

# WASP AI

Danica Kragic  
KTH

# WASP

- Wallenberg AI, Autonomous Systems and Software Program
- Largest individual research program in Sweden ever
  - **5.5 billion SEK for 15 years to 2030**
- Knut and Alice Wallenbergs foundation 4.2 billion SEK, universities, industry

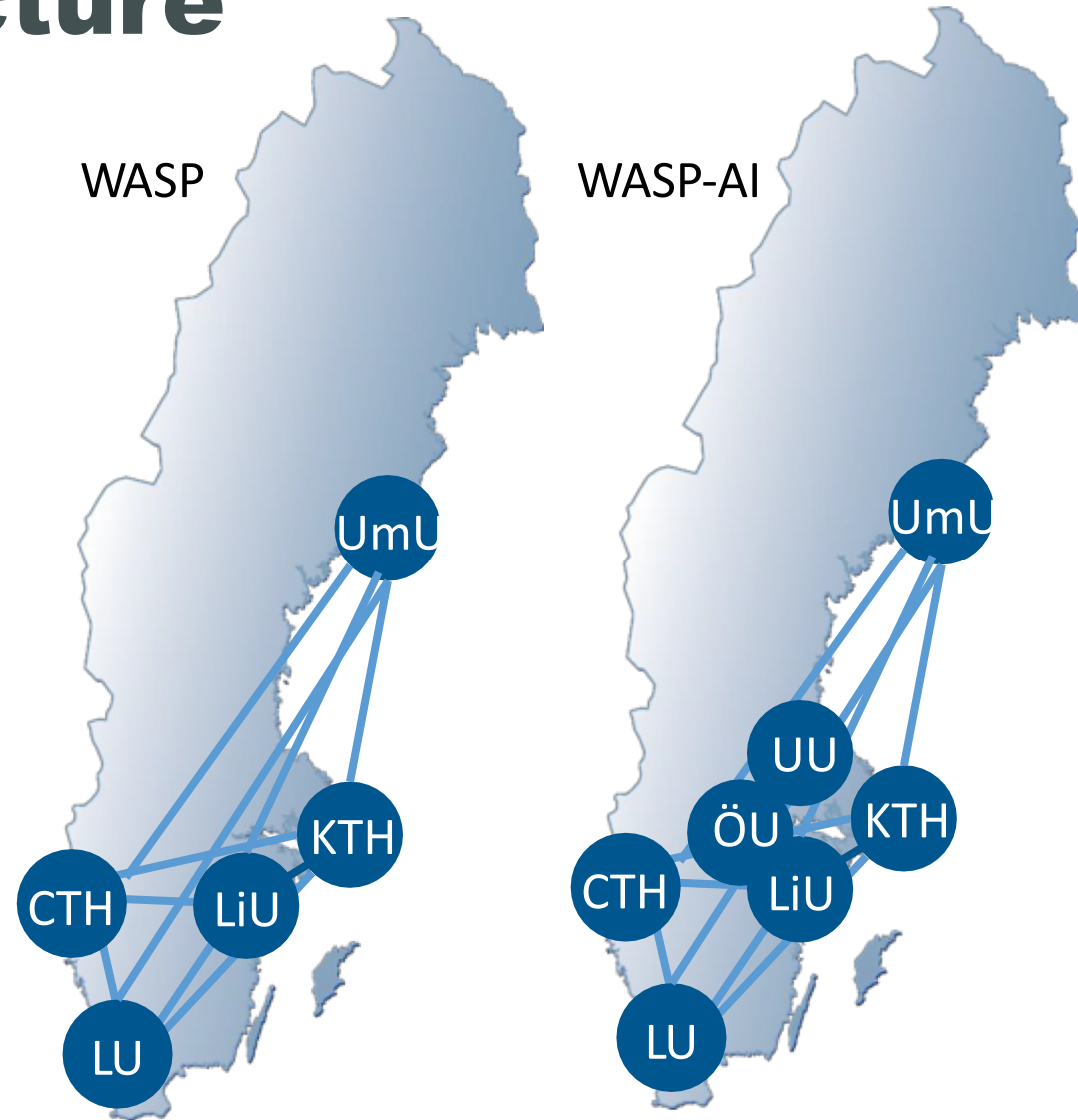
# WASP

*Vision* - Excellent research and competence in artificial intelligence, autonomous systems and software for the benefit of Swedish industry. (The word “industry” in its English meaning, for example including the financial industry.)

*Mission* - Build a world leading platform for academic research that interacts with leading companies in Sweden to develop knowledge and competence for the future.

# WASP structure

Collaborating  
universities



# Current Instruments

- **Research Program:** A research program aiming at disruptive developments.
- **Graduate School:** Ca 400 new PhDs, out of which 100 industrial PhDs.
- **Recruitment:** An international recruitment program at all academic levels.
- **Research arenas:** A joint university and industry initiative.
- **Internationalization:** Partnership with NTU, Berkeley and Stanford.
- **Communication, events and networking**

# WASP AI-MLX Scientific focus

- Representation learning and grounding
- Sequential decision-making and reinforcement learning
- Learning from small data sets, GANs and incremental/active learning
- Multi-task and transfer learning

## Example projects

- Efficient Data Representation and Machine Learning over Next Generation Networks
- Learning and Leveraging Rich Priors for Factorization Problems
- Machine Learning for Causal Inference from Observational Data with Apps in Healthcare
- Interpreting and Grounding Pre-trained Representations for Natural Language Processing
- Statistical and Adversarial Learning in Continuous System Control
- RL in Continuous Spaces with Interactively Acquired Knowledge-based Models
- How to Inject Geometry into Deep Learning
- Probabilistic models and deep learning - bridging the gap
- Robot learning of symbol grounding in multiple contexts through dialog
- Under-Supervised Representation Learning
- Beyond supervised learning for semantic analysis of visual data
- Exploration and uncertainty in generative networks for supervised learning and RL
- Deep Probabilistic Neural Networks for Survival Analysis
- Data-driven foundations for robust deformable object manipulation

<b>Academic lead</b>	<b>Project title</b>	<b>Company</b>	<b>Uni</b>
A Payberah	Scalable Generalized Deep Reinforcement Learning	King	KTH
A Gionis	Learning categorical representations in complex networks with graphs	Ericsson AB	KTH
C Rojas	Inclusion of hardware components in deep learning networks	SAAB AB	KTH
D Axehill	Unified task planning and optimal-control-based motion planning	SAAB AB	LiU
F Heintz	Verification and Validation of Sequential Decision-making in Uncertain and Adversarial Environments	SAAB AB	LiU
F Lindsten	Attentive and Disentangled Representation Learning	Veoneer Sweden AB	LiU
K Åström	Automating data annotation for deep learning	Zenuity	Lund
L Hammarstrand	Methods for semi-supervised learning with accurate uncertainty estimation	SAAB AB	Chalmers
L Solus	Scalable Causal Inference in Media	Combient AB	KTH
M Matskin	Unified Multimodal Neural Architecture Search	Peltarion AB	KTH
M Chehreghani	Autonomous compound optimisation in drug design	AstraZeneca	Chalmers
N Wahlström	Modular neural networks and meta learning in 6G networks	Ericsson	UU
P Jensfelt	Semantic SLAM	Univrse	KTH
S Girdzijauskas	Semantic Topology for Modelling Conversational AIs	Gavagai	KTH
W Chacholski	TDA for time series of weighted hypergraphs	Combient Mix	KTH