7	Summary of Deep Learning	Lecture	
8	Mid-Term Exam		
9	Introduction to Recurrent Neural Networks	Lecture	
10	Vision and Language	Lecture	
11	Deep Learning Application – Network	Presentation and Discussion	
12	Deep Learning Application – Recognition	Presentation and Discussion	
13	Deep Learning Application – Segmentation	Presentation and Discussion	
14	Deep Learning Application – VQA	Presentation and Discussion	
15	Final Project Presentation	Presentation and Discussion	
16	Final Project Presentation	Presentation and Discussion	

## 9. Others