

Computer Vision for Industry

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Organization of the Excursion

- Excursion topic: Machine Vision for Safety at Sea
- Company: SEA.AI
- You must visit the excursion to pass the course





Excursion Logistics

- Excursion date: 13.11 (**this Friday!**), 9:30 – 11:30
- We will meet 9:25 at Rechte Wienzeile 29, 1040 Wien
  (if you cannot find us, write a mail to irene.ballester@tuwien.ac.at)
- If you feel sick or cannot attend due to other reasons, please contact me.

Written Report

- Should answer:
  - What's the problem and why does it matter?
  - How CV was used to solve it?
- Structure
  - Introduction
  - Problem statement
  - Solution/discussion of state-of-the-artapproaches
  - Conclusion

- **4 pages** (max, without references)
- Due Dates
  - First draft: 10.01.2027
  - Final report: 18.01.2027
- Submit to: TUWEL
- Enter your topic and ensure that no one has the same topic

Topic Table Link

Written Report: Structure

1. Introduction
    1. Set the context: what is the application, and what goes wrong without a solution?
    2. Why does it matter (eg. safety, cost, scale)?
    3. What's the purpose of the report and what does it cover?
2. Problem statement
    1. Define the task or goal: what goes in, and what should come out? (detections, distances, a dataset, learned features)
    2. Name what makes it hard: small objects, glare, waves, night, limited data/onboard compute.
    3. Say how it is evaluated: metrics, benchmarks, or dataset quality.
3. Solution and state of the art
    1. Group the approaches into 2-4 families
    2. For each family, say what the idea is, what it handles well, and where it fails.
    3. Compare them on the same criteria, such as accuracy, speed, data needs and robustness. A short comparison table works well here.
4. Conclusion
    1. What did we learn? Summarize the main findings in a few sentences, with nothing new.
    2. Say what is still unsolved and where the field is heading.

References

1. Cite every claim, method and figure that isn't yours.
2. Use one consistent citation style (e.g. IEEE).

Suggested Preparation (before excursion)

1. Think about a problem/topic(s) you find interesting
   → if you're sure about the topic you can already add it to the list

   Topic Table Link

2. Get familiar (1h)
   Some resources:
   - SEA.AI, Our technology
   - NVIDIA blog, "SEA.AI Navigates the Future With AI at the Helm"
   - Maritime Computer Vision (MaCVi)

3. Prepare 3-4 questions for the excursion

WS 2025 Topics (for inspo)

Using infrared cameras for object detection
Monocular camera based distance measurement
Tiny object tracking
Trajectory Prediction of objects at sea
Synthetic Data Generation for Object Recognition at Sea
Computer Vision Datasets of Maritime Scenes
Self-Supervised Representation Learning for Maritime Infrared Surveillance
Video Object Detection
GNSS Jamming & Vision-Only Navigation

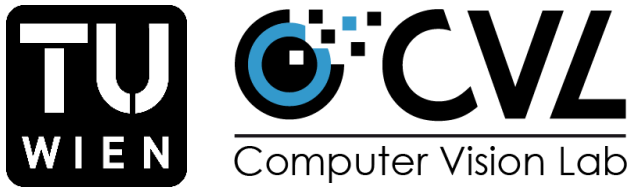
Template and examples

- On TUWEL

Schedule

1. Excursion Exercise: 09.11.2026 - 13:00 c.t., Sem FAV 01 A
   - Details on the excursion
   - Work plan & flow
   - What to prepare
2. Excursion to SEA.AI: 13.11.2026 - 9:30 – 11:30.
   - Address: Rechte Wienzeile 29, 1040
3. Presentation Preparation Lecture: 14.01.2027 - 13:00 c.t., Sem FAV 01 A
   - Discuss the draft documents
   - Planning of the presentation
4. Final Presentations & Due date: 18.01.2027 - 13:00 c.t., Sem FAV 01 A

More info: TUWEL course + https://cvl.tuwien.ac.at/course/applications-of-computer-vision-ex/



Thank you - Questions?

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