강 의 계 획 서(Syllabus)

2023 년도 2 학기 2023년 9월 16일 토요일

교과목명	자연언어처리	담당교수명	김태간
학수번호	ITC3603-002 학점:3.0	교과목영문명	Natural Language Processing
강의시간표	6-326:토12,13,14,6-525:수24,25,26	강좌평가방법	상대평가
기타정보			
전공능력 및 핵심역량	[전공능력] 1. IT융합지식 :IT분야의 기본 및 고급 지식을 이해하고 이를 활용하여 융합할 수 있는 능력 2. SW 전문지식:소프트웨어의 기본 및 고급 지식을 이해하고 이를 활용하여 융합할 수 있는 능력		
첨부파일			

교수프로필 (자세히보기)	Invited Professor in Software Convergence Engineering at Inha University lecturenotesindeadlock@gmail.com
강의목표	The course aims to provide students with an understanding of the fundamental concepts and principles of Natural Language Processing (NLP), as well as acquiring knowledge of the key domains and application methods in NLP. Students will learn to utilize various tools and libraries used in NLP to process textual data and solve problems. Furthermore, students will develop an understanding of ethical considerations in NLP and explore the potential advancements in the field. They will also gain practical experience in NLP applications through a project.
강의개요	This course is an introductory course on Natural Language Processing (NLP), where we will introduce the basic concepts and techniques. NLP is a technology that enables computers to understand and process human language. It is an important technology used in various fields, such as search, translation, chatbots, and question-answering systems. The course will cover the following topics: Overview of Natural Language Processing Fundamentals of Natural Language Processing Key algorithms in Natural Language Processing Major tools used in Natural Language Processing Major applications of Natural Language Processing Ethical considerations in Natural Language Processing
교재	
부교재및참고도서	서명:Hands-On Machine Learning with Scikit-Learn, Keras, and Tensorflow: Concepts, Tools, and Techniques to Build Intelligent Systems (Concepts, Tools, and Techniques to Build Intelligent Systems) 저자: Aurelien, Geron 출판사: Oreilly & Associates Inc 출판년도: 2019 ISBN: 9781492032649 서명:Getting Started with Google BERT(Paperback) (Build and train state-of-the-art natural language processing models using BERT) 저자: Ravichandiran, Sudharsan 출판사: Packt Publishing 출판년도: 2021 ISBN: 9781838821593 서명:Natural Language Processing with Pytorch: Build Intelligent Language Applications Using Deep Learning (Build Intelligent Language Applications Using Deep Learning) 저자: Rao, Delip^Mcmahan, Brian 출판사: O'Reilly Media 출판년도: 2017 ISBN: 9781491978238 서명:Natural Language Processing with Transformers: Building Language Applications with Hugging Face (Building Language Applications with Hugging Face) 저자: Tunstall, Lewis^Werra, Leandro Von^Wolf, Thomas 출판사: O'Reilly Media 출판
강의진행방식	The course will be conducted in the following manner: Lectures: The lectures will provide students with a theoretical understanding of the fundamental concepts and techniques of natural language processing. This will include topics such as text processing, natural language understanding, and natural language generation. Lab Exercises: The lab exercises will give students the opportunity to practice the techniques that they learn in the lectures. This will involve working with real-world data and using natural

	language processing tools to solve problems. Projects: The projects will allow students to apply their knowledge of natural language processing to solve real-world problems. This could involve developing a chatbot, creating a text summarizer, or building a machine translation system.
수업 방법	강의식
수강시유의사항	The Wednesday class is a recorded lecture through blended learning, while the Saturday class is an offline face-to-face session. The minimum prerequisite knowledge that students should have to take this course is as follows: Programming Basics: Students should have a basic understanding of programming concepts and syntax in languages such as Python, C++, or Java. Python is particularly important as it is widely used in NLP. Basic Statistics Knowledge: NLP requires a basic understanding of statistical concepts for data analysis and model evaluation. Students should be familiar with concepts such as mean, variance, probability, and basic statistical inference methods. Linear Algebra: Since matrix operations are commonly used in NLP, students should have a basic understanding of linear algebra concepts and matrix operations. Knowledge of concepts such as vector and matrix multiplication, transpose, and inverse is essential. Fundamentals of Machine Learning: Familiarity with the basic concepts and types of machine learning is beneficial for NLP, as machine learning algorithms are often applied. Understanding concepts such as supervised learning, unsupervised learning, clustering, and classification will aid in understanding the course material.
공학인증관련	
특별지원관련	장애학생의 원활한 수강을 위하여 지원이 필요한 경우 담당교원 및 장애학생지원센터(☎860-7067)와 사전에 협의할 수 있습니다.
Office Hour (상담시간)	

평 가 기 준							
중간고사	기말고사	출석	과제	퀴즈	토론	기타	계
40 %	40 %	10 %	0 %	10 %	0 %	0 %	100 %
평가기준 세부내역							

강 의 진 행 계 획 서			
주 차	구분	내 용	강의방식
1	강의주제	Orientation and Introduction to Natural Language Processing	
	강의내용		
	시험및과제		
2	강의주제	Essential Python Libraries for Natural Language Processing	
	강의내용		
	시험및과제		
3	강의주제	Web Scraping and Data Extraction	
	강의내용		
	시험및과제		
4	강의주제	Text Data Preparation for Statistics and Machine Learning (1)	
	강의내용		
	시험및과제		

5	강의주제	Text Data Preparation for Statistics and Machine Learning (2)	
	강의내용		
	시험및과제		
6	강의주제	Feature Engineering and Syntactic Similarity	
	강의내용		
	시험및과제		
7	강의주제	Classification Algorithms	
	강의내용		
	시험및과제		
8	강의주제	Midterm Exam	
	강의내용		
	시험및과제		
9	강의주제	Deep Learning Framework	
	강의내용		
	시험및과제		
10	강의주제	Topic Modeling and Clustering	
	강의내용		
	시험및과제		
11	강의주제	Text Classifier	
	강의내용		
	시험및과제		
12	강의주제	Introduction to the Transformer	
	강의내용		
	시험및과제		
13	강의주제	BERT, GPT	
	강의내용		
	시험및과제		
14	강의주제	Project	
	강의내용		
	시험및과제		
15	강의주제	Final Exam	
	강의내용		
	시험및과제		
16	강의주제	보강실시, 기초교양필수 기말고사	
	강의내용	20230930 추석연휴 - 별도보강 수업	
	시험및과제		