

Individual study plan

Print date: 2026-10-17

Version: 2 (Not established)

Reference number: IDA-2024-00170

Start date: 2026-03-25

Expected establish date: 2027-01-31

Name

Dominik Frey

Personal identity number

Basic information

Admitted to

Third-cycle subject	TKIDADAT Computer Science 240.0 hp
Leads to	Degree of Doctor
Later part	No
Subject instance, start date	2024-08-15
Higher education institution resources	- Office space (Yes) - Computer (Yes) - Two Recommended monitors with integrated docking station, 27" - External wireless keyboard - Wireless mouse - Recommended Windows laptop - Recommended docking station USB-C - Recommended iPhone SE 2022 (paket) - 4,7" 64GB SIM+eSIM 144g 5G - One extra chair, number 67 from Återbruket - Drawer - Desk lamp

General syllabus

Reference number	DNR LiU-2022-04768
Attached file	phd-studies-syllabus-computer-science-2023.pdf
Link to general syllabus	https://liu.se/en/article/forskarutbildning-i-datalogi
Course requirements in total (hp)	60.0

Milestones in third-cycle studies

Calendar half year	2029H
Milestones in third-cycle studies	Defence of doctoral thesis
Date	2029-12-10

Status	Planned
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Calendar half year	2027H
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Milestones in third-cycle studies	Half-time seminar
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Date	2027-09-01
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Status	Planned
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Study activity and funding (SCB)

Planned study activity and funding

Calendar half year	2029H
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Study activity	80%
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Study funding scope	100%
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Study funding type	DTJ Doctoral studentship
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Calendar half year	2029V
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Study activity	80%
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Study funding scope	100%
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Study funding type	DTJ Doctoral studentship
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Calendar half year	2028V
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Study activity	80%
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Study funding scope	100%
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Study funding type	DTJ Doctoral studentship
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Calendar half year	2027H
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Study activity	80%
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Study funding scope	100%
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Study funding type	DTJ Doctoral studentship
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Calendar half year	2027V
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Study activity	80%
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Study funding scope	100%
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Study funding type	DTJ Doctoral studentship
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Calendar half year	2026H
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Study activity	80%
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Study funding scope	100%
Study funding type	DTJ Doctoral studentship

Calendar half year	2026V
Study activity	80%
Study funding scope	100%
Study funding type	DTJ Doctoral studentship

Calendar half year	2025H
Study activity	80%
Study funding scope	100%
Study funding type	DTJ Doctoral studentship

Calendar half year	2025V
Study activity	80%
Study funding scope	100%
Study funding type	DTJ Doctoral studentship

Calendar half year	2024H
Study activity	100%
Study funding scope	100%
Study funding type	DTJ Doctoral studentship

Reported study activity and funding

Calendar half year	2026V
Study activity	88%
Study funding	100% Doctoral studentship

Calendar half year	2025H
Study activity	75%
Study funding	100% Doctoral studentship

Calendar half year	2025V
Study activity	81%
Study funding	100% Doctoral studentship

Calendar half year	2024H
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Study activity 75%

Study funding 100% Doctoral studentship

Departmental duties

Calendar half year 2029H

Scope 20%

Description Teaching

Status Planned

Calendar half year 2028H

Scope 20%

Description Teaching

Status Planned

Calendar half year 2028V

Scope 20%

Description Teaching

Status Planned

Calendar half year 2027H

Scope 20%

Description Teaching

Status Planned

Calendar half year 2027V

Scope 20%

Description Teaching

Status Planned

Calendar half year 2026H

Scope 20%

Description Teaching

Status Planned

Calendar half year 2026V

Scope 20%

Description	Teaching
Status	Planned

Calendar half year	2025H
Scope	20%
Description	Teaching
Status	Completed

Calendar half year	2025V
Scope	20%
Description	Teaching
Status	Completed

Other documentation

Attached file	ISP_LIU_Dominik Frey_ISP 2024_44416_1_EN_Established.pdf
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Supervisor and decision-maker

ISP-Admin/FUS

Name	Moe, Anne
Start date	2025-10-15

ISP-Decision-maker

Name	Eriksson, Henrik
Start date	2025-10-08

ISP-Principal supervisor

Name	Varro, Daniel
Start date	2024-08-15
Supervisor training	No
Calendar half year	2026V
Supervisor input and forms of supervision	Weekly meetings (dominantly in person), extra meetings when writing papers.
Version	1

ISP-ÄF/FUÄ/Mentor/FUS

Name	Peng, Zebo
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Start date 2025-10-08

ISP-Assistant supervisor

Name	Kargén, Ulf
Start date	2024-08-15
Supervisor training	No
Calendar half year	2026V
Supervisor input and forms of supervision	Weekly meetings
Version	1

Supervisor conversation

Type of conversation	Annual follow-up conversation
Date	2026-01-22
Version	1
Participants	Dominik Frey, Ulf Kargén, Dániel Varró
Note	We discussed general progress and research plans for the upcoming year

Type of conversation	Startup conversation
Date	2024-01-29
Version	1
Participants	Dominik Frey, Dániel Varró, Ulf Kargén

Thesis work

Summary

Title	Enhancing Safety Assurance for Autonomous Surface Vehicles (ASVs) through Model-Based Test Generation
Description	In recent years, significant efforts have been directed towards developing autonomous surface vehicles (ASVs) for applications such as oceanography and cargo transport. A critical requirement for ASVs in these contexts is the ability to complete missions without posing risks to other maritime traffic. To prevent collisions, the International Maritime Organization (IMO) has established the International Regulations for Preventing Collisions at Sea (COLREGs), a set of 41 rules that guide vessels in close-encounter situations to avoid collisions. However, since these regulations were designed with human operators in mind, many rules are subject to subjective interpretation and rely on human judgment. This presents a major challenge when it comes to ensuring that ASV control systems comply with COLREGs. Currently, effective methods for ensuring COLREGs compliance

in complex maritime traffic scenarios such as those involving multiple vessels or static obstacles are lacking. These scenarios may involve rare event combinations that traditional (stochastic) simulations fail to cover adequately. Nevertheless, sophisticated naval simulators offer a promising means of identifying potential safety risks (e.g., near-collision situations) without endangering human lives or maritime operations.

The expected outcomes of this PhD project are as follows:

A set of functional models for maritime actors and collision-avoidance behaviors, along with a dedicated test scenario specification language.

Novel techniques and methods for systematically and scalably generating complex, diverse test scenarios in the maritime domain.

Practical integration of the developed test-scenario generators with existing naval simulators.

New methods for evaluating situation coverage and diversity in generated test scenarios.

Part of thesis work

Summary

Title	Assessing Scene Generation Techniques for Testing COLREGS-Compliance of Autonomous Surface Vehicles
Type	Conference
Co-author	Ulf Kargén, Dániel Varró
Description	Autonomous surface vehicles (ASVs) need to complete missions without posing risks to other maritime traffic. Safe traffic in open sea encounters is controlled by the International Regulations for Preventing Collisions at Sea (COLREGS) formulated by the International Maritime Organization (IMO). Designed with human operators in mind, the COLREGS are intentionally underspecified, which may result in ambiguous requirements for correct behaviour for ASVs. Hence the systematic testing of such ambiguous situations is particularly important. This paper investigates to what extent existing test scenario generation approaches deemed effective in the automotive domain can be adapted to test COLREGS-compliance in a maritime context with multi-vessel encounters. In a series of experiments involving synthetic and real-world test scenarios, their performance is evaluated with respect to relevance, diversity, completeness, scalability and speed. Our results indicate that (1) test scenarios derived from historic maritime traffic are insufficient for testing multi-ship encounters. Moreover, (2) existing test scenario generation techniques provide sufficient scalability and speed, but they are very limited in terms of diversity and completeness when the number of vessels increases.
Name of publication/conference	The ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA)
Publication year	2025
Status	Completed

Summary

Title	Automated Generation of Functionally Complete Assurance Suites for COLREGS-Compliance of Autonomous Surface Vehicles
Type	Conference
Co-author	Ulf Kargén, Dániel Varró
Description	Autonomous surface vehicles (ASVs) operating in maritime traffic must comply with the International Regulations for Preventing Collisions at Sea (COLREGS). Demonstrating COLREGS compliance requires systematic assurance that all relevant encounter scenarios are represented and analyzed. Recent work has proposed a research agenda for scenario-based assurance of COLREGS compliance based on qualitative abstractions and multi-level scenario modeling. In this paper, we provide the first realization of a model-based approach that systematically derives initial scenes as assurance scenarios for multi-vessel encounters. First, a complete set of functional equivalence classes is derived automatically. Then, we provide a mapping from functional equivalence classes to logical scenarios that capture geometrical constraints between potentially hazardous ship encounters. Next, initial scenes with precise vessel placements are generated from logical scenarios by (1) a search-based algorithm and (2) a novel rejection sampling-based algorithm. Finally, we derive (static) trajectories amenable to simulation for ASV assurance purposes. Our evaluation demonstrates that the approach achieves full coverage of relevant \colregs{} encounters at the functional level and scales to complex scenarios up to six vessels, which represent the vast majority of open sea encounters.
Status	Ongoing

Summary

Title	SceneGEMS: Scenario Generation and Execution Framework for the Safety Assurance of Maritime Autonomous Surface Vehicles
Type	Conference
Co-author	Ulf Kargén, Dániel Varró
Description	Autonomous Surface Vehicles (ASVs) must comply with the International Regulations for Preventing Collisions at Sea (COLREGS) to operate safely in shared maritime environments. While simulation-based testing is widely used to assess compliance, existing approaches typically focus on scenario generation, simulation, or compliance monitoring and evaluation in an isolated way. SceneGEMS is an integrated modular framework for systematic ASV assurance. It (1) generates functionally complete assurance suites from high-level specifications, and provides interactive visualization of the resulting multi-vessel encounters. Furthermore, SceneGEMS (2) instantiates and executes generated scenarios in simulation, and (3) monitors COLREGS compliance at runtime, generating real-time visual feedback and exportable assurance evidence for later analysis. Practitioners can configure the simulation environment, communication interfaces, and vessel-specific physical models. The ASV system under test is integrated through software-in-the-loop or hybrid setups involving both real and simulated vessels.
Status	Ongoing

Summary

Title	Model-driven Scenario-Based Assurance for the COLREGS compliance of Autonomous Surface Vehicles
Type	Conference
Description	Doctoral Symposium paper outlining my current research and research plans.
Status	Ongoing

Ethical approvals and considerations

Description	Specify the following: - Permits required? (No) - Experiments on animals will be included (No) - Experiments on humans will be included (No) - Ethical trial required (No) - Notification of processing of personal data (GDPR) required (No) Ethical aspects: While the primary aim of this research is safety enhancement, the dual-use nature of autonomous systems presents possible morally problematic applications. For instance, test generation tools developed for civil maritime safety could be adapted for military or surveillance applications. Scenarios designed to improve navigation robustness could theoretically be used to optimise evasive behaviour in hostile or covert operations. According to the Uppsala Code of Ethics for Scientists (1984), researchers have a moral responsibility to avoid harm and anticipate and prevent misuse of their work. The Code emphasises four core duties: to seek the truth, to disseminate knowledge, to act for the benefit of humanity, and to avoid harm. To address this, we take the following responsibilities seriously: Transparency: We publish methods and results in peer-reviewed venues with open data and reproducible benchmarks, ensuring visibility of research intentions. Mitigation of misuse: We plan to include clear use-case restrictions and limitations in all deliverables. For instance, models trained on safety-critical scenarios should be labelled accordingly and require justification for downstream uses.
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Courses and conferences

Total within education	79.5 hp (of which 42.0 hp credited)
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Unsorted certified results

Calendar half year	2026H
Name	WASP Planning and Relational Learning
Scope	6.0 hp
Status	Completed

Ex. date 2026-09-01
Certifier Jendrik Seipp

Calendar half year 2026V
Name Advanced Data Models and Databases
Scope 6.0 hp
Status Completed
Ex. date 2026-01-28
Certifier Patrick Lambrix

Calendar half year 2025H
Name Discrete structures II
Scope 6.0 hp
Status Completed
Ex. date 2025-12-22
Certifier Victor Lagerkvist

Calendar half year 2025H
Name Deep Learning
Scope 6.0 hp
Status Completed
Ex. date 2025-09-23
Certifier Fredrik Lindsten

Calendar half year 2025H
Name The WASP Community Building Summer School 2025
Scope 1.5 hp
Status Completed
Ex. date 2025-09-12
Certifier Daniel Axehill

Calendar half year 2025V
Course code 6FTFK01
Name Fundamentals for PhD Studies in Science and Engineering
Scope 6.0 hp
Status Completed
Ex. date 2025-06-05

Certifier Nicolette Lakemond

Calendar half year 2025V
Course code 6FIDA16
Name Logic II
Scope 6.0 hp
Status Completed
Ex. date 2025-06-03
Certifier Johannes Klaus Fichte

Mandatory courses

Planned

Calendar half year 2026V
Course code TDDD43
Name Advanced Data Models and Databases (CUGS Core)
Scope (hp) 6.0

Calendar half year 2026V
Course code DS2
Name Discrete Structures II (CUGS core)
Scope (hp) 6.0

Calendar half year 2026V
Course code Higher Education Pedagogy for New Teachers
Name Higher Education Pedagogy for New Teachers
Scope (hp) 6.0

Calendar half year 2026V
Course code Ethical, Legal and Societal Aspects of AI and Auto
Name WASP Ethical, Legal and Societal Aspects of AI and Auto
Scope (hp) 3.0

Calendar half year 2025H
Course code WASP Autonomous Systems
Name WASP Autonomous Systems
Scope (hp) 6.0

Calendar half year 2025H

Course code	WASP Software Engineering & Cloud Computing
Name	WASP Software Engineering & Cloud Computing
Scope (hp)	6.0

Elective courses

Planned

Calendar half year	2026V
Course code	WASP Planning and Relational Learning
Name	WASP Planning and Relational Learning
Scope (hp)	6.0

Calendar half year	2025H
Course code	WASP Topological Data Analysis
Name	WASP Topological Data Analysis
Scope (hp)	6.0

Credit transfer / Credited education

Calendar half year	2024H
Name	Software and Systems Verification
Scope	6.0 hp
Decision maker	Zebo Peng
Decision date	2024-12-02
Calendar half year	2024H
Name	Probabilistic Inference and Decision Support Systems
Scope	6.0 hp
Decision maker	Zebo Peng
Decision date	2024-12-02
Calendar half year	2024H
Name	Languages and Automata
Scope	6.0 hp
Decision maker	Zebo Peng
Decision date	2024-12-02
Calendar half year	2026V
Name	WASP Topological Data Analysis
Scope	6.0 hp
Decision maker	Zebo Peng

Decision date	2026-04-28
Calendar half year	2026V
Name	WASP Ethical, Legal and Societal Aspects of AI & AS
Scope	6.0 hp
Decision maker	Zebo Peng
Decision date	2026-04-28
Calendar half year	2026V
Name	WASP Software Engineering & Cloud Computing
Scope	6.0 hp
Decision maker	Zebo Peng
Decision date	2026-04-28
Calendar half year	2026V
Name	WASP Autonomous Systems
Scope	6.0 hp
Decision maker	Zebo Peng
Decision date	2026-04-28

Non-credit-bearing activities, including International participation

Calendar half year	2029H
Type of activity	Seminar
Description	PhD defense
Date	2029-12-10
Status	Planned

Calendar half year	2027H
Type of activity	Seminar
Description	60 Percent Seminar
Date	2027-09-01
Status	Planned

Calendar half year	2026H
Type of activity	Conference
Description	MODELS, the ACM/IEEE International Conference on Model-Driven Engineering Languages and Systems, Malaga, Spain
Date	2026-10-04
Status	Planned

Calendar half year	2026H
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Type of activity	School
Description	FAME – 2nd International School on Foundations and Advances of Model-Based Engineering, University of Malaga, Spain
Date	2026-09-30
Status	Planned

Calendar half year	2026H
Type of activity	Conference
Description	WARA-PS Demonstration Week 2026, Gransö, Västervik
Date	2026-09-14
Status	Planned

Calendar half year	2026V
Type of activity	Conference
Description	WASP Winter Conference, 2026
Date	2026-01-13
Status	Completed

Calendar half year	2026V
Type of activity	Conference
Description	MODPROD/OpenModelica 2026, Linköping
Date	2026-02-03
Status	Completed

Calendar half year	2026V
Type of activity	Study Trip
Description	International study trip to Singapore 2026
Date	2026-03-21
Status	Completed

Calendar half year	2026V
Type of activity	Winter School
Description	WASP Ethical, Legal and Societal Aspects of AI and Autonomous Systems 2026
Date	2026-03-11
Status	Completed

Calendar half year	2026V
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Type of activity	Workshop
Description	WASP Software Engineering and Technology Cluster Workshop, Linköping, June, 2026.
Date	2026-06-16
Status	Planned

Calendar half year	2025H
Type of activity	Conference
Description	WARA-PS Demonstration Week, Gransö, Vastervik
Date	2025-09-15
Status	Completed

Calendar half year	2025V
Type of activity	Conference
Description	The ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA), Trondheim
Date	2025-06-28
Status	Completed

Calendar half year	2025V
Type of activity	Conference
Description	The ACM International Conference on the Foundations of Software Engineering (FSE), Trondheim
Date	2025-06-25
Status	Completed

Calendar half year	2025V
Type of activity	Conference
Description	WASP Winter Conference, Norrköping
Date	2025-01-14
Status	Completed

Calendar half year	2025V
Type of activity	Conference
Description	MODPROD/OpenModelica 2025, Linköping
Date	2025-02-03
Status	Completed

Calendar half year	2025V
Type of activity	Field Work
Description	WARA-PS Data Collection Week, Gransö, Vastervik
Date	2025-05-20
Status	Completed

Learning outcomes

A. Knowledge and understanding

A.1 Demonstrate broad knowledge and systematic understanding of the research field as well as advanced and up-to-date specialised knowledge in a limited area of this field.

Note	Completed: - Participated in at least 10 department seminars over the next 12 months. - Completed 43.5 hp of PhD-level coursework in software engineering, logic, data models, and autonomous systems. - Participated in 5 international conferences (ISSTA 2025, FSE 2025, MODPROD 2025, WASP Winter Conference 2025, WARA-PS Demonstration Week 2025). - Presented research through 2 poster sessions (WASP Winter Conference 2026; WARA-PS Demonstration Week 2025). - Attended 2 doctoral milestone seminars (30% seminars) and 1 PhD defense. - Attended 1 faculty research seminar (SAS). - Co-authored 1 completed international conference publication (ISSTA 2025), 1 ongoing conference paper on system-level testing of ASVs and 1 ongoing vision paper on COLREGS oracles. - Presented research at MODPROD 2026. Planned: - Present research at MODPROD 2027. - Participate in MODELS 2026 (PhD Symposium, Summer Workshop, main event). - Publish 3 papers at MODELS 2026 (1 full research paper, 1 tool paper, 1 doctoral symposium). - Attend the WASP Software Engineering and Technology Cluster Workshop in June, 2026.
Status	Ongoing

A.2 Demonstrate familiarity with research methodology in general and the methods of the specific field of research in particular.

Note	Completed: - Attended two full-day workshops or seminars on research methodology (Fundamentals for PhD Studies in Science and Engineering) in 2025 - Applied model-based testing, search-based testing, and simulation-based evaluation methods in peer-reviewed publications. - Designed and executed systematic experimental evaluations on diversity, scalability, and completeness of generated test scenarios. - Showcased new methodologies like RRT* and WARA-PS ecosystem in ONR project report.
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- Served as a reviewer for 1 international conference research paper (FASE).

Planned:

- Apply multi-step refinement and subsystem-level experimentation in upcoming MODELS 2026 publications.
- Further develop quantitative evaluation methods for scenario coverage and diversity in large-scale ASV simulations.
- Attend the WASP Software Engineering and Technology Cluster Workshop in June, 2026.

Status

Ongoing

B. Competence and skills

B.1 Demonstrate the capacity for scholarly analysis and synthesis as well as to review and assess new and complex phenomena, issues and situations autonomously and critically.

Note

Completed:

- Acted as an external reviewer for a BSc thesis work and defence at Budapest University of Technology and Economics (January 2025)
- Analyzed reviewers' responses for major revision of the ISSTA paper. Converted the paper into an experience paper based on reviews (2025).
- Conducted continuous literature analysis on COLREGS formalization, scenario generation, and safety assurance.
- Critically assessed limitations of automotive scenario generation techniques when transferred to maritime domains (ISSTA 2025).
- Participated in doctoral seminars 2 × 60%, 1 × 90%, and 1 PhD defense, contributing to scholarly discussion and critique.
- Reviewed a FASE paper about autonomous inland vessel software architecture (FASE 2026).
- Analyzed reviewers' response for rejected ICSE paper. Converted the response into a better paper in March 2026.
- Analyzed reviewers' response for MODELS26 paper. Answered the reviewers' questions to the best of my knowledge in May 2026.

Planned:

- Participate in doctoral seminars (60%) and 1 PhD defense, contributing to scholarly discussion and critique.
- Submit a PhD Symposium paper at MODELS 2026.
- (Identify and document methodological gaps after each MODELS 2026 submission for follow-up journal work.)

Status

Ongoing

B.2 Demonstrate the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to plan and use appropriate methods to undertake research and other qualified tasks within predetermined time frames and to review and evaluate such work.

Note

Ongoing:

- Using Agile planning (e.g., 3-week sprints) for managing thesis-related research tasks starting August 2024, with retrospectives at the end of each sprint.

Completed:

- Formulated research problems addressing multi-vessel COLREGS-compliance testing.
- Planned and executed model-based test generation pipelines integrated with naval simulators.
- Supervised 3 Master's students, managing scope, timelines, and deliverables.
- Submitted two research papers to peer-reviewed software engineering venues (ISSTA, ICSE) by July 2025.
- Supervised 2 Master's students, managing thesis writing.
- Supervised a group of 8 Bachelor students managing scope, timelines, and deliverables (web application project).

Planned:

- Supervise 2–3 additional Master's thesis students (2026-2027).
- Develop and evaluate 1 autonomous testing subsystem for WARA-PS field experiments and demonstrations.
- Submit two more research papers to peer-reviewed software engineering venues (MODELS) by July 2026.

Status

Ongoing

B.3 Demonstrate through a dissertation the ability to make a significant contribution to the formation of knowledge through his or her own research.

Note

Completed:

- Published 1 peer-reviewed conference paper forming part of the dissertation.
- Developed core functional models and test generation techniques used across publications.

Planned:

- Publish 2 MODELS 2026 papers and 1 additional peer-reviewed paper contributing to the cumulative thesis.
- Apply for artifact evaluation if the paper is accepted to MODELS26
- Consolidate publications into a coherent dissertation structure by 2027.

Status

Ongoing

B.4 Demonstrate the ability in both national and international contexts to present and discuss research and research findings authoritatively in speech and writing and in dialogue with the academic community and society in general.

Note

Completed:

- Presented research at international conferences via posters (2 occasions).
- Participated in academic discussions at ISSTA, FSE, MODPROD, and WASP venues.
- Deliver 2 oral presentations (MODPROD 2026 and ONR project meeting)

Planned:

- Deliver 4 additional oral presentations at (MODELS 2026, WARA-PS Demonstration Week 2026, and MODPROD 2027).
- Present research in PhD Symposium and Summer Workshop settings at MODELS 2026.
- Participate in academic discussions at the WASP Software Engineering and Technology Cluster Workshop in June, 2026.

Status Ongoing

B.5 Demonstrate the ability to identify the need for further knowledge.

Note Completed:
 - Identified scalability and diversity limitations in existing scenario generation techniques through empirical studies.
 - Documented open research challenges in ongoing publications (COLREGS ambiguity, adapting automotive scene generation to maritime, COLREGS-compliant scenario generation).

 Planned:
 - Maintain a structured future research log updated after each MODELS 2026 submission.
 - Define post-thesis research directions in safety assurance for autonomous maritime systems.

Status Ongoing

B.6 Demonstrate the capacity to contribute to social development and support the learning of others both through research and education and in some other qualified professional capacity.

Note Completed:
 - Mentored 3 Master's students.
 - Taught and supervised Master's students in a Software Engineering laboratory course.
 - Graded a large number of Software Engineering examinations, contributing to quality assurance in education.

 Planned:
 - Mentor 2–3 additional Master's students by the end of 2026.
 - Supervise 1 Bachelor student group in a web application project by 2026 June.

Status Ongoing

C. Judgement and approach

C.1 Demonstrate intellectual autonomy and disciplinary rectitude as well as the ability to make assessments of research ethics.

Note Completed:
 - Reflected on ethical and dual-use implications of autonomous system testing.
 - Ensured transparency through peer-reviewed publication and reproducible benchmarks.
 - Gained insight into academic peer review and ethical standards by reviewing 1 FASE research paper.

 Planned:
 - Integrate explicit ethical reflection sections in MODELS 2026 papers and future journal submissions.
 - Participate in additional ethics- or integrity-focused seminars by mid-2026.

Status Ongoing

C.2 Demonstrate specialised insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used.

Note	Completed:
	- Analysed limitations of current COLREGS interpretations for autonomous systems in safety-critical contexts. - Considered societal impact and potential misuse of autonomous testing technologies.
Status	Planned:
	- Include societal impact analysis in at least one MODELS 2026 paper. - Engage in one research activity related to autonomous systems safety by the end of 2026.
Status	Ongoing

Timeplan

2029H

Milestones in third-cycle studies	Defence of doctoral thesis	Planned
Study activity and funding	80% Study activity 100% DTJ Doctoral studentship	Planned
Departmental duties	20% Teaching	Planned
Non-credit-bearing activities, including International participation	(Seminar) PhD defense (2029-12-10)	Planned

2029V

Study activity and funding	80% Study activity 100% DTJ Doctoral studentship	Planned
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2028H

Departmental duties	20% Teaching	Planned
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2028V

Study activity and funding	80% Study activity 100% DTJ Doctoral studentship	Planned
Departmental duties	20% Teaching	Planned

2027H

Milestones in third-cycle studies	Half-time seminar	Planned
Study activity and funding	80% Study activity 100% DTJ Doctoral studentship	Planned
Departmental duties	20% Teaching	Planned
Non-credit-bearing activities, including International participation	(Seminar) 60 Percent Seminar (2027-09-01)	Planned

2027V

Study activity and funding	80% Study activity 100% DTJ Doctoral studentship	Planned
Departmental duties	20% Teaching	Planned

2026H

Study activity and funding	80% Study activity 100% DTJ Doctoral studentship	Planned
Departmental duties	20% Teaching	Planned
Non-credit-bearing activities, including International participation	(Conference) MODELS, the ACM/IEEE International Conference on Model-Driven Engineering Languages and Systems, Malaga, Spain (2026-10-04)	Planned
	(School) FAME – 2nd International School on Foundations and Advances of Model-Based Engineering, University of Malaga, Spain (2026-09-30)	Planned
	(Conference) WARA-PS Demonstration Week 2026, Gransö, Vastervik (2026-09-14)	Planned

2026V

Study activity and funding	80% Study activity 100% DTJ Doctoral studentship	Planned
	88% Study activity 100% Doctoral studentship	Reported
Departmental duties	20% Teaching	Planned
Supervisor conversation	Annual follow-up conversation (2026-01-22)	-
Mandatory courses	TDDD43 Advanced Data Models and Databases (CUGS Core) 6.0 hp	Planned
	DS2 Discrete Structures II (CUGS core) 6.0 hp	Planned
	Higher Education Pedagogy for New Teachers Higher Education Pedagogy for New Teachers 6.0 hp	Planned

2026V

	Ethical, Legal and Societal Aspects of AI and Auto WASP Ethical, Legal and Societal Aspects of AI and Auto 3.0 hp	Planned
Elective courses	WASP Planning and Relational Learning WASP Planning and Relational Learning 6.0 hp	Planned
Credit transfer / Credited education	WASP Topological Data Analysis 6.0 hp (2026-04-28)	-
	WASP Ethical, Legal and Societal Aspects of AI & AS 6.0 hp (2026-04-28)	-
	WASP Software Engineering & Cloud Computing 6.0 hp (2026-04-28)	-
	WASP Autonomous Systems 6.0 hp (2026-04-28)	-
Non-credit-bearing activities, including International participation	(Conference) WASP Winter Conference, 2026 (2026-01-13)	Completed
	(Conference) MODPROD/OpenModelica 2026, Linköping (2026-02-03)	Completed
	(Study Trip) International study trip to Singapore 2026 (2026-03-21)	Completed
	(Winter School) WASP Ethical, Legal and Societal Aspects of AI and Autonomous Systems 2026 (2026-03-11)	Completed
	(Workshop) WASP Software Engineering and Technology Cluster Workshop, Linköping, June, 2026. (2026-06-16)	Planned

2025H

Study activity and funding	80% Study activity 100% DTJ Doctoral studentship	Planned
	75% Study activity 100% Doctoral studentship	Reported
Departmental duties	20% Teaching	Completed
Mandatory courses	WASP Autonomous Systems WASP Autonomous Systems 6.0 hp	Planned
	WASP Software Engineering & Cloud Computing WASP Software Engineering & Cloud Computing 6.0 hp	Planned
Elective courses	WASP Topological Data Analysis WASP Topological Data Analysis 6.0 hp	Planned
Non-credit-bearing activities, including International participation	(Conference) WARA-PS Demonstration Week, Gransö, Vastervik (2025-09-15)	Completed

2025V

Study activity and funding	80% Study activity 100% DTJ Doctoral studentship	Planned
	81% Study activity 100% Doctoral studentship	Reported
Departmental duties	20% Teaching	Completed

2025V

Non-credit-bearing activities, including International participation	(Conference) The ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA), Trondheim (2025-06-28)	Completed
	(Conference) The ACM International Conference on the Foundations of Software Engineering (FSE), Trondheim (2025-06-25)	Completed
	(Conference) WASP Winter Conference, Norrköping (2025-01-14)	Completed
	(Conference) MODPROD/OpenModelica 2025, Linköping (2025-02-03)	Completed
	(Field Work) WARA-PS Data Collection Week, Gransö, Vastervik (2025-05-20)	Completed

2024H

Study activity and funding	100% Study activity 100% DTJ Doctoral studentship	Planned
	75% Study activity 100% Doctoral studentship	Reported
Credit transfer / Credited education	Software and Systems Verification 6.0 hp (2024-12-02)	-
	Probabilistic Inference and Decision Support Systems 6.0 hp (2024-12-02)	-
	Languages and Automata 6.0 hp (2024-12-02)	-

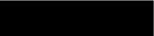
2024V

Supervisor conversation	Startup conversation (2024-01-29)	-
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Overview and reflections

Overview

Calendar...	Milestones	Study act...	Departm...	Courses...
2029H	Defence of doctoral thesis	(80%)	(20%)	
2029V		(80%)		
2028H			(20%)	
2028V		(80%)	(20%)	
2027H		(80%)	(20%)	
2027V		(80%)	(20%)	
2026H		(80%)	(20%)	6.0 hp
2026V		88% (80%)	(20%)	30.0 hp (27.0 hp)



Calendar...	Milestones	Study act...	Departm...	Courses...
2025H		75% (80%)	20%	13.5 hp (18.0 hp)
2025V		81% (80%)	20%	12.0 hp
2024H		75% (100%)		18.0 hp
Summary		319% (820%)	40% (140%)	79.5 hp (45.0 hp)

Reflections

Date	2026-01-29
Version	1
Reflection	There are no major deviations from the previous study plan
Posted by	Dániel Varró