DC5: Agile network configuration for ultra-low-latency Tactile Internet

Application deadline: 28-02-2023 | Date of enrolment: 1-9-2023

Project description

This project aims to provide agile communication and networking solutions for Tactile Internet services in the Network Domain connecting humans and robots. Therefore, an end-to-end multi-domain orchestration with optimal 5G/B5G network configuration is vital to establish Tactile Internet services offering the required QoS (Quality of Service)/QoE (Quality of Experience)/QoT (Quality of Task). In addition, as Tactile Internet services require communication of multi-modal sensor data (visual/auditory/haptic), which have different requirements regarding sampling rate, transmission rate, latency, reliability, and others, it requires the network to support at least uRLLC traffic (e.g., haptic data) and eMBB traffic (e.g., 3D video stream). From a radio resource management and information theory perspective, multiplexing of large video packets (low update rate) with small haptic packets (high update rate) requires careful consideration of their characteristics. Hence, the significant communication and networking challenges are how to support highly demanding and diverse information flows and to meet their processing and control needs, while keeping the network operating at optimal points in the latency, resilience, and throughput trade-off hyperspace.

In short, this project has two main goals: (1) To achieve ultra-low latency and reliability through seamless relocation of computation and network functions and dynamic path reconfiguration; and (2) To develop end-to-end network slicing solutions based on SDN and integrating NFV for Tactile Internet.

Eligibility Conditions

- Diploma or master's degree in Electrical Engineering, Computer Science, or equivalent
- The candidates are eligible if they have not resided in Germany for more than 12 months within the past 36 months

Required Skills

- Research and R&D activities to embedded systems and tactile Internet
- Strong analytical skills and techniques, which can be demonstrated in previous works
- English language proficiency as well as good oral and written communication skills
- Great teamwork ability and motivation to pursue new knowledge in softwarized networking

How to apply

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