

CONVERGE: Telecommunications and Computer Vision Convergence

Description

Telecommunications and computer vision have evolved as separate scientific areas. This is envisioned to change with the advent of wireless communications with radios operating in the millimetre-wave frequencies and up to the sub-THz, characterised by line-of-sight operating ranges, which could benefit from visual data to accurately predict the wireless channel dynamics such as anticipating future received power and blockages, as well as constructing high-definition 3D maps for positioning.

On the other hand, computer vision applications will become more robust against occlusion and low luminosity if helped by radio-based imaging, such as the high-frequency radio signals generated by 6G large reconfigurable intelligent surfaces that can also provide high-resolution sensing. This new joint research field relies on a range of technologies in the fields of wireless communications, computer vision, sensing, computing, and machine learning.

This field has a high innovation potential not only because of the large domain of innovative applications it enables but also because of the relevant know-how available in Europe in these areas. However, the full potential of this convergent research area can only be evaluated if adequate Research Infrastructures (RI) and tools are available.

The main objective of the CONVERGE project is the development of an innovative toolset combining radio and vision-based communications and sensing technologies to enable an emerging area of research aligned with the motto view-to-communicate and communicate-to-view. This new area of research departs from the traditional and isolated research in each field. It aims at creating new knowledge and discoveries at the intersection of wireless communications, computer vision, sensing, and machine learning.

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