GOODMILL
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The 5G-enabled self-driving test vehicle running on open roads

Automated Vehicles in Winter Traffic

The international 5G-MOBIX project funded within EU Horizon 2020 programme works to qualify 5G for automated driving. In some of the first pre-trials of the project, carried out at the Otaniemi campus of Aalto University in Finland in February 2021, a 5G-enabled self-driving test vehicle by the Finnish company Sensible 4 was evaluated. The self-driving test vehicle, which is approved for use on public road, ran on a two-kilometers route with mixed traffic of cars, service trucks, public busses, and pedestrians. What is also impressive is that the tests were done under the challenging Nordic winter conditions; that is, with temperatures down to -18 degrees Celsius, and snow covering lane markings challenging the vehicle's perception. Quite a challenge requiring highly reliable connectivity!

TECHNICAL SETUP

In the campus area, Aalto University can setup up to ten different 5G public land mobile networks (PLMN). Two of these PLMNs are used in the 5G-MOBIX project, both in the non-stand-alone (NSA) and stand-alone (SA) mode, and with one core network running locally and the other hosted thousands of kilometers away in a cloud deployment. Additionally, two commercial operators already offer 5G NSA connectivity in the campus area. The test-bed then emulates crossing national borders scenarios which require seamless switching and concurrent use of various types of 5G networks. A requirement that the Goodmill's routers were built to fulfill.

Indeed, in the pre-trials, the self-driving test vehicle was equipped with a 5G On-Board Unit (OBU) based on the mobile multi-channel router w24h-S by Goodmill Systems, which integrates multiple 5G modems. Goodmill router enabled seamless transfer of vehicle-to-network connections from one 5G network to another.

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Aalto University

5GMOBIX

ROAD AHEAD

The pre-trials were a success. The self-driving test vehicle drove amidst other traffic repeated times with no incidents, and the connectivity stayed up and enabled the system to perform as designed. These pre-trials tested 5G enabling key functions of the automated driving, such as collision avoidance, lane merging, and remote driving, as well as new developed applications for CCAM (cooperative, connected, and automated mobility). The results will be made available soon in the form scientific and dissemination publications.

The 5G-MOBIX project will continue with local trials in Finland and other European and Asian sites. Cross-border trials are also planned in southern Europe, one between Spain and Portugal and the other between Greece and Turkey. We are eagerly waiting to continue our cooperation and trials with Aalto University and Sensible 4. The aim is nothing less than to enable automated driving with no geographical limitations.

Goodmill Systems w24h-S multichannel router

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