Lorenz Veithen

Aspiring research engineer devoted to bridging the gap between cutting edge technology and societal challenges.

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TECHNICAL EXPERIENCE

GRADUATE RESEARCHER (MSc THESIS)
DELFT UNIVERSITY OF TECHNOLOGY

Delft, The Netherlands — *Jan. 2024 - Sep. 2024*

- 8-month long research on the tumbling dynamics and attitude control retrieval of solar-sails (awarded 8.5/10).
- Ran large-scale computations on the DelftBlue supercomputer and handled over 400 GB of results data.
- Results will be submitted to the ISSS2025 conference.

AEROTHERMAL ENGINEER
REXUS PROGRAMME - TEAM SHEAR (DARE)

Delft, The Netherlands — *Jul. 2022 - Jan. 2024*

- Flight-proving a new simple to manufacture and cost-efficient heat shield for sounding rocketry through the SHEAR experiment.
- Developing the heat shield production process to improve its manufacturability.

FLIGHT DYNAMICS INTERNSHIP
GERMAN AEROSPACE CENTER (DLR)

Munich, Germany — *Aug. 2023 - Dec. 2023*

- Research project on the Q-Law, a Lyapunov control law to compute near-optimal many-revolutions trajectories between any two bounded orbits.
- Implemented and compared different formulations, devised methods to mitigate thrust chattering, and derived a novel general slot targeting method.
- Presented results at ISSFD2024 conference.

UNDERGRADUATE RESEARCHER
DELFT UNIVERSITY OF TECHNOLOGY

Delft, The Netherlands — *Sep. 2020 - Aug. 2022*

- Developed a novel method to analyse the morphometrics of surface features of meteorites to determine characteristics of its entry.
- Displayed results at the IMC2023 and published as first author in its proceedings.

SPACE SWEEPER PROJECT MANAGER
DELFT UNIVERSITY OF TECHNOLOGY

Delft, The Netherlands — *April 2022 - Jul. 2022*

- Led a team of 10 students in the research and development of a space debris removal mission, leading to the André Kuipers Ruimtevaart prize and a paper presented at the ISSFD2024 conference.
- Worked on systems engineering, orbit design, and telecommunication architecture design.

MISSION DESIGN TEAM LEAD & ENGINEER
TEAM TUMBLEWEED

Delft, The Netherlands — *Nov. 2019 - May 2022*

- Participated in the development of a next-generation Mars rover swarm mission in an international team of 70+ students.
- Defined the mission scientific objectives and architecture, formulated mission and system level requirements, and analysed the Mars Relay Network performance for a wind-driven swarm of rovers.
- From May 2021 onwards, I led a team of 10 engineers towards the first complete Tumbleweed mission feasibility analysis which received a positive review from experts from TU Delft, ESA, and NASA.

EDUCATION

MPhil SCIENTIFIC COMPUTING
UNIVERSITY OF CAMBRIDGE

Cambridge, UK — *Oct. 2024 - Oct. 2025*

- Courses focused on the numerical modelling of continuum mechanics and high performance computing.

MSc AEROSPACE ENGINEERING
DELFT UNIVERSITY OF TECHNOLOGY

Delft, The Netherlands — *Sep. 2022 - Sep. 2024*

GPA: 8.67/10.0

- Courses focused on astrodynamics, planetary exploration, optimisation and fluid dynamics.
- Part of Delft Aerospace Rocket Engineering society.
- Master thesis on the tumbling dynamics and attitude control retrieval of solar-sails (awarded 8.5/10).

BSc AEROSPACE ENGINEERING
DELFT UNIVERSITY OF TECHNOLOGY

Delft, The Netherlands — *Sep. 2019 - Jul. 2022*

GPA: 8.64/10.0, Top 5% Cum Laude, Honours student

MINOR FLUIDS & NUMERICAL METHODS
ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Lausanne, Switzerland — *Sep. 2021 - Jan. 2022*

GPA: 5.6/6.0, Magna Cum Laude

INTERDISCIPLINARY EXPERIENCE

CHALLENGE PROGRAMME PARTICIPANT
IDEA LEAGUE

Europe — *Sep. 2022 - May 2023*

- Part of TU Delft delegation for an interdisciplinary educational programme in preparation for leadership roles in society offered to the 40 highest achieving students of IDEA League partner universities.
- Investigated an ill-defined societal problem (Schiphol slot allocation) through political, analytical, economical, and design perspectives.
- Presented results to the key stakeholders to support their efforts in finding a solution.

CERN IDEASQUARE SUMMER SCHOOL
CERN

Delft, The Netherlands — *May 2021 - Aug. 2021*

- Followed lectures on innovation and developed skills in brainstorming, user interviews, and creative thinking.
- Found innovative applications to ATTRACT technologies, built coarse prototypes and pitched the ideas to CERN experts.

SKILLS & INTERESTS

Languages: French: C2 | English: C1| Dutch: B1
Interests: numerical modelling, space exploration, disruptive concepts, endurance running.

Python | MATLAB | Fortran | C++ | Agisoft | ArcGIS Pro | CATIA | Git | CFD | TUDAT | LaTeX | Office

PUBLICATIONS

Veithen, L. and Keller, M. (2024). Predictor-Controller Approach for Q-Law 6th Element Targeting in Low-Thrust Trajectory Design. Proceedings of the 29th International Symposium on Space Flight Dynamics.

Bögel E., Buurmeijer H., Veithen L., Meijering F., Alves Teixeira G., Rehling D., Bas Fernández J., van Wolfswinkel P., Zandvliet N., and Struziński J. (2024). Feasibility Analysis of Small-Size Space Debris Removal in Low-Earth Orbit by Space-Based Laser Ablation. Proceedings of the 29th International Symposium on Space Flight Dynamics.

Veithen, L. A. V., and de Vet, S. J. (2024). Morphometrics of regmaglypts based on a 3D Model of the fusion-crusted ordinary chondrite Broek in Waterland (L6). In Proceedings of the IMC, Redu, 2023 (pp. 169-176). International Meteor Organization.

IN PREPARATION:

- "Solar-Sail Tumbling and Stabilisation using Actuated Tip-Vanes", as first author. Will be submitted to ISSS 2025 conference.
- "Operationally Robust Hybrid Optimal Control for Low-Thrust Trajectory Optimization", as co-author. Will be submitted to the Journal of Spacecraft and Rockets.

AWARDS & HONOURS

- André Kuipers Ruimtevaart Prize 2022.
- Cum Laude (highest obtainable, top 5%) distinction for TU Delft Aerospace Engineering Undergraduate Program.
- Honours student of the TU Delft.
- 1st and 2nd CanSat Belgium competition in 2019/18.