Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
INF 538	Computational Analysis of Human Behavior	1	3	0	0	3	6

Prerequisites	
Admission Requirements	

Language of Instruction	English
Course Type	Elective
Course Level	Masters Degree
Objective	The course focuses on machine learning and pattern recognition techniques commonly used in human behavior analysis. The primary objective of the course is to introduce students to recent research and diverse applications in this field and to help them apply their theoretical knowledge to the problems and challenges encountered in human behavior analysis using modern methods and multimodal approaches.
Content	This course examines machine learning and pattern recognition techniques used in the computational analysis of human behavior. It introduces the most commonly used techniques and algorithms in this field and presents examples of real-world applications. These applications include gait and posture analysis, hand gesture recognition in sign language, activity recognition in image sequences, tracking social signals, multimodal behavioral analysis (based on visual, auditory, and physiological signals), and the study of social interactions.
References	Salah, A. A., & Gevers, T. (Eds.). (2011). Computer analysis of human behavior. London: Springer. Uddin, M. Z. (2024). Machine Learning and Python for Human Behavior, Emotion, and Health Status Analysis. CRC Press. Yu, Z., & Wang, Z. (2020). Human behavior analysis: sensing and understanding (pp. 1-271). Singapore: Springer. Paramasivan, P., Rajest, S. S., Chinnusamy, K., Regin, R., Joseph, J., & Joe, F. (Eds.). (2024). Explainable AI applications for human behavior analysis. IGI Global.

Theory Topics

Week	Weekly Contents
1	Capturing and interpreting human behavior using computational methods
2	Sensor-based behavior recognition
3	Device-free behavior recognition
4	Activity recognition : Gait and posture analysis
5	Activity recognition : Sign language recongition
6	Social and affective behaviors : Speech and voice analysis
7	Social and affective behaviors : Multimodal interaction in rehabilitation
8	Social and affective behaviors : Emotion recognition in social interaction
9	Midterm
10	Adaptive and personalized systems
11	Example : Activity monitoring systems in health care applications
12	Example : Human behavior analysis in ambient gaming and playful interaction

Week	Weekly Contents
13	Challenges and open issues
14	Student presentations