

东南大学 2021 年国际暑期学校项目介绍

Introduction of SEU International Summer Seminar Program

项目主题 (Theme)

东南大学 2021 年第二届智能感知国际暑期学校

2021 The 2nd International Summer Workshop on intelligent sensing, Southeast University

项目概述 (Overview)

针对测控技术与仪器专业及电类相关专业对国际化人才日益增加的需求, 本项目对中国学生和国际学生具有同等的培养作用。本课程面向国内外本科生、本年度外校意向免试研究生, 在校外籍研究生留学生等。暑期学校将邀请世界一流大学知名教授开展面向我校本科生和海外合作大学国际学生的全英文课程, 在面向本专业学生授课同时, 向校内其他相关专业及境外合作高校的国际学生开放。项目邀请了来自国外知名高校的教授分别主讲以下三门主题课程: Artificial Intelligence and Challenges in Machine Learning and Data Sciences、AI-Based Applications in Control Systems、Matlab Programming for Data Science in Smart Sensing, 分别可对应获取模式识别、控制技术与系统、matlab 语言与应用等相关课程学分。本国际暑期学校的目标是以现代智能感知、检测与数据处理理论为指导, 合理应用电子、计算机、人工智能、机械、自动控制、通信、信息处理等各专业领域的知识, 将传统传感的信号采集推向智能传感, 将传统测量的信号分析推向智能数据分析, 显著提升仪器类人才的人工智能跨学科技能。课程拟从面向生物医学等应用的传感物理原理、传感系统设计、传感数据的智能处理等角度出发, 在仪器科学、数据科学与计算机科学等学科交叉前沿方向选取适当的模型案例作为载体, 介绍相关领域的最新研究成果, 提升学生对知识的理解, 强化学生对知识的运用, 展示智能传感技术在实际应用中的重要性。本课程的特色是理论与应用并重, 并体现跨学科交叉融合。

In response to the increasing demand for international talents in measurement and control technology and instrument majors and electrical related majors, this project aims to train Chinese students as well as international students, undergraduates as well as graduate students in the related area. The program will invite well-known professors from world-class universities to carry out English courses. The project invites professors from overseas universities to give lectures in the following three subject courses: Artificial Intelligence and Challenges in Machine Learning and Data Sciences, AI-Based Applications in Control Systems, Matlab Programming for Data Science in Smart Sensing. Participants will get credits for similar courses such as Pattern Recognition, Control techniques and systems and matlab programming and its applications.

The theme of this program is intelligent sensing. The courses intend to start from the perspectives of sensor physics principles, sensor system design, and intelligent processing of sensor data for applications such as biomedicine, and select appropriate model cases in the cutting-edge direction of instrument science, data science and computer science.

日程安排 (暂定) (Schedule (Draft))

Artificial Intelligence and Challenges in Machine Learning and Data Sciences

Time	Topic
Aug 19 8:30am~11:30am	Artificial Intelligence outline
	Machine learning
Aug 20 8:30am~11:30am	Supervised Learning (SL)
	No-Supervised Learning (NSL)
Aug 23 8:30am~11:30am	SL-Decision Tree
	SL-Bayesian Network
Aug 24 8:30am~11:30am	SL-Neural Network
	SL-Support Vector Machine
Aug 25 8:30am~11:30am	Discussion on for linear and non-Linear Data
	NSL and SL: Clustering
Aug 26 8:30am~11:30am	K-means
	DBSCAN, C-Means
Aug 27 8:30am~11:30am	Data mining, Streaming
	Semi Supervised Learning
Aug 31 8:30am~11:30am	Deep learning
	Discussion and Examinations.

Platform for online class: Tencent Meeting

Contact: liyuwen@seu.edu.cn

AI-Based Applications in Control Systems

Time	Topic
Aug 2 14:00pm~17:30pm	Introduction – part 1.
	Introduction – part 2.
Aug 5 14:00pm~17:30pm	Swarm intelligence – part 1
	Swarm intelligence – part 2
Aug 9 14:00pm~17:30pm	Introduction to reinforcement learning - part 1
	Introduction to reinforcement learning - part 2
Aug 12 14:00pm~17:30pm	Flight control using reinforcement learning - part 1
	Flight control using reinforcement learning - part 2
Aug 16	Perception - part 1

14:00pm~17:30pm	Perception - part 2
Aug 19	Perception - part 3
14:00pm~17:30pm	Perception - part 4
Aug 23	Decision making based on game theory - part 1
14:00pm~17:30pm	Decision making based on game theory - part 2
Aug 26	Decision making based on game theory - part 3
14:00pm~17:30pm	Decision making based on game theory - part 4

Platform for online class: Tencent Meeting

Contact: lifengzhu@seu.edu.cn

Matlab Programming for Data Science in Smart Sensing

Time	Topic
July 5	Basics of MATLAB Application
14:00pm~17:30pm	Basics of MATLAB Application
July 7	Graphics Plotting – part 1
14:00pm~17:30pm	Graphics – part 2
July 9	Graphics – part 3
14:00pm~17:30pm	Graphics – part 4
July 12	Linear equations – part 1
14:00pm~17:30pm	Linear equations – part 2
July 14	Curve fitting and interpolation – part 1
14:00pm~17:30pm	Curve fitting and interpolation – part 2
July 16	DSP Applications -part 1
14:00pm~17:30pm	DSP Applications -part 2
July 19	Simulink toolbox - part 1
14:00pm~17:30pm	Simulink toolbox - part 2

Platform for online class: Tencent Meeting

Contact: huanglibin@seu.edu.cn

计划招生人数 (Number of Participants)

150

申请要求 (Application Requirements)

测控技术与仪器等类似专业的大二、大三学生，要求具备英语听说能力，已先修程序设计、高等数学、概率论与数理统计、控制论等知识。

Sophomore or Junior students majoring in measurement and control or related areas. Applicants should be familiar with English. The prerequisites include programming, calculus, linear algebra, statistics and automated control.

申请截止时间 (Application Deadline)

2021 年 6 月 15 日
June. 15th, 2021

主办/承办单位 (Host & Organizer)

东南大学仪器科学与工程学院
School of Instrument Science and Engineering, Southeast University

联系人及联系方式 (Contact Information)

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