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| **TSC Category** | Development and Implementation | | | | | |
| **TSC Title** | Computer Vision Technology | | | | | |
| **TSC Description** | Develop and deploy vision analytics algorithm and spatial sensing and/or reasoning systems | | | | | |
| **TSC Proficiency Description** | **Level 1** | **Level 2** | **Level 3** | **Level 4** | **Level 5** | **Level 6** |
|  |  |  | **ICT-DIT-4022-1.1** | **ICT-DIT-5022-1.1** |  |
|  |  |  | Set-up and deploy video analytics algorithms and perform system performance evaluations | Build spatial sensing and spatial reasoning systems |  |
| **Knowledge** |  |  |  | * Vision system concepts * Business applications of vision systems * Methods to represent image and video data * Image and video processing, filtering and transformation methods * Feature extraction and representation techniques * Local feature descriptions, edge, colour, texture and motion * Global feature descriptions, statistical and geometrical methods * Deep learning concepts * Object segmention, detection and recognition * Activity tracking, generative models, scene understanding and event discovery * Vision system architecture * Vision communication protocols * Real-world design constraints and solution options | * Spatial sensing technology and modelling from sensor data * Applications of spatial sensing and reasoning technology * 3D sensor data representation and modelling * Sensor data representation and modelling * 3D scene scanning and mapping * Stereo vision for scene reconstruction, camera pose estimation, structure from motion * Feature extraction, description and registration from sensor data for spatial localisation * Machine learning methods for spatial localisation, 3D object recognition and 3D scene recognition * Applications of spatial sensing and reasoning in robotics, gaming and augmented reality |  |
| **Abilities** |  |  |  | * Identify the needs of vision systems technology in industrial applications * Apply the principles of processing, filtering and analysis methods for video data * Analyse global feature descriptions * Design and implement feature extraction and representation methods * Design and apply machine-learning based methods for object detection, object tracking and activity recognition * Design and apply video analytics algorithms for high-level video analytics tasks * Design the architecture of appplied vision systems * Design, develop and evaluate edge-based and cloud-based systems | * Evaluate and implement sensor data models and representation methods * Analyse local and global feature extraction and descriptions for 3D scenes * Design and implement scene scanning and mapping methods * Design and apply machine learning-based methods for 3D object and scene recognition * Analyse the representation of video data in spatial and temporal domain * Process, filter and analyse video data in real time using modelling and processing models * Analyse the object trajectory using classification and clustering methods * Perform object tracking and action recognition in video sequences in realtime * Analyse audio signal representation in spatial and frequency domain * Design and apply audio classification methods using machine learning techniques * Design real-time audio-visual sense making systems |  |
| **Range of Application** |  | | | | | |