WASP | WALLENBERG AI, AUTONOMOUS SYSTEMS AND SOFTWARE PROGRAM

An Alumni Perspective

Olov Andersson – Batch1 AS Alumnus

PhD: Artificial Intelligence and Integrated Computer Systems, Linköping University

Postdoc: Autonomous Systems Lab, ETH Zürich

CHALMERS UNIVERSITY OF TECHNOLOGY

KTH VETENSKAP OCH KONST

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My Background

- Interests: AI/ML for Autonomous robots
  - Intersection of theory and application
  - Aim to publish and review across the spectrum, e.g. ICRA, AAAI, CDC, ICML…
- PhD from Linköping Uni., April 29, 2020
  - Advisors: Prof. Patrick Doherty (AI/UAV lab) & Prof. Mattias Villani (Bayesian ML)
  - Focus: ML for **planning/control** under **uncertainty** (e.g. moving obstacles)
- Currently: postdoc at ETH Zürich (WASP):
  - After some corona delays...
  - Aim: Expand on navigation under uncertainty

Research Context: The Real World Is Both Uncertain and Dynamic….

- Difficult to **model** and **computationally challenging** to solve
- Autonomy requires **real-time** decisions

…real-world robots often struggle with these concepts

Experiences with the WASP Project Course

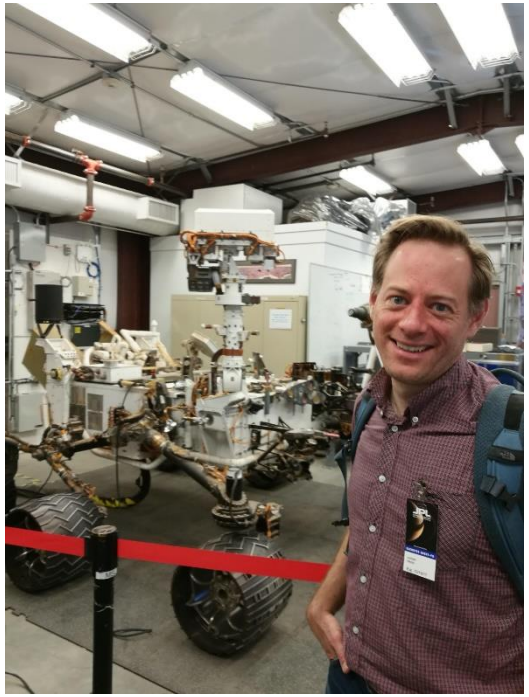
- **Gist**: Put what you have learned into practical use
  - First taste of valuable ”real-world” experience for some

- Great opportunity to tie into your research, maybe even publish
  - If you are proactive, can probably get 50% there during the course

- Impression: **being proactive helps**
  - Find a project relevant for your research, or try tailoring one
  - Want suitable mix of talents, who else is applying to this project?
  - Do not underestimate importance of software skills (if robotics: ROS/C++)

Experiences with the WASP Study Trip

- Each WASP batch does 1+ big international trip
- Amazing opportunity to talk to people at top universities and companies
  - Really enjoyed the LA+Bay Area trip (JPL, iRobot, Caltech, Stanford, USC...)
  - I hear Fredrik & co put in a **lot** of work to make it happen
- Impressions:
  - Academic labs/NASA very interesting, but format matters
    - Lab visits in small groups or poster sessions great (imo)
  - Top US students not so different from Swedish...
  - Companies rather close-lipped about research
  - Get to network with top labs **and** your WASP batch



Experiences with WASP Research Arenas (WARA)

- I participated in the Public Safety demonstrator (WARA-PS)
- Impressions:
  - Diverse backgrounds: other students, various companies
  - Lots of accumulated real-world experience, *possibly* collaboration opportunities
  - Mind the **theory-practice gap,** but also an opportunity to find new research problems
  - Memorable days at the beautiful Gränsö Slott in Västervik

Real-world Robot Demo Generated a lot of Interest

LINKÖPING UNIVERSITY

Education Research Co

A robot politely gets out of the way

09 October 2019

Monica Westman Svenselius

Print

We are far from being able to coexist with flying robots in our urban landscapes, but one of the demonstrations this year within the WASP arena for public safety was a drone that politely gets out of the way when a person walks towards it.

← NEWS

The WASP Programme on Display

February 13th, 2020

Sara Mazur, chair of the WASP programme, and Peter Wallenberg Jr, chair of the Knut and Alice Wallenberg Foundation, are on tour visiting the WASP universities. On the agenda are meetings with doctoral students and researchers, interspersed with a selection of WASP research demos.

Experiences as a WASP Alumni

- I don’t think you will have a problem finding a job in industry ☺
- WASP also has a postdoc scholarship you can apply for
- Early postdoc experiences:
  - Interviewed with three labs at Stanford, Oxford and ETH Zürich, all were positive
  - Selected Roland Siegwart’s lab at ETH Zürich
    - One of the top robotics labs (spans an entire floor), with several spin-offs
  - Tight coupling between theory and practice
    - Leading in **algorithms and software for autonomy,** evaluated on real robots
    - **Builds amazing robots** of all kinds: flying, wheeled, legged, jumping, submersible… →
  - We have a team in the prestigious DARPA SubT competition
    - Learning a lot about state-of-the-art autonomy solutions
  - Perhaps more about this some other time ☺

- In conclusion: WASP was a great experience for me. Lots of opportunity!