Artificial Intelligence Applications for All
모두를 위한 인공지능의 활용 GEK10109

General Information

Class Meeting Information

Section	Days	Time	Lecture Room	Language used in class
01	Tue/Fri	10:00 ~ 11:15	OH420	Korean (Some material provided in English.)

Instructor

Name	Youngsup Kim
Office & Office Hours	GRACE School 204, Mon, Thu 11:15~12:00 or with an appointment. Ask your questions on the discussion group available from Piazza.com
Email	idebtor@gmail.com
Piazza	Use for the public open questions and comments Notice that you have an option "Post to Instructors".
Phones	010-4939-2819 For urgent matters and texting
TA	이원빈 21900543@handong.edu, 고언약 21300035@handong.edu

Course Description and Goals

Catalog Description – 3 credit hours (PD/P/F grading optionally)

This course is designed students to introduce the core concepts of artificial intelligence, to know how it is used in everyday life and to understand why it is a building block of today's 4th Industrial Revolution. The course begins with watching various video clips and lectures to have an overview of artificial intelligence and ends with building their choice of application in own domain by themselves. Students will acquire to have a few mathematical skills and logical reasoning skills that are essential for the sciences through Python programming basics. Students will understand how the artificial intelligence system works and experience to build such a system using many open machine-learning libraries. After finishing this course, eventually, students will understand how to apply artificial intelligence in their own domain and what to study further to achieve such a purpose.

Prerequisites

High-school level of English and mathematics including derivatives and matrix

Objectives

1. Knowing the core concepts of artificial intelligence and its applications
2. Experiencing artificial intelligence applications in everyday life
3. Learning the basics of Python programming
4. Understanding the components of artificial intelligence systems such as TensorFlow and Keras open platforms

Program Outcomes

PO1 - an ability to think computationally through machine learning principles and algorithms
PO2 - an ability to implement computational thinking in Python programming language

My Own Personal Objectives

Give a fish, and you feed him for a day; teach a man to fish and you feed him for a lifetime.

Texts, Materials, and Resources

Textbook(Optional)

1. 모두의 딥러닝, 조태호 지음, 길벗 출판사

References

1. 케라스 창시자에게 배우는 딥러닝, Francois Chollet(프랑소와 숄레), 백해선 역, 길벗출판사
2. 프로그래밍을 처음 접하는 학생(1 학년): 한입에 쏙 파이썬, 김왼손, 김태간 지음, 한빛미디어
3. 프로그래밍 경험한 학생: 파이썬 프로그래밍(2 판), John V. Guttag, 김영섭 역, 홍릉출판사

MOOC Lectures

- "파이썬으로 배우는 기계학습" by Prof. Youngsup Kim is available from: www.kmooc.kr
- "Machine Learning" courses by Prof. Andrew Ng is available from: www.coursera.org

Joining Piazza Discussion Group is required.

To join Piazza, go the www.piazza.com and follow the instruction to register. If you are not allowed, you will be enrolled by the instructor.

- School: Handong Global University
- Course Number: GEK10109
  Course Name: 모두를 위한 인공지능의 활용, Artificial Intelligence Applications for All

Most of our communication between us will go through this SNS. Your questions should be posted here. Then your peers, TA or I will answer them.

Installing "Git" and "GitHub DeskTop"

Install "Git" and "GitHub DeskTop", and clone the following repository.

- **https://github.com/idebtor/JoyAI**

This will serve as our main information and software distribution repository for this course.
If you need a short introduction on GitHub Desktop, you may watch
[this](https://www.youtube.com/watch?v=77W2JSL7-r8).

- Read "README" first.
- Read "GettingStarted"
- Follow the instructions in "GettingStarted" to get started this course.
  You may see the following topics:
- Joining Piazza Discussion Group is required.
- Install "Git" and "GitHub Desktop"

Installing Anaconda

Anaconda is a Python and R distribution package. It aims to provide everything you need (python wise) for data science "out of the box". It includes:

- The core python language
- 200+ python "packages" (libraries)
- Jupyter Notebook
- conda, Anaconda's own package manager, used for updating Anaconda and packages

IDE(Integrated Development Environment) Tools

- Jupyter notebook – This comes with Anaconda, I prefer to use this tool to others.

Exams, Projects and Grading

Quizzes and Exams

There will be one midterm and one final exam. You may expect to have some quizzes every week. Also, you may have a few presentations and one final project presentation.

Class Participation, Teamwork, and Q/A's on Piazza

Proactive class interaction and teamwork are expected. You are encouraged to post your questions such as homework questions, debugging, errors, anything that other students may also be concerned as well. You may post some recommended resources you have found and share with your colleagues such as websites, tips, video lectures. Also, you are encouraged to help your peers by answering questions on Piazza.

Projects or Open Resources

Even if we have a basic textbook to use, we are going to use a lot of the most recent technical presentations and lectures from open resources available on the web. Don't be afraid of using tons of materials from the web in English or Korea.

Grading:

Grades will be assigned based on the following weights: (These weights are a rough estimation.)

Homework & Quizzes	40
Midterm & Final	20, 20
Final Project & Presentation	10, 10
-0.5 per tardiness, -1.0 per absence	
Total	100

Letter grades will be assigned using the following scale:

Grade		+
A	90.0	95.0
B	80.0	85.0
C	70.0	75.0
D	60.0	65.0
F	Below 60	

- P/F Grading is available optionally if you apply for it and get approved in time.
  - PD – Pass with distinction if over 85.
  - P – Pass if over 70.
  - F – Fail, otherwise
- **Pop-quizzes:** In the beginning of the semester, two students team up, study together, and help each other. **Pop-Quizzes will be graded by a team, not by individuals.**
- If you don't agree with my grading policy, you should let me know at the first week or day of registration such that I may suggest you an alternative or you should seriously think about options of changing the class or dropping the course. **At the discretion of the instructor, grades may NOT be "curved."**

Policies

Classroom Seat

Within a week or two after the term begins, your seat will be fixed for the first half of the semester at least. You may be seated any seat for the second half of the semester.

Late Work

Late work is **not** accepted**.** Please do not ask for extensions for homework and quizzes. If accepted, there will be a hefty penalty applied. The minimum penalty per day will be 25% and more, not more than two days for any reason.

Absences and Tardy

Attendance is checked from time to time. There will be a penalty for a missing class or late class attendance. Absence with an excuse such as doctor's appointment and job interview are allowed without penalty. Oversleeping, hangover, birthday, cold, body ache, or mom's visit would not be considered as an excuse.

Collaboration and Cheating

All incidents of cheating is reported to the Office of Student Affairs, who will maintain records of your academic misconduct.

1. Never have a copy of someone else's program in your possession either electronically or on paper and never give your program to someone else.
2. Discussing an assignment without sharing any code is generally acceptable. Helping someone to interpret a compiler error message is an example of permissible collaboration. However, if you get a significant idea from someone or internet sources, acknowledge them in your assignment.
3. These rules apply to homework and project. No cheatings whatsoever in exams and quizzes.

4. In group projects (if any), you share code freely within your team, but not between teams. Each in a team is responsible for the entire project, which means that you will be held responsible if your partner uses another team's solution to produce part of your team's solution.
5. Cheating on an exam, or cheating twice in any way, will earn you an F in the course. I reserve the right to assign an F in the course to anyone who cheats on a project, though I might not exercise it.
6. Never post a complete program on Piazza for help or question, but a line of code that causes an error. In that case, you do not forget posting the entire error message along with a line of code.

Reservation of Rights

I reserve the right to change this syllabus and these policies without prior notice.

Tentative Course Schedule

Wk	Topic	Homework and Quiz
1	강의 소개 및 인공지능 소개	
2	인공지능으로의 초대, 코딩으로의 초대(data types, variables)	FamousLectureQuiz1
3	인공지능으로의 초대, 코딩으로의 초대 (string)	FamousLectureQuiz2
4	인공지능으로의 초대, 코딩으로의 초대 (repetition)	FamousLectureQuiz3
5	인공지능으로의 초대, 코딩으로의 초대 (conditions, logics)	FamousLectureQuiz4
6	인공지능으로의 초대, , 코딩으로의 초대 (list) 내 손으로 만져보는 인공지능 - 딥러닝의 동작 원리, 함수와 뉴론	FamousLectureQuiz5
7	코딩으로의 초대 (list comprehension) 내 손으로 만져보는 인공지능 – 활성화함수, 퍼셉트론	FamousLectureQuiz6
8	중간고사	절대평가
9	내 손으로 만져보는 인공지능 – 선형 회귀 적용하기, 인공신경망	FamousLectureQuiz7
10	내 손으로 만져보는 인공지능 - 인공신경망의 순전파	FamousLectureQuiz8
11	내 손으로 만져보는 인공지능 – 인공신경망의 역전파	FamousLectureQuiz9
12	내 손으로 만져보는 인공지능 – XOR 문제, MNIST 문제 A Sample Project	
13	내 손으로 만져보는 인공지능 – 경사하강법 프로젝트 그룹 토의, 선택	
14	프로젝트 구현, 보고서 작성	
15	프로젝트 Video 제작, Posting, Presentation	상대평가
16	기말고사	절대평가

Do the first things first during the first week of the semester:

1. Join **www.piazza.com**.
   School: Handong Global University
   Course: Artificial Intelligence Applications for All
   Let me know your 'real' email address such that I can invite you to join in Piazza. Then simply accept my invitation when you get an email from Piazza.
2. Install GitHub Desktop and Git.
   A. Clone a repository: https://github.com/idebtor/JoyAI
3. Install **Anaconda** package.
   A. NOTE: Do not forget to check 'PATH' option when you install Anaconda.
   B. Have Python ready to run on your computer.
4. Read README including references or links.
   A. https://github.com/idebtor/JoyAI/README
5. Read or Watch materials listed in **KMOOC Week 1..**