School of Engineering and Natural Sciences / Computer Engineering (English)

2023 - 2024 Academic Year

EMBEDDED ARTIFICIAL INTELLIGENCE and COMPUTER VISION

Syllabus

Course Description						
Name		**Code**	**Semester**	**T+A Hour**	**Credit**	**ECTS**
EMBEDDED ARTIFICIAL INTELLIGENCE and COMPUTER VISION		COE4215378	Spring Semester	2+2	3	6
Prerequisites Courses	BİLGİSAYARLA GÖRMEYE GİRİŞ					
Recommended Elective Courses						
Language of Instruction	English					
Course Level	First Cycle (Bachelor's Degree)					
Course Type	Elective					
Course Coordinator	Prof.Dr. Bahadır Kürşat GÜNTÜRK					
Name of Lecturer(s)	Prof.Dr. Bahadır Kürşat GÜNTÜRK					
Assistant(s)						
Aim	Develop artificial intelligence and computer vision applications in edge devices (Nvidia Jetson)					
Course Content	This course contains; Introduction to Linux operating system,Installation of Nvidia Jetson Nano,Face detection application,Installation and use of CSI camera,Utilizing GPU functions of OpenCV,Optical flow and object detection applications,OpenCV DNN module applications,TensorRT model optimization and usage,Mediapipe application,Tesseract application,Nvidia Jetson GPIO usage,Semester project progress (I),Semester project progress (II),Project demo.					

Course Learning Outcomes	**Teaching Methods**	**Assessment Methods**
Develops artificial intelligence and computer vision applications in resource constraint platforms	14	F
Uses Nvidia Jetson platform	14	F

Teaching Methods	14: Self Study Method
Assessment Methods	F: Project Task

Lecture Schedule

Sequence	**Topics**	**Preliminary Preparation**
1	Introduction to Linux operating system	
2	Installation of Nvidia Jetson Nano	
3	Face detection application	
4	Installation and use of CSI camera	
5	Utilizing GPU functions of OpenCV	
6	Optical flow and object detection applications	
7	OpenCV DNN module applications	
8	TensorRT model optimization and usage	
9	Mediapipe application	
10	Tesseract application	
11	Nvidia Jetson GPIO usage	
12	Semester project progress (I)	
13	Semester project progress (II)	
14	Project demo	

Evaluation Methods	**Weight(%)**
Midterm Exam	30
General Exam	70

Resources