

Session 1: Energy Efficiency

Smart Home – AI at the edge

Nils Kucza, Bielefeld University

Abstract

Within the Smart Home domain, energy-efficient computing is a crucial product feature when it comes to local data processing. Cognitive edge computing, with its capability of delivering local computing performance enabling reliable, low-latency processing without the need to connect to the cloud and introducing potential security and privacy threats is a promising option to tackle this challenge.

While off the shelf edge hardware solutions like a GPU workstation are capable of delivering the required compute performance, its power consumption of more than 600 W imposes a problem, as this would not be accepted in a smart home environment.

Within LEGaTO, a heterogeneous, modular and scalable edge hardware platform is developed and applied to the Smart Home environment available at Bielefeld University. It enables simultaneous object, gesture, face and speech recognition within a <50 W power envelope, which is demonstrated using an intelligent mirror.