

AI & Design

CREDIT	3	INSTRUCTOR	Jin-Kook Lee
OFFICE	Samsung Hall #522	OFFICE HOURS	
TIME	On demand	CLASSROOM LOCATION	TBA
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[COURSE INFORMATION]

COURSE DESCRIPTION & GOALS	<p>This course deals with a series of recent issues in artificial intelligence (AI) focusing on the field of design, more specifically <u>deep learning</u> and architectural <u>space design</u>, for <u>beginners</u>. Students will review the related technologies with cases, and the conceptual and intellectual issues on top of AI in the perspective of design. Not only focusing on the AI techs, but also surveying the qualitative/quantitative aspects of design with theoretical issues outside of the conventional state of knowledge are the objectives of this course, empowered by actual individual project developments. Theory lectures, case studies, survey on the references, and students' participation in class are the materials for the course.</p> <p>In the technological standpoint, recent decade has marked a huge change in how we perceive and talk about general AI. Buzz words "Big Data" and "Machine Intelligence" also changes (or will change) the fundamental role of designers from conventional approaches, and we will take a look where to go via this course. The deep learning (DL) techniques, for example, have shown how end-to-end differentiable functions can be learned to solve complex design tasks involving high-level perception abilities. In association with this shift and effect to our domain-specific knowledge, design, we would keep eyes opening so that we can take max advantages from it.</p>
PREREQUISITE	<p>None: This course is for beginners.</p> <p>No previous experience / knowledge of AI is needed</p>
COURSE REQUIREMENTS	Strong interests in design, Fundamental skills on computing, and Laptop or PC
GRADING POLICY	<p>Exercises & mini assignments 30%, Project I 20%, Project II 30%, Attendance 20%</p> <p><More Info.></p> <ol style="list-style-type: none"> 1) Attendance (Weekly recommended viewing time) (20%) <ul style="list-style-type: none"> ✧ A week's worth of courses are uploaded to YSCEC every Friday (except for the first week) and students need to complete their course within a week of upload. ✧ View progress rates are checked weekly-based, and texts will be sent to students who have not finished their online courses. ✧ Even after the recommended time, online courses can be watched until the

final viewing date, but in this case, they are considered late and are deducted. Students who have not completed their courses by noon on July 22 will be treated as absent.

Week	Recommended viewing period (Every Friday at noon)	Final due date
Week 1	06-29(tue)-12:00 ~ 07-01(thu)-12:00	07-22(thu)-12:00
Week 2	07-05(mon)-12:00 ~ 07-08(thu)-12:00	07-22(thu)-12:00
Week 3	07-12(mon)-12:00 ~ 07-15(thu)-12:00	07-22(thu)-12:00
Week 4	07-19(mon)-12:00 ~ 07-22(thu)-12:00	07-22(thu)-12:00

2) Exercises and assignments (30%)

✧ Readings (10%)

- Summarizing and analyzing an article or a paper: Read an article or paper about artificial intelligence and analyze or write a comment concerning your major. It should be submitted to YSCEC within the time frame.

✧ Surveys (10%)

- Further investigation of the advantages and disadvantages of AI: Investigate information about artificial intelligence in addition to those mentioned in the course.
- Case study related to Google TensorFlow or Microsoft Azure: An example survey for AI platform applications

✧ Assignments (10%)

- Submit results from Tutorial 1-5 conducted in the online course

3) Projects(Individual projects) (50%)

- ✧ The final project is to make an AI application example in your major, using the examples from the course or other AI platforms.

✧ Project I (20%)

- In Project I, submit a summary of what project you will be working on in your major field.
- Submit within 10 PPT pages

✧ Project II (30%)

- Submit projects carried out by Colaboratory or AI platforms based on Project I
- Submit within 10 PPT pages with links or project files

4) Midterm exam/Final exam

- ✧ Project-oriented class

5) Weekly Schedule

- ✧ Updates in the table above

TEXTS & NOTES

Lecture slides given by instructor

INSTRUCTOR'S PROFILE

Jin Kook Lee, Ph.D., Assistant Professor, Space & Design IT Lab.,

	<p>Dept. of Interior Architecture & Built Environment, Col. of Human Ecology, Yonsei University.</p> <p>Contact: http://designitlab.kr leejinkook@yonsei.ac.kr +82-2-2123-3134</p> <p>Bio: Jin Kook Lee is a researcher and developer in the field of Design Computing - the intersection of design and computation. He pursues “better environment” using computing technologies based on his interdisciplinary studies in Housing & Interior Design, Digital Design Media, Computer Science, and Architecture. Building Information Modeling (BIM) and AI & Design are his research directions that have been explored in his studies and recent research and development projects.</p> <ul style="list-style-type: none"> - Academic degree: B.S. and M.S. received from Yonsei University, Ph.D. from Georgia Institute of Technology - Industry experiences: Hanssem Co. Ltd., Autodesk Inc. at San Francisco - Academia experiences: Researcher of Digital Building Lab at Georgia Tech, Professor at Hanyang University
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[WEEKLY SCHEDULE]

WEEK (PERIOD)	WEEKLY TOPIC & CONTENTS	COURSE MATERIAL & ASSIGNMENTS	NOTES
1	<p>Course Introduction & Lecture for general AI and Design</p> <ul style="list-style-type: none"> - Introduction to AI & Design - General AI & Deep Learning - What is Design? - AI & Design Approach <p>Criticisms & Lessons learned from AI development</p> <ul style="list-style-type: none"> - AI Impact & Criticisms - AI impact in design domain - Domain knowledge & AI - Future AI Implications 	<p>Exercises and mini assignments</p> <ul style="list-style-type: none"> - Readings, survey, etc. 	(6.29) Classes Begin
2	<p>AI Platforms & Basic Applications</p> <ul style="list-style-type: none"> - AI Platform & Data - Introduction to General AI Platforms (e.g. Microsoft Azure, etc.) - Introduction to NLP AI Platforms - Microsoft Azure basic application example <p>AI Platforms &</p>	<p>Exercises and mini assignments</p>	

WEEK (PERIOD)	WEEKLY TOPIC & CONTENTS	COURSE MATERIAL & ASSIGNMENTS	NOTES
	Basic Applications <ul style="list-style-type: none"> - Introduction to Deep Learning Framework AI Platforms (e.g. Google TensorFlow, etc.) - Google TensorFlow basic application example 		
3	Tutorials & AI Application for design <ul style="list-style-type: none"> - Tutorial 1,2: Analyzing public data by Microsoft Azure - Tutorial 3,4: Google TensorFlow Installation & Classification of design style 	Project I	
4	Tutorials & AI Application for design <ul style="list-style-type: none"> - Introduction to Colaboratory - Basic application examples of Colaboratory - Tutorial 5: Image classification 	Project II	(7.22) Classes End & Final Exam