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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

Framework for assessing situational awareness in Beyond Visual Line of Sight UAV operations

Maben, R. P., Jena, A., Reitmann, S. & Topp, E. A., 2025, *HRI 2025 - Proceedings of the 2025 ACM/IEEE International Conference on Human-Robot Interaction*. IEEE Computer Society, p. 1473-1477 5 p. (ACM/IEEE International Conference on Human-Robot Interaction).

Injecting conflict situations in autonomous driving simulation using CARLA

Mihaylova, T., Reitmann, S., Topp, E. A. & Kyrki, V., 2025, *HRI '25: Proceedings of the 2025 ACM/IEEE International Conference on Human-Robot Interaction*. Association for Computing Machinery (ACM), 5 p.

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.

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 → ...