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## Research

### Community commitments

I have been a member of the WASP Graduate School Management group since 2019 and since 2021 I am WASP Affiliated Faculty, as well as a member of the steering group of the COMPUTE Graduate School at Lund University. From August 2021 through December 2023 I was a member of the advisory board for the Swedish Agency for Digital Government (Myndigheten för digital förvaltning, DIGG), and from 2022 through 2024, I have been an Associate Editor for the ACM Transactions on Human-Robot Interaction (THRI).

### Research interest

My research interest lies in the area(s) of Artificial Intelligence, Cognitive Science and Human-Robot Interaction, more specifically in building robotic systems that can communicate appropriately with human users. This is relevant to both industrial and service robotic systems, but even to interfaces for the surveillance of (semi)autonomous systems (cars, drones, ships) as the demands on flexibility, ease-of-use and human-comprehensible setup and configuration are increasing. During my PhD project on Human Augmented Mapping I observed several interesting phenomena in an interactive home tour scenario, which inspired my further research on firstly detecting and possibly finding solutions to ambiguities arising from mismatches in human and robotic expectations and understanding of concepts. In short, my research tries to establish common ground between humans and machines (robotic systems) by applying AI methods to analysing and modelling the interaction between humans and robots or other (autonomous) systems.

## Qualifications

Computer Science, Readership, Faculty of Engineering, LTH  
Award Date: 2019 Jun 4

Computer Science, PhD, Human-Robot Interaction and Mapping with a Service Robot: Human Augmented Mapping, KTH  
Royal Institute of Technology  
Award Date: 2009 Jan 27

## Employment

### Project manager, Head of department

Department of Computer Science  
Lund University  
Lund, Sweden  
2009 May 1 → present

## PhD Student

KTH Royal Institute of Technology  
Stockholm, Sweden  
2004 Jan 1 → 2009 Jan 31

## Recent research outputs

### **Conflict Simulation for Shared Autonomy in Autonomous Driving**

Reitmann, S., Mihaylova, T., Topp, E. A. & Kyrki, V., 2024 Mar 11, *HRI 2024 Companion - Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction*. Association for Computing Machinery (ACM), p. 882-887 6 p. (ACM/IEEE International Conference on Human-Robot Interaction).

### **Ah, Alright, Okay! Communicating Understanding in Conversational Product Search**

Papenmeier, A. & Topp, E. A., 2023 Jul, *Proceedings of the 5th International Conference on Conversational User Interfaces: CUI '23*. Association for Computing Machinery (ACM), p. 1-5 5 p. 49

### **Chaos to Control: Human Assisted Scene Inspection**

Jena, A. & Topp, E. A., 2023 Mar 13, *HRI 2023 - Companion of the ACM/IEEE International Conference on Human-Robot Interaction*. IEEE Computer Society, p. 491-494 4 p. (ACM/IEEE International Conference on Human-Robot Interaction).

### **A Shared Pose Regression Network for Pose Estimation of Objects from RGB Images**

Hein Bengtson, S., Åström, H., Moeslund, T. B., Topp, E. A. & Krueger, V., 2022 Oct, *IEEE/RSJ International Conference on Signal Image Technology & Internet Based Systems (SITIS)*. IEEE - Institute of Electrical and Electronics Engineers Inc., 8 p.

### **Variable Impedance Skill Learning for Contact-Rich Manipulation**

Yang, Q., Dürr, A., Topp, E. A., Stork, J. & Stoyanov, T., 2022 Jun 30, In: *IEEE Robotics and Automation Letters*. 7, 3, p. 8391-8398 8 p.

### **WARA-PS: A Research Arena for Public Safety Demonstrations and Autonomous Collaborative Rescue Robotics Experimentation**

Andersson, O., Doherty, P., Lager, M., Lindh, J.-O., Persson, L., Topp, E. A., Tordenlid, J. & Wahlberg, B., 2021 Nov, In: *Autonomous Intelligent Systems*. 1, 9.

### **Pose Estimation from RGB Images of Highly Symmetric Objects using a Novel Multi-Pose Loss and Differential Rendering**

Hein Bengtson, S., Åström, H., Moeslund, T. B., Topp, E. A. & Krueger, V., 2021 Sept, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. 2021 ed. IEEE - Institute of Electrical and Electronics Engineers Inc.

### **Realeasy: Real-Time capable Simulation to Reality Domain Adaptation**

Dürr, A., Neric, L., Krueger, V. & Topp, E. A., 2021, *2021 IEEE 17th International Conference on Automation Science and Engineering (CASE)*. IEEE - Institute of Electrical and Electronics Engineers Inc., p. 2009-2016 8 p.

### **VR Teleoperation to support a GPS-free Positioning System in a Marine Environment**

Lager, M., Topp, E. A. & Malec, J., 2020 Dec 15, In: *International Journal on Marine Navigation and Safety of Sea Transportation*. 14, 4, p. 789-798 10 p.

### **Robust Terrain-Aided Navigation through Sensor Fusion**

Lager, M., Topp, E. A. & Malec, J., 2020 Jul 6, *23rd International Conference on Information Fusion Virtual Conference*. IEEE - Institute of Electrical and Electronics Engineers Inc., 8 p.

## Activities

NAC Member meeting 2023 (NAC week)

Wisbrant, J. (Organiser), Åström, K. (Chair), Gustafsson, O. (Speaker), Topp, E. A. (Role not specified), Warrant, E. (Speaker), Gullberg, M. (Role not specified) & Johansson, B. (Role not specified)  
2023 Oct 25

**HRI research at RSS & RobotLab LTH: When robots need skills and "autonomous" systems need support**

Topp, E. A. (Speaker)  
2023 Sept 1

**ACM/IEEE International Conference on Human-Robot Interaction, 2023**

Topp, E. A. (Organiser)  
2023 Jan → 2023 Mar

**IEEE / ACM Conference on Human Robot Interaction**

Topp, E. A. (Organiser)  
2022 Aug → 2023 Apr

**COMPUTE Research School Steering Group**

Topp, E. A. (Member)  
2021 Jul → ...

**ACM/IEEE Conference on Human-Robot Interaction (HRI), 2020**

Topp, E. A. (Organiser)  
2020 Mar 23 → 2020 Mar 26

**WASP Graduate School Management group**

Topp, E. A. (Member)  
2020 Jan → ...

**ACM/IEEE Conference on Human Robot Interaction (HRI), 2019**

Topp, E. A. (Organiser)  
2019 Mar 11 → 2019 Mar 14

**WASP-AI Graduate School Management Group**

Topp, E. A. (Member)  
2019 Jan → ...

**Science and Innovation Talks: Cognitive Robotics**

Johansson, B. (Invited speaker) & Topp, E. A. (Invited speaker)  
2018 Dec 4

**Artificiell Intelligens är faktiskt bra!**

Topp, E. A. (Invited speaker)  
2018 Dec 3

**Skills for Industrial Robotic Assembly: Representation, Acquisition, Reuse and Adaptation**

Topp, E. A. (Invited speaker)  
2018 Oct 5

**AI for Multimodal Human Robot Interaction Workshop within the Federated AI Meeting 2018 in Stockholm**

Topp, E. A. (Organiser), Hiatt, L. M. (Organiser), Jokinen, K. (Organiser) & Bailly, G. (Organiser)  
2018 Jul 14 → 2018 Jul 15

**IdeenLab 4.0**

Topp, E. A. (Reviewer)  
2018 Jun → 2019 Feb

**AAAI Fall Symposium Series 2017**

Topp, E. A. (Chair) & Hiatt, L. M. (Chair)  
2017 Nov 9 → 2017 Nov 11

**Robotics @ Lund University - Helping Robots to understand (a bit) of our world**

Topp, E. A. (Invited speaker)  
2017 Feb 2

**Panel debate on Semantic Computing and Robotic Computing**

Topp, E. A. (Speaker), D'Auria, D. (Speaker) & Ostrowski, D. (Speaker)  
2017 Jan 31

**Intl' Conference on Human Agent Interaction**

Topp, E. A. (Member of programme committee)  
2017

**Robotics@Lund University**

Topp, E. A. (Organiser)  
2015 Dec 1

**IEEE Robotics and Automation Society, Sweden Chapter**

Topp, E. A. (Member)  
2014 Mar → ...