

北京大学深圳研究生院
Peking University Shenzhen Graduate School
(2021-2022 学年 year 第 2 学期 semester)
课程大纲 Syllabus

课程编号 Course ID:	开课学期 Course Time:	2
总学时 Total hours: 36	学分 Credit:	2
课程名称 Course Name:	人工智能与金融科技	
英文名称 English Name:	Artificial Intelligence and FinTech	
教学方式 Teaching Style:	课堂讲授	
考试方式 Examination Method:	作业+考试	
先修要求 Prerequisites:	线性代数、统计学，程序设计基础	
主讲教师 Lecturer:	邹月嫻 (Cynthia Zou)	
辅助教师 Teaching Assistant:	杨邦 (Bang Yang)	
学科领域 Field of study:	计算机应用技术、人工智能、数据分析、金融科技 (Computer Application Technology, Artificial Intelligence, Data Analysis, Financial Science and Technology)	
大纲执笔人 Syllabus author:	邹月嫻	制定年月 Date: 2022 年 4 月 28 日
成绩评定方法 Grading:	<ol style="list-style-type: none">1、出席与参与度 (Attendance and participation) : 10%2、读书与调研报告 (Course Reading and Research Report) : 20%3、学生作业及口头报告 (Student Project and Oral Representation) : 40%4、笔试 (Written examination) : 30%	
大纲内容简介 (300 汉字以内):	<p>Brief introduction of the syllabus (300 words at most): 人工智能是计算机科学和金融科技中重要的技术内容。随着移动互联网、大数据、通信技术的快速发展，人工智能在金融科技多个领域（金融交易行为分析与评价、金融信用/贷款评估、个人金融助理、智能客服、量化和资产管理、智能保险服务、市场研究/情绪分析、智能金融监管等）成为关键核心和支撑技术。 本课程为金融科技专业必修基础课程，主要讲授人工智能发展脉络，相关基础理论，最新和主流的算法和技术，结合金融科技 3.0 中的智能客服、市场分析、金融数据分析与挖掘需求和具体问题，介绍应用案例，为学生理解人工智能与金融科技领域技术现状，开展相关领域技术开发和科学研究奠定基础。</p> <p>(Artificial intelligence plays key roles in computer science and financial science and technology-FinTech. With the rapid development of mobile internet, big data and communication technology, artificial intelligence has become the core supporting technology in many fields of FinTech including financial transaction behavior analysis and evaluation, financial credit/loan evaluation, personal financial assistant, intelligent customer service, quantitative analysis and asset management, intelligent insurance service, marketing research/emotional analysis, intelligent financial supervision etc.</p> <p>This course is a compulsory course for finance major. It mainly covers the history of AI development, relevant basic theories, latest and mainstream algorithms and technologies; Regarding to several key technologies of FinTech 3.0 and the demand of finance applications such as customer service, market analysis, financial data analysis and mining, the course will introduce some case studies to help students understand the state-of-art of</p>	

AI technologies and FinTech, which will laid the foundation of the scientific research and technology.)

大纲详细内容(2000 汉字以内): (请按开课单元撰写, 注明学时)

每次课 2 学时 (2 hours / class)

- 1) AI 与 FinTech 课程简介: Course Orientation for AI and FinTech
- 2) 金融科技商业模式概述: Introduction to Business Models of Fintech
- 3) 人工智能概述: Introduction to the History of AI and Its Technical Trend
- 4) 机器学习基础: Fundamentals of Machine Learning
- 5) 深度学习导论: Introduction to Deep Learning
- 6) 金融科技中的计算机视觉: Computer Vision for FinTech
- 7) 循环神经网络: Recurrent Neural Networks
- 8) Python 基础及其应用: Python Fundamentals (助教)
- 9) 无监督学习与聚类分析: Unsupervised Learning & Clustering
- 10) 企业家专题报告-金融科技实战(暂定): Seminar: FinTech Practice (Tentative)
- 11) 学生中期技术研究报告汇报: Mid-term Technology Research Report Presentation
- 12) 生成对抗网络简介: Introduction to Generative Adversarial Network (GAN)
- 13) 自然语言处理基础: Natural Language Processing Basics
- 14) 注意力机制和 Transformer: Attention and Transformer
- 15) 深度无监督学习简介: Introduction to Deep Unsupervised Learning
- 16) 预训练模型与微调: Pre-trained Models and Fine Tuning
- 17) 学生期末报告 1: Final Project Presentation
- 18) 学生期末报告 2: Final Project Presentation
- 19) 期末考试: 开卷考试 (Open book examination)

教材 Text book: 无

参考资料 Reading materials:

- 1) 李开复等, 《科学+遇见人工智能》, 人民邮电出版社, 2017
- 2) 尼克, 《人工智能简史》, 人民邮电出版社, 2017
- 3) 李航, 《统计学习方法》, 清华大学出版社, 2012
- 4) 周志华, 《机器学习》, 清华大学出版社, 2016
- 5) Yoshua Bengio, 《Deep Learning》, 2017 (有中文译本)
- 6) Susanne Chishti, FinTech (全球金融科技权威指南), 中国人民大学出版社, 2017
- 7) 曾鸣, 智能商业, 中信出版社, 2018
- 8) 由曦, 蚂蚁金服: 科技金融独角兽的崛起, 2017
- 9) Yuxing Yan (2017), Python for Finance, Second Edition, Packt Publishing
- 10) Jake VanderPlas, Python Data Science Handbook: essential tools for working with data, 2017
- 11) 之江实验室: 《金融科技白皮书(2020)》
- 12) Mohammad Taher Pilehvar and Jose Camacho-Collados, Embeddings in Natural Language Processing: Theory and Advances in Vector Representation of Meaning, 2020