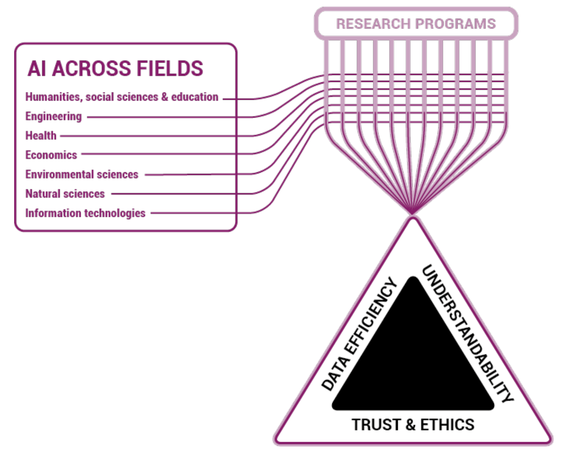
FCAI Finnish Center for Artificial Intelligence

fcai.fi

AI for sustainability (Highlight F)

AI for sustainability is a new FCAI Highlight launched at the beginning of year 2022. It is focused especially on identifying and supporting FCAI's innovations that are relevant for sustainability. It also runs a Virtual Laboratory called Sustainable Mobility and Autonomous Systems jointly with Research Program R6 (Autonomous AI).

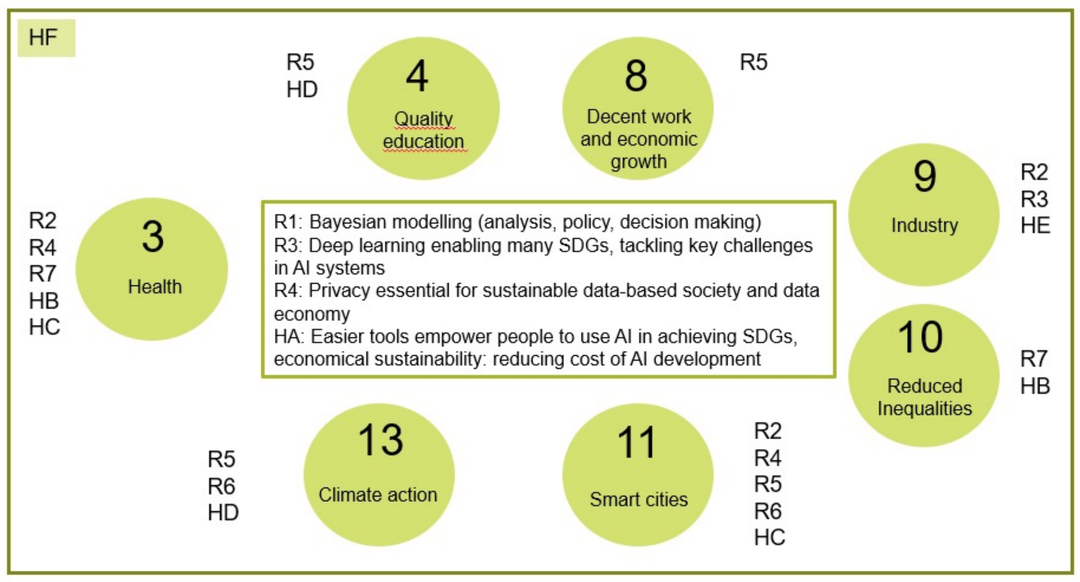


Identifying and supporting FCAI's Sustainability innovations

Highlight F aims at

- Identifying and promoting FCAI's innovations that are relevant for sustainability
- Strengthening collaboration with sustainability research (universities, companies, public sector)

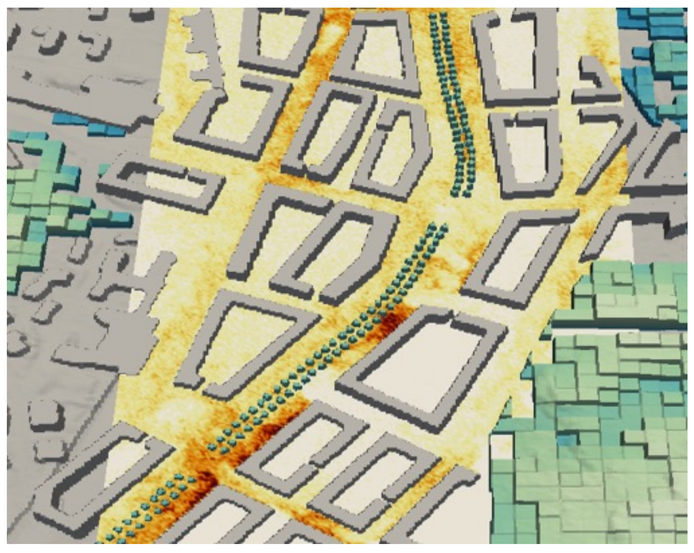
FCAI's Research Programs (R1–7) and Highlights (HA–F) addresses the following United Nations' Sustainable Development Goals (SDGs)



Research results

JC Demmler et al (2021). A novel approach of creating sustainable urban planning solutions that optimise the local air quality and environmental equity in Helsinki, Finland: The CouSCOUS study protocol. Plos one 16 (12).

N Soininen et al. (2022). Bridge over troubled water: managing compatibility and conflict among thought collectives in sustainability science. Sustainability Science, 1–18.



Land use draft,
City of Helsinki, 2021

Virtual Laboratory Sustainable Mobility and Autonomous Systems

A joint laboratory of HF AI for sustainability & R6 Autonomous AI

- Develops simulations using Reinforcement Learning for mobility, traffic planning and autonomous driving for sustainable future cities
- Specific research activities include
  - Fusion of results from various simulations
  - Methods for Closing the reality gap
  - Computational efficiency of simulation algorithms

Example projects

Artificial Intelligence for Urban Low-Emission Autonomous Traffic (AIforLEssAuto)

Funded by the Academy of Finland, 1.1.2022–31.12.2024

- Organization of autonomous electrified traffic to maximize the reduction of CO2 emissions in cities
- A framework of computational modelling tools to evaluate the CO2 emissions
- AI-based control strategies from vehicle-level to city-center wide traffic control

Sustainable urban development emerging from the merger of cutting-edge Climate, Social and Computer Sciences (CouSCOUS)

Funded by the Academy of Finland, 1.9.2020–31.8.2024

- CouSCOUS combines artificial intelligence, atmospheric and social sciences to optimize air quality at street space in different planning and traffic flow scenarios using
  - novel deep learning methods
  - a novel air quality model that can account in detail urban neighborhoods

Coordinating professor

Laura Ruotsalainen

Associate Professor in computer science

University of Helsinki

laura.ruotsalainen@helsinki.fi

Finnish Center for Artificial Intelligence FCAI is a community of experts in artificial intelligence in Finland, initiated by Aalto University, University of Helsinki, and VTT Technical Research Centre of Finland. FCAI is one of the six Academy of Finland Finnish flagships.

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