WASP | WALLENBERG AI, AUTONOMOUS SYSTEMS AND SOFTWARE PROGRAM

Industrial PhD Student and Industrial Postdoc Calls 2024

Webinar 2024-05-27

Program

- **10:00 Introduction**
  Danica Kragic, WASP Co-director - KTH
- **10:15 General presentation about WASP Industrial PhD Student program**
  Karl-Erik Årzén, WASP Co-director - Lund University
- **10:40 General presentation about WASP Industrial postdoc program**
  Karl-Erik Årzén, WASP Co-director - Lund University
- **10:50 WASP Graduate School**
  Daniel Axehill, WASP Graduate School Director – Linköping University
- **11:10 Perspectives from industry**
  Christoffer Petersson, industrial PhD supervisor at Zenseact and Georg Hess, industrial PhD student,
- **11:40 Questions and discussion**

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WASP
WALLENBERG AI,
AUTONOMOUS SYSTEMS
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CHALMERS

KTH VETENSKAP OCH KONST

LINKÖPINGS UNIVERSITET

LUNDS UNIVERSITET

UMEÅ UNIVERSITET

AFFILIATED GROUPS OF EXCELLENCE at

ÖREBRO UNIVERSITET

UPPSALA UNIVERSITET

LULEÅ TEKNISKA UNIVERSITET

Vision

Excellent research and competence in artificial intelligence, autonomous systems and software for the benefit of Swedish society and industry.

Mission

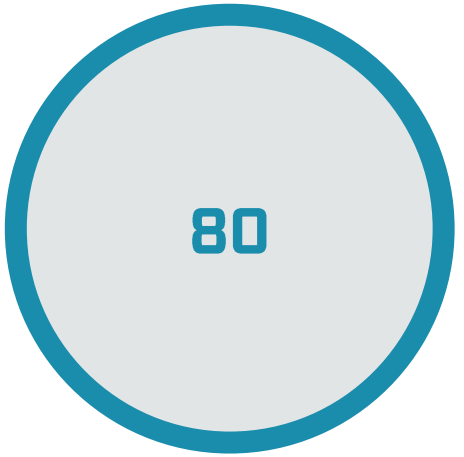
Build a world leading platform for academic research that interacts with leading companies and actors in Sweden to develop knowledge and competence for the future.

Knut och Alice Wallenbergs Stiftelse

WASP in Numbers

6.2 billion SEK for
15 years until 2031

600 Graduated
PhDs



80 Faculty
Recruitments

2024 WASP Top Research Challenges

- ***Complex data and models in AI***
- ***Human in the loop and explainability***
- ***Scaling and distribution of resources***
- ***Efficiency, verifiability, security and robustness***

WASP Instruments

- Research program
- Graduate school
- Recruitment
- Research arenas
- Internationalization
- Communication events networking

WASP Status 2024

64 Recruitments

440 Active PhDs (122 have defended)

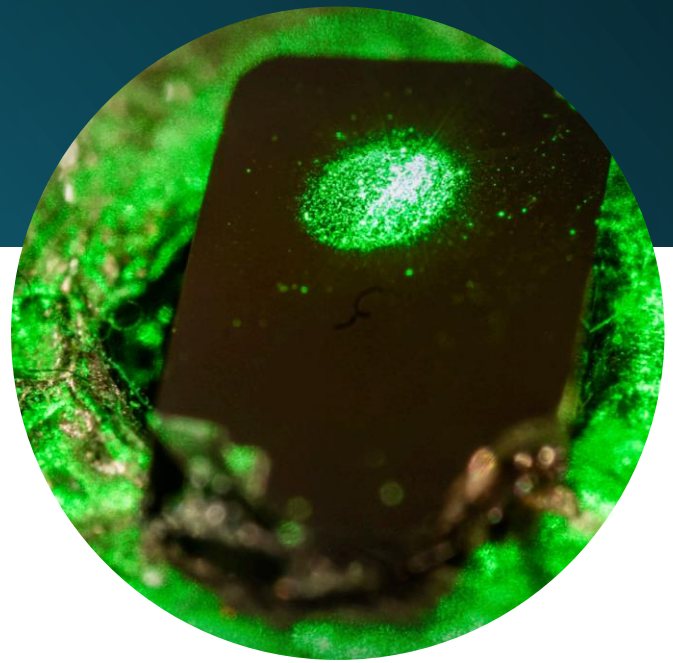
80 affiliated companies and agencies engaged

WASP Winter Conference 2024 with 550 participants

One PhD per week!

Strategic Initiatives and Collaborations 2024

Cybersecurity Initiative



Wallenberg Initiative Materials Science for Sustainability

(WISE)

Data Driven Life Science

(DDLS)

WARA - Research Arenas

4 Operational Arenas

- Public Safety
- Media and Language
- Robotics
- Operations

INTERNATIONALIZATION

The WASP program is situated in an internationally fast-moving area and the international dimension is inherent in the program.

- Collaborations with
  - Stanford
  - Aalto
  - Berkley
  - MIT
  - NTU
- Annual study trips
- Semester abroad
- Postdocs

Berzelius – AI Resource

- ATOS - NVIDIA SuperPod
- 94 DGX A100 systems
- 8 A100 GPUs/node
- 5 PetaFLOPS/node
- 1800 Gb/s interconnect
- Hosted by the National Supercomputer Centre (NSC) and integrated in the HPC environment for compute and storage solution

- Fully utilized as of April 2022
  - Natural Language Processing (GPT-SW3)
  - Protein Folding
  - Computer Vision
  - …

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Industrial PhD Student Call

Swedish PhD Education

- Four years at 100% level
- Normally done at 80% level and takes five years
  - University PhD students do 20% teaching
  - Industry PhD students work 20% at the company doing non-research related tasks
- Four years correspond to 240 high school credits (hp)
- All PhD students are required to take 60-120 hp courses
  - Varies depending on department
  - Normally 90 hp (corresponds to 1.5 year full time studies)
  - Normally the departments require that certain mandatory courses are included
  - The WASP mandatory courses are 27 hp, i.e., most courses are not WASP courses
- The rest constitutes the research and the PhD thesis

WASP Industrial PhD Students

- Employed by a company
- PhD studies at a university department of a WASP university
- Four years if 100% research
- Five years if 80% research (20% for other non-research related tasks at the company) – the normal case
- The company receives 600k SEK / year from WASP (100%) or 480k (80%)
  - Includes a travel budget of **30k / year**
  - The PhD student should be allowed to travel also if the company has a travel ban
- The academic advisor gets funding from WASP corresponding to 15% for the academic supervision

- The PhD student has an university PhD advisor and an industrial PhD advisor (ideally a person with some research experience)
- The PhD student must spend at least 20% of the time physically at the university and at least 20% at the company
  - However, in practice, spending only 20% at the university is not enough
- A contract is signed between the company and the university
- No contract between the company and WASP
- There should be an individual development plan (”utvecklingsplan”) for the PhD student at the company that treats, e.g., main contact person, industrial supervisor, the role of the closest manager, the role of the project in the overall company strategy
- At the university there will be an individual study plan (ISP) for the PhD student that details issues such as time spent, research results obtained etc

Companies Involved

- Around 100 active industrial PhD students from around 80 companies
  - 31 industrial PhDs produced
- Companies with large involvement
  - Ericsson
  - Saab
  - Zenseact
  - ABB
  - Astra Zeneca
- Most industries have only one PhD student each
- Research institutes, e.g., RISE, and public organizations may not participate
- Not only the traditional system industry but also, e.g., finance, media, consulting, health, ...

This Call

- Up to 15 projects (Note, projects and not positions)
- Call opens: 10 June, 2024
- Application deadline: 1 October, 2024, 14:00
- Decision by the WASP Board communicated: 6 December
- Earliest start date: 1 January 2025
- Latest start date: 15 June 2025

Applications

- Submitted through the WASP application portal
  - https://wasp-sweden.org/calls/wasp-industrial-phd-student-positions-2024/
  - Use the application form available there
- Should be signed by both the academic and the industry supervisor

New 2024 - Projects

- From this year you can either apply for a one-PhD student project or for a two-PhD student project
- You may only apply for a two-PhD student project if at least one of the two candidates is of the underrepresented gender (on the WASP level)
- A two PhD student project should clearly describe the role of each of the students in the project and how they complement each other
- A two-PhD student project is either accepted fully or rejected fully, i.e., it cannot happen that only one of the two candidates is accepted
  - You must really think through if you should apply for a one- or a two-student project
- Each industrial supervisor may submit at most one application

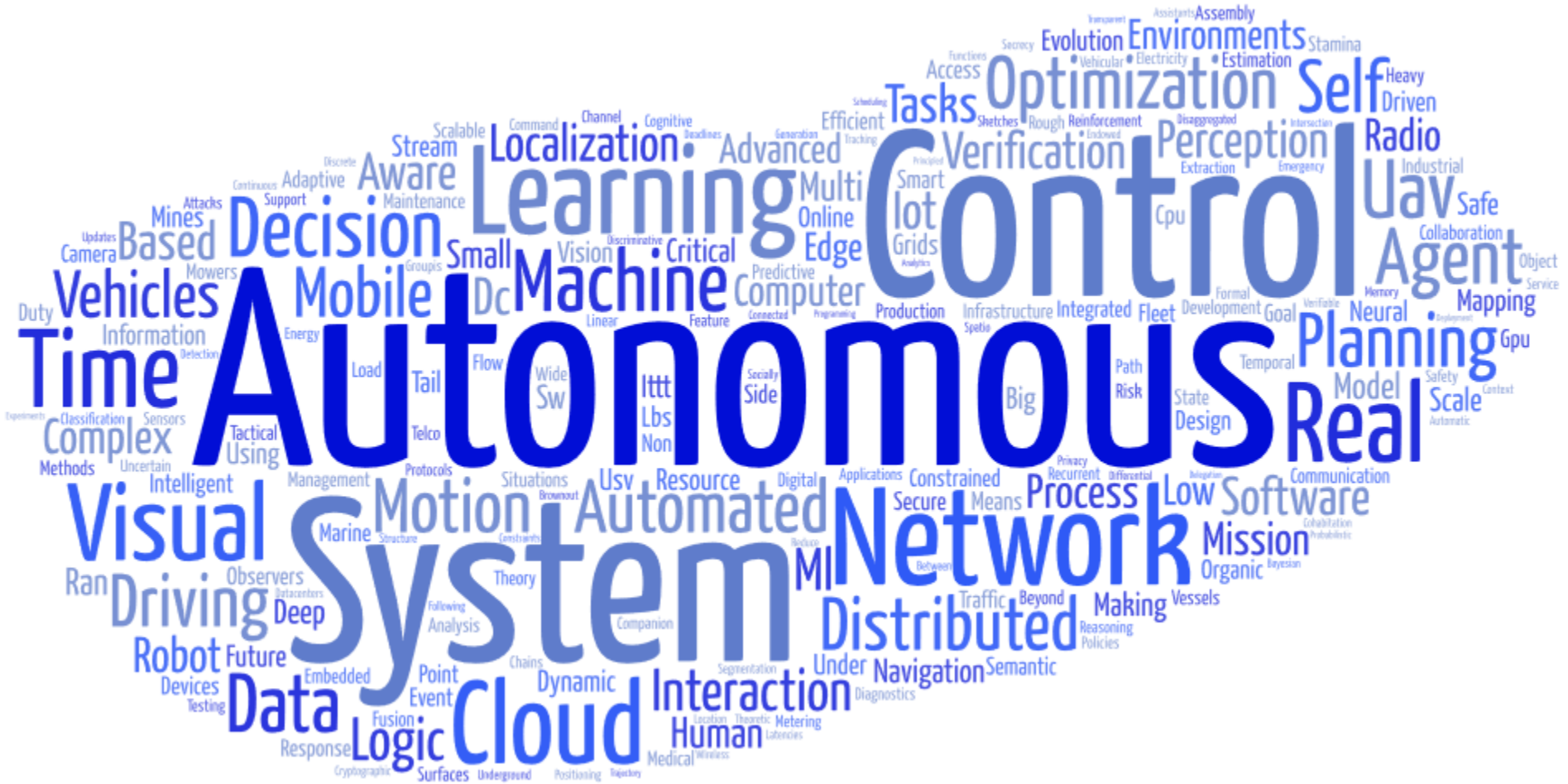
WASP Research Areas

- Autonomous Systems (AS)
  - Research on autonomy, including enabling technologies for autonomous systems
  - Transport systems, self-driving vehicles, perception, interaction, visualization, human-machine collaboration, multi-agent systems, robotics, autonomous clouds and networks, security, localization, optimization, ...
  - Strong systems focus
  - Data-driven and/or model-based approaches (“WASP is not only AI”)
- Artificial Intelligence (AI)
  - MLX
    - Machine Learning, Deep Learning, and Next Generation/Explainable Learning
  - MATH
    - Mathematical Foundations of AI/ML
    - Theoretical Computer Science foundations of AI

WASP Research Areas

- Software (SW)
  - Software methodology and software technology.
  - Software for the modelling, analysis, development, training, verification, and deployment of autonomous or AI and ML-based systems.
  - Software that contains or utilizes autonomy, automation, AI, learning, or feedback.
- Cyber-Security (CS)
  - Of relevance to AS, AI and SW

What the Autonomous Systems and Software students actually do



What the AI students actually do

Evaluation Criteria

- Three aspects of the proposal are evaluated
  - Project
    - Scientific excellence
    - Uniqueness, visionary and novelty nature
    - Relevance to WASP
    - Potential to collaborate with other WASP initiatives such as WARA
  - PhD student candidate(s)
    - Grades from Master Education
  - Supervisors
    - Scientific merits
    - International research experience
    - Pedagogical skills and merits
    - Ability and experience to collaborate with academia and industry
    - Doctoral student and supervisor constellation with underrepresented gender are encouraged

- The industrial PhD student instrument is primarily aimed at students who already are employed at the company
- Some, e.g., small, companies may have no internal candidate. In that case it is also possible to employ a student candidate especially for this position.
- The candidate must be identified at application time, but need not be employed before the latest start date
- In the latter case there is a risk that the student disappears after the proposal has been accepted but before the latest start date
- In that case the company is allowed to propose a new candidate if that candidate has at least as good qualifications as the original one
- If the student decides to quit after the start, then the project will be terminated

Elements of a Good Proposal

- Fits into the WASP research program
- Clear and well-described scientific problem / research questions
- Novelty
- Explain why the applicants are the best parties to address this problem – how they complement each other
- Added value to academia, industry, and Sweden
- And above all
  - Strong PhD student candidate(s)

Furher Information and Questions

General Questions

- info@wasp-sweden.org

Further Information and Guidance from the WASP University Representative Group:

- Chalmers: Robert Feldt – robert.feldt@chalmers.se
- KTH: Bo Wahlberg – bo@kth.se
- Linköping University: Michael Felsberg – michael.felsberg@liu.se
- Lund University: Karl-Erik Årzén – karl-erik.arzen@control.lth.se
- Luleå University: Marcus Liwicki - marcus.liwicki@ltu.se
- Umeå University: Erik Elmroth – elmroth@cs.umu.se
- Uppsala University: Thomas Schön – thomas.schon@it.uu.se
- Örebro University: Amy Loutfi – amy.loutfi@oru.se

Some Questions and Issues

- How should the project topic be defined?
  - Sufficiently long-term so that the results still are of value to the company after five years
  - Sufficient research depth for publications
- How handle deviations?
  - Very few PhD students end up with a thesis that is exactly about the problem that was initially formulated
  - Deviations occur due to several reasons
- What is a good PhD student candidate?
  - An ideal PhD student candidate should have a couple of years of experience of the company but still have the graduate education fresh in mind
    - However, WASP accepts industry PhD students also if they have shorter or longer experience
  - Good analytic competence, excel at problem solving, good oral and written communication skills
  - Good grades, in particular in the courses of relevance
    - Have in mind that many of the WASP courses are rather mathematical in nature

Some Questions and Issues

- What is the objective for the company?
  - Initiate a long-term collaboration with a leading research group in order to improve the company's innovation capacity
  - Solve a challenging problem
  - Increase the knowledge within an area that is of relevance to the company
  - Competence buildup for a promising employee
  - Obtain persons with sufficient skills to take a leading R&D role after 5 years
  - .....

Some Questions and Issues

- The company must be aware of the realities of PhD studies
  - Around 1.5 years full time are spent on taking courses
  - Some of the courses may be of less interest to the company (and the student) but they must still be taken
  - An important part of the studies consists of travels to conference, summer schools, study trips, meetings of different kind, in order to discuss, present, and learn
  - The PhD student must have the possibility to travel also if the company has a travel ban

Some Questions and Issues

- How should one guarantee that the PhD student remains to be relevant to the company during these five year?
  - Involved in a research-related ”shadow” project where intermediate research results can be evaluated and which can generate new research questions
  - Formalize the knowledge transfer using, e.g., regular presentations by the PhD student at the company

Some Questions and Issues

- How can we be sure that the PhD stays with the company afterwards?
  - Well, ...
- How do we start?
  - Start by identifying the PhD student candidate and the academic supervisor
  - If you do not have contacts in academia yourself then ask the WASP university representatives
  - Start the project discussions with the academic supervisor as early as possible
    - He/she knows best which research problems that fit into WASP and which don't

- More information about industrial PhD studies in WASP can be found at

https://wasp-sweden.org/wp-content/uploads/2019/12/IndustrialPhD_Final_print.pdf

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Industrial Postdoc Call

Industrial Postdocs

- Targeting newly graduated PhDs who have not decided on career path.
- Enables hosting company to ”get to know” the postdoc and at the same time conduct a two-year academic project.
- The hosting company applies together with a university research group. There should be identified mentors at both the company and the university.
- Industrial relevance and academic quality are key priorities.
- The postdoc will be employed by the company, but the time should be shared between the company and the university (nominally 50-50)
  - At least 50% of the time at the university
  - At least 20% of the time at the company

Industrial Postdocs

- Although the main target is newly graduated PhDs also candidates with an older PhD exam may apply
  - The PhD does not have to be performed in WASP
- The projects are expected to address fundamental research problems with industrial relevance within any of WASPs research areas
- Total grant over two year: 2.2 Mkr out of which 300k goes to the university and 1.9 Mkr to the company for partial salary funding
- For SMEs the total grant is 2.7 Mkr, and 2.4 Mkr goes to the company
- Up to five positions

Rules

1. **For the project:**
   a. At least 80% of full time
   b. At least 50% of the time at the university
   c. The research should be at the level that it can be published in a scientific journal or conference. This holds for the entire project, i.e., also th part that is performed at the company. Patent applications are not considered as scientific publications.

2. **For the company:**
   a. The company should be sufficiently large to be a suitable host for the industrial postdoc, i.e., at least two-three full-time employees
   b. There should be an academically competent supervisor/mentor at the company working with research or research related tasks

Rules

3. **For the industrial supervisor/mentor:**
   a. Should have sufficient academic competence
   b. Cannot be the same person as the university supervisor/mentor
   c. The industrial supervisor/mentor should not have been the postdoc candidate's supervisor during his/her PhD

4. **For the university supervisor/mentor:**
   a. Can be involved in the company but not as the CEO
   b. Can own parts of the company but not be the main owner

5. **For the industrial postdoc:**
   a. Can be involved in the company but not as the CEO
   b. Can own parts of the company but not be the main owner

In general be careful if there are personal or business relationships between the applicants and the candidate. We might have missed some cases above. Contact us before you start writing.

Evaluation Criteria

- The academic qualifications of the industrial postdoc candidate. (must be a PhD)
- The industrial relevance of the project.
- The scientific level of the project.
- The industrial and academic qualifications of the industrial and the academic supervisors as well as their potential to support the candidate and the project.
- Mobility, i.e., to what extent the candidate has changed research group between the most recent university appointment and the planned industrial postdoc.

For work permit and residence reasons it may be necessary for applicant to submit the application prior to obtaining the PhD. In such cases, a statement from the PhD advisor regarding planned date for defense should be provided.

More information

- CTH Robert Feldt robert.feldt@chalmers.se
- KTH Bo Wahlberg bo@kth.se
- LU Karl-Erik Årzén karl-erik.arzen@control.lth.se
- LiU Michael Felsberg michael.felsberg@liu.se
- LTU Marcus Liwicki marcus.liwicki@ltu.se
- UmU Erik Elmroth erik.elmroth@umu.se
- UU Thomas Schön thomas.schon@it.uu.se
- ÖrU Amy Loutfi amy.loutfi@oru.se

Timeline

- 2025-06-10 Call opens
- 2025-10-01 Application deadline 14:00
- 2025-12-06 Decision communicated
- 2025-01-01 Earliest Start date
- 2025-09-01 Latest Start date

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WASP Graduate School
WASP Webinar 2024-05-27

Daniel Axehill, Linköping University
Director WASP Graduate School

The Graduate School Mission

The mission of the WASP Graduate School is to educate PhDs with skills in **strategically important disciplines** within WASP, together with a **broad knowledge** of **AI, autonomous systems and software development**.

Goals – Students

Students should become knowledgeable **researchers** in the area of **AI, autonomous system or software**.

Students should form a strong sense of **belonging** to WASP connecting you together.

Students should get to know Swedish **industry**.

Students should form a strong and valuable **international** academic-industrial **network**.

Students should strive for **excellence.**

Goals – Graduate School

We will organize **courses** and **activities** to provide you with **state-of-the-art knowledge** in **AI, autonomous systems and software**.

We will organize **courses** and **activities** that **respect** the needs of a **heterogeneous** group of students spread out over Sweden

We will provide **added value** to **your PhD** education.

We will provide **opportunities** to those that really want to **excel.**

WASP Graduate School Activities: General Offer

Winter Conference

Introduction to WASP
Get to know WASP and other students

Year 1

Poster Presentations
Receive friendly feedback on research

Year 2 and on

Diploma
Celebrate your accomplishments with a diploma

Year 5

Summer Schools

Community Building summer school
Get to know WASP and other students

Year 1

Thematic summer schools
Deepen knowledge in an area

Year 2

Year 3 and on (optional)

International Study Trips
(Two centrally arranged and two student arranged)

New knowledge and international networking

Year 1

Year 2

Year 3 and on (optional)

Research Stints Abroad

Conduct research and networking

Year 3 and on (optional)

WASP Graduate School Activities: Courses

Introductory courses	▪ Introduction to logics for AI ▪ Mathematics for Machine Learning
Mandatory course	▪ Ethical, Legal, Societal and Economical aspects on AI and Autonomous Systems
Foundational courses (2 out of 3)	▪ Autonomous Systems ▪ AI and Machine Learning ▪ Software Engineering and Cloud Computing
Advanced courses	▪ Deep Learning ▪ Deep Learning for NLP ▪ Graphical Models, Bayesian Learning and SRL ▪ Interaction, Collaboration, and Visualization ▪ Learning Feature Representations ▪ Learning Theory ▪ Reinforcement Learning ▪ Scalable Data Science ▪ Topological Data Analysis ▪ WASP Project Course

Course Schedule

Yearly courses

Spring

- Mathematics for Machine Learning (4hp)
- Introduction to logics for AI (2hp)
- Artificial Intelligence and Machine Learning (6hp)
- Software Engineering and Cloud Computing (6hp)
- Ethical, Legal, Societal and Economical aspects on AI and Autonomous Systems (3hp)

Autumn

- Autonomous Systems (6hp)

Courses given odd years only

Spring

- Deep Learning (6hp)
- Interaction, Collaboration and Visualization (6hp)

Autumn

- WASP Project Course (6hp)
- Topological Data Analysis (6hp)
- Graphical Models, Bayesian Learning and Statistical Relational Learning (6hp)

Courses given even years only

Spring

- Learning Theory (6hp)
- Deep Learning for Natural Language Processing (6hp)

Autumn

- Reinforcement Learning (6hp)
- Learning Feature Representations (6hp)
- Scalable Data Science and Distributed Machine Learning (6hp)

Take the opportunity that WASP is and strive to do the most of it!

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Q & A


AVANCEZ
1829
CHALMERS
UNIVERSITY OF TECHNOLOGY

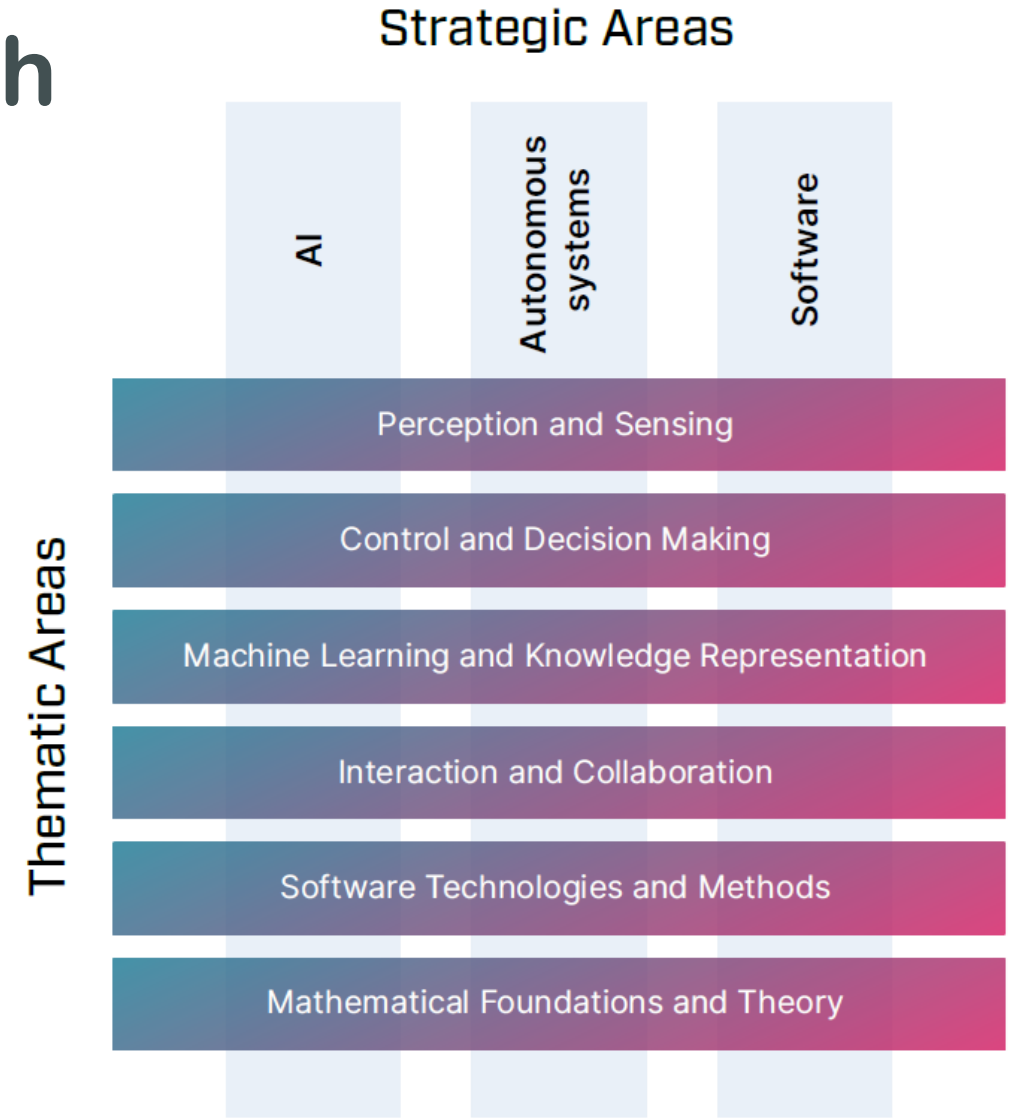

KTH
VETENSKAP
OCH KONST


LINKÖPINGS UNIVERSITET


LUNDS
UNIVERSITET


UMEÅ
UNIVERSITET

WASP Research



WASP Structure

- WASP
  - Autonomous Systems and Software
    - The original part of WASP
    - AI and Machine Learning included but mainly as tools or methods in Autonomous Systems and Software
  - AI
    - Added to WASP in 2017 with substantial budget increase
    - Increased emphasis on AI and Machine Learning in WASP
    - WASP-AI/MLX
      - Focused on Machine Learning
    - WASP-AI/MATH
      - Mathematical Foundations of AI/ML

WASP Autonomous Systems

- Research on autonomy, including enabling technologies for autonomous systems
- Transport systems, self-driving vehicles, perception, interaction, visualization, human-machine collaboration, multi-agent systems, robotics, autonomous clouds and networks, security, localization, optimization, ...
- Strong systems focus

WASP Software

The software research in WASP falls primarily within two areas:

1. Software methodology and technology for the modeling, analysis, development, training, verification, and deployment of autonomous or AI and ML-based systems.
2. Software methodology or technology that contains or utilizes autonomy, automation, AI, learning, or feedback. This includes, for example, experiment-driven development practices, self-reflection, self-adaptive software systems, self-repairing software, and automatic programming.

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

- ‘Established’ 2018 – to be updated given transformers, contrastive l, explainability, ☺

Perspectives from an industrial WASP PhD supervisor

Webinar: WASP Industrial Postdoc and PhD Student Calls 2024 | May 27th, 2024

Christoffer Petersson, Zenseact

Outline

- Zenseact
- My background
- Why join the WASP program
- WASP industrial PhD project setup at Zenseact
- Examples of impact
- Summary

Zenseact

- **Mission**: Develop AD and ADAS software for consumer vehicles to eliminate road traffic accidents
- **Vision**: A world with zero road traffic fatalities and injuries

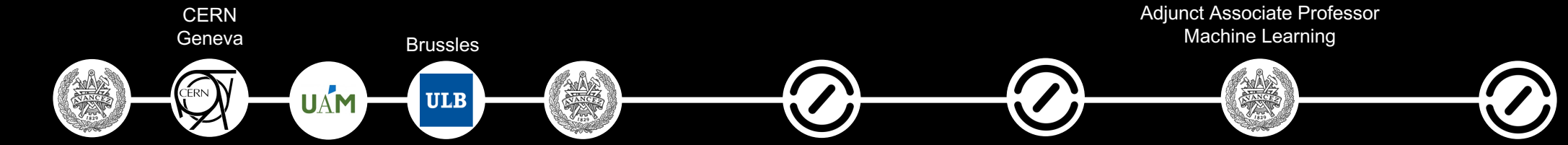
Zenseact

Locations: Gothenburg (main office), Lund and Shanghai

Size: 700+ engineers, 60+ DL engineers

Costumers: Volvo Cars (Owner) and Polestar

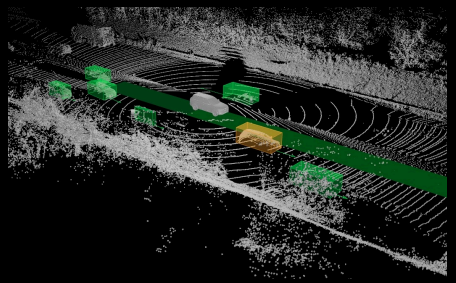
My Background



Industrial supervisor for 3 WASP industrial PhD students:
Adam Tonderski, LU, with Kalle Åström
Georg Hess, CTH, with Lennart Svensson
William Ljungberg, LiU, with Michael Felsberg

Importance of AI, Autonomous Systems, and Software

- AI: State-of-the-art perception and prediction tasks



- Autonomous Systems: Reducing human error in driving

- Software: Developing full safety-critical software stack

Importance of research at Zenseact

- Truly safe, useful, and cost-effective autonomous driving for consumer cars has never been done
- Staying competitive with cutting-edge technology
- Addressing unique challenges not covered in academia

Why join the WASP program

- Address key challenges
- Connect with academic researchers and WASP industry partners
- Develop in-house expertise
- Reqruitment oppertunities

Steps leading to a WASP industrial PhD project at Zenseact

1. Identify a key challenge
2. Identify the most suitable PhD candidate and academic supervisor
3. Define the research question(s) together with the academic supervisor
4. Write the WASP application together with the academic supervisor

WASP industrial PhD project setup at Zenseact

- Industrial supervisor dedicates at least 5-10% work time
- PhD student joins our *Advanced Graduate Program*
- Continous communication with the relevant parts of the company
- Plan for integrating the research into products
- Tip: Release data publically [1]

[1] Zenseact Open Dataset: A large-scale and diverse multimodal dataset for autonomous driving
Mina Alibeigi, William Ljungbergh*, Adam Tonderski*, Georg Hess, Adam Lilja, Carl Lindström, Daria Motorniuk, Junsheng Fu, Jenny Widahl, Christoffer Petersson*
ICCV 2023

Examples of WASP program impact at Zenseact

- Research Question: How to reduce manual annotations? [1]
  Impact: In-house team for self-supervision and auto-labelling

[1] Masked Autoencoder for Self-Supervised Pre-training on Lidar Point Clouds
Georg Hess, Johan Jaxing, Elias Svensson, David Hagerman, Christoffer Petersson, Lennart Svensson
WACV 2023

Examples of WASP program impact at Zenseact

- Research Question: How to reduce manual annotations? [1]
  Impact: In-house team for self-supervision and auto-labelling

- Research Question: How to test software stack on safety-critical scenarios? [2], [3], [4]
  Impact: Integrated into in-house closed-loop simulation environment

[1] Masked Autoencoder for Self-Supervised Pre-training on Lidar Point Clouds
Georg Hess, Johan Jaxing, Elias Svensson, David Hagerman, Christoffer Petersson, Lennart Svensson
WACV 2023

[2] NeuRAD: Neural Rendering for Autonomous Driving
Adam Tonderski, Carl Lindström*, Georg Hess*, William Ljungbergh, Lennart Svensson, Christoffer Petersson*
CVPR 2024 (“Highlight”)

[3] Are NeRFs ready for autonomous driving? Towards closing the real-to-simulation gap
Carl Lindström, Georg Hess*, Adam Lilja, Maryam Fatemi, Lars Hammarstrand, Christoffer Petersson, Lennart Svensson*
CVPR 2024 Workshop for Autonomous Driving

[4] *NeuroNCAP: Photorealistic Closed-loop Safety Testing for Autonomous Driving*
William Ljungbergh, Adam Tonderski*, Joakim Johnander, Holger Caesar, Kalle Åström, Michael Felsberg, Christoffer Petersson*
In submission

Summary

The WASP program:

- Has had a significant impact on Zenseact’s R&D
- Will enhance traffic safety globally
- Aligns with Zenseact's mission to save lives by pushing the limits of AI, Autonomous Systems and Software

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Thank you!


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Perspectives from an industrial WASP PhD student

Webinar: WASP Industrial Postdoc and PhD Student Calls 2024 | May 27th, 2024

Georg Hess, Zenseact

Outline

- My background
- My PhD time so far
- How to be a PhD student and generate company value
- How to create a happy (successful) PhD student
- Why join the WASP program

My Background

- B.Sc. in Mechanical Engineering (2018) & M.Sc. in Systems, Mechatronics and Control (2021) from Chalmers
- Internships within automotive & AD development since 2018
- Joined Zenseact summer 2021 as Ph.D. student

PhD journey so far

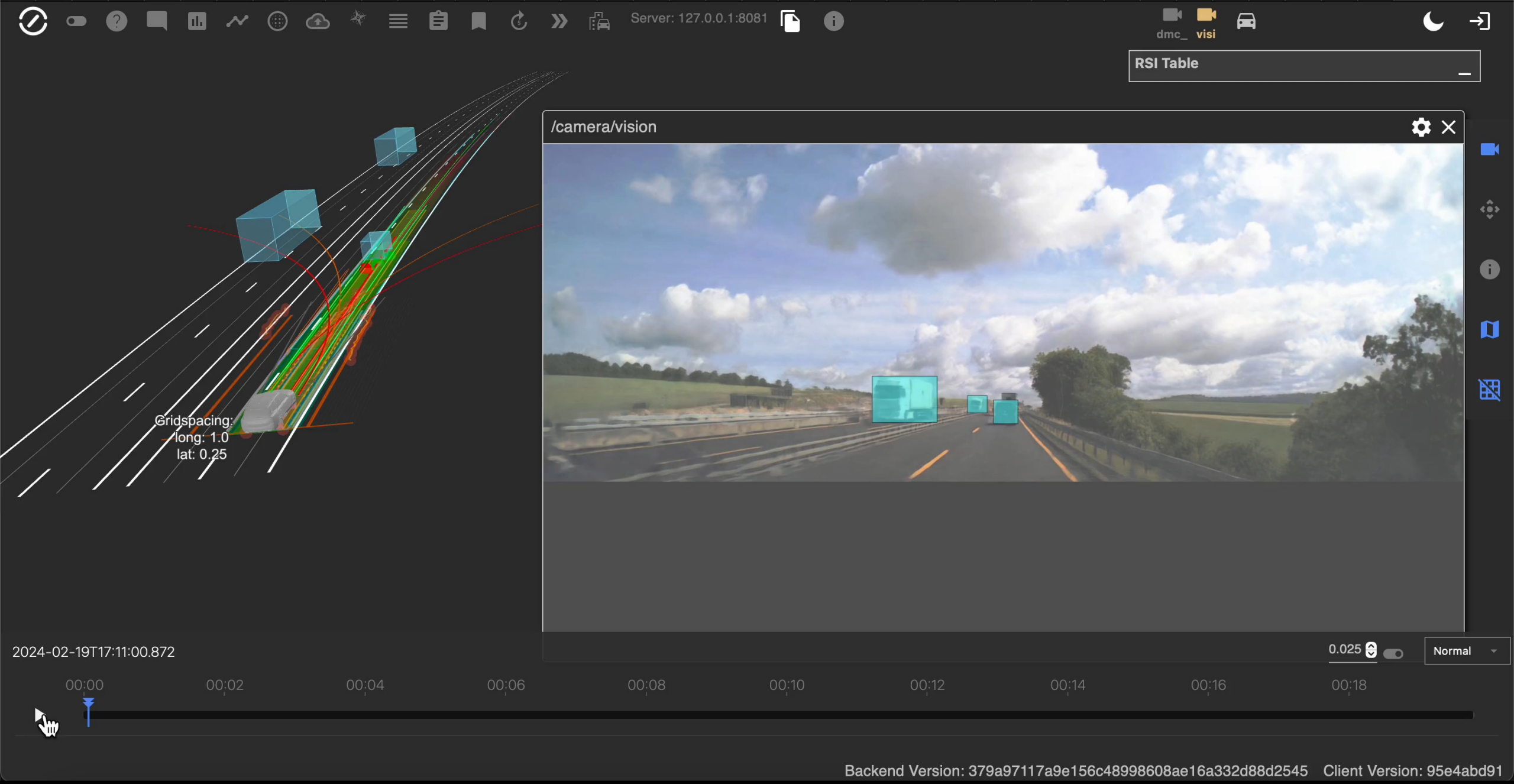
- Started August 2021
- First period, focus on course-work
- March 2022, first paper submitted
  - Pre-defined project with (1) good chance of success. (2) low risk of scooping, (3) fast iterations
  - But, working solo was stressful + uncertainty
- Cooperation with other PhD students + supervise master thesis
  - Publications at: CVPR, CVPRW, ECCV, WACV (x2), ICCV, Fusion, IEEE Journals
- Halfway 2023, disputation early next year

PhD student + generating company value

- Inherit conflict of interest between academia and company?
  - Much progress in computer vision and DL driven by companies
- Define projects with large academic impact & useful for Zenseact
  - Utilize industry perspective to find challenges
- Spread knowledge in the company

Example

Neural Rendering


Server: 127.0.0.1:8081
dmc_
visi
RSI Table
/camera/vision
Gridspacing:
long: 1.0
lat: 0.25
2024-02-19T17:11:00.872
0.025
Normal
00:00
00:02
00:04
00:06
00:08
00:10
00:12
00:14
00:16
00:18
Backend Version: 379a97117a9e156c48998608ae16a332d88d2545
Client Version: 95e4abd91

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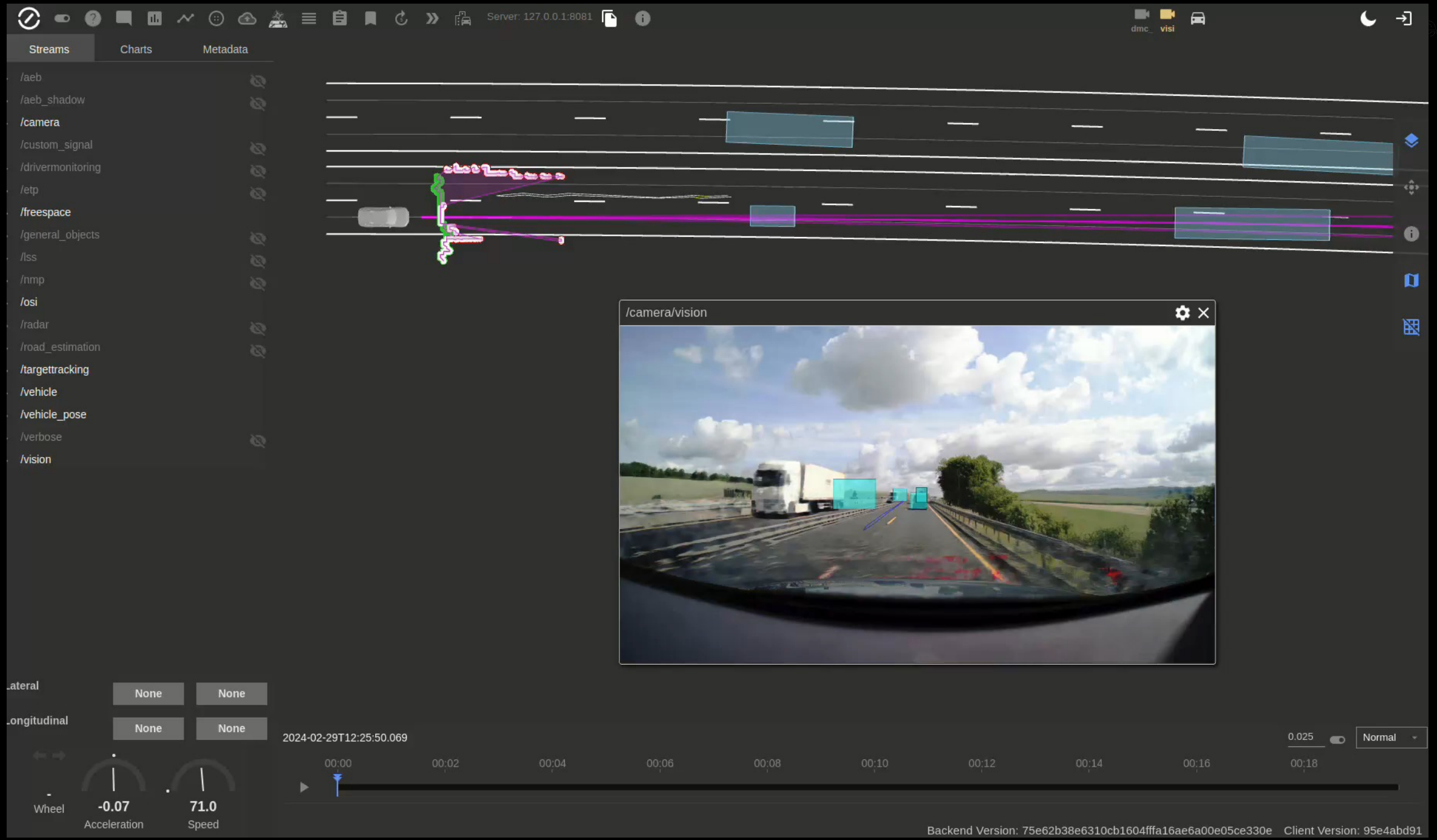
Server: 127.0.0.1:8081
dmc_
visi
Streams
Charts
Metadata
/aeb
/aeb_shadow
/camera
/custom_signal
/drivermonitoring
/etp
/freespace
/general_objects
/lss
/nmp
/osi
/radar
/road_estimation
/targettracking
/vehicle
/vehicle_pose
/verbose
/vision
/camera/vision
Lateral
Longitudinal
None
None
None
None
2024-02-29T12:25:50.069
0.025
Normal
00:00
00:02
00:04
00:06
00:08
00:10
00:12
00:14
00:16
00:18
Wheel
-0.07
Acceleration
71.0
Speed
Backend Version: 75e62b38e6310cb1604fffa16ae6a00e05ce330e
Client Version: 95e4abd91

How to create a happy (successful?) PhD student

- Pre-defined first project
  - Simple, easy win, or
  - Join more senior student
- Collaborations - within company or university
  - Find collaboration-friendly supervisor
- Engaged industrial and academic supervisors
- Flexible research directions
- Limit company work not tied to research

Why join WASP?

- Networking & collaboration
- WASP courses
  - Flexible schedule
  - Combination with own research – two papers generated from WASP courses
- Travelling
  - Conferences, study trips, and longer research visits


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