TU Clausthal

Abschlussvortrag Masterarbeit Arnold Jojo Kattampally

„Radar Driven People Recognition"

As Industry 4.0 progresses, it leverages smart technologies including the Internet of Things (IoT), cloud computing, and artificial intelligence (AI). These technologies are instrumental in setting up intelligent factories where automated systems use sensor data to make critical decisions, creating safe and efficient workspace. The effective implementation of these systems depend upon the accurate and reliable identification and recognition of humans in their operational surroundings.

This thesis proposes an innovative system for individual human recognition via gait patterns, utilizing radar detections obtained from a Frequency Modulated Continuous Wave Radar(FMCW) Multiple-Input Multiple-Output (MIMO) radar operating at 60 GHz and using a neural network for the decision making. Radar signal processing algorithms were employed to cluster and track walking individuals, enabling the efficient extraction of gait features. This lead to a training dataset exclusively consisting of gait features only, eliminating any influence from the environment on the dataset generated. This approach resulted in a recognition accuracy of 94% when identifying individuals in a different environment where the system was not previously trained on. The use of neural network helps to identify individuals from radar point cloud data, surpassing traditional recognition systems reliant on camera technology, which often fall short in the factory environment due to factors like dust and poor lighting.

Betreuer der Arbeit:	Prof. Dr. Rüdiger Ehlers, Prof. Dr. Sven Hartmann (Institut für Informatik)
Datum:	Dienstag, 11. Juli 2023, 10:00 Uhr
Ort:	Online-Meeting über BBB Link: https://webconf.tu-clausthal.de/b/sim-uc9-rvy