

# Aware Intelligent Systems

## A Research Theme within Research for Innovation

–the overarching strategic research programme at Halmstad University, with support from The Knowledge Foundation

### Background and Motivation

Today's society is overwhelmed with data. Data volumes grow much faster than the number of people with skills to analyse it.

We need machines that can automatically mine this data for knowledge that can be used for almost anything: guiding autonomous vehicles, enabling advanced health-care, increasing quality of life, suggesting music you like, etc, etc..

Users expect such intelligent machines to act “human like”, from the reasoning and acting point of view; they expect them to be aware.

### Purpose and Long-term Goals

To enable technologies and systems based on these technologies that are capable of mimicking the human ability to observe, remember, learn, reason, decide and act.

Such aware intelligent systems should be able to find knowledge in sensor readings, reason about the situation or the system itself, and project its future actions including feedback (if necessary) to lower processing levels.

### Research Areas and Methods

Machine learning, Signal/Image processing, Robotics/Mechatronics.

Supervised and unsupervised learning, signal/image filtering (feature extraction), joint human-machine learning, information fusion, time-frequency analysis

### Status and Development Plans

The research profile CAISR was started in 2012 to build up and establish a key research centre that focuses on aware intelligent systems, within two specific application areas: intelligent vehicles and health care technology.

CAISR today has more than 40 members, an annual research volume of about 20 MSEK, of which 70% are external grants, and a scientific publication output of 30 peer-reviewed papers per year.



### Strategic Partners

Volvo Technology AB, Kollmorgen AB, Optronic AB, Toyota Material Handling Europe AB, NEAT Electronics AB, Tappa Service AB, Swedish Adrenaline, Daralabs AB, Phoniro

### Key Funding Sources

The KK-foundation, VINNOVA, EU, the Swedish Science Council (VR), and the Brazilian Science without Borders programme.

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