**Content**

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

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| Prerequisites | |
| Admission Requirements | |

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| 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.<br>Uddin, M. Z. (2024). Machine Learning and Python for Human Behavior, Emotion, and Health Status Analysis. CRC Press.<br>Yu, Z., & Wang, Z. (2020). Human behavior analysis: sensing and understanding (pp. 1-271). Singapore: Springer.<br>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 |
| 13 | Challenges and open issues |
| 14 | Student presentations |