

# Marius Neuhalfen

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Mechanical Engineering student  
passionate about Computer Vision,  
AI Safety and Alignment.

## WORK EXPERIENCE

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### Blackswan Space

March - September 2025 (ongoing)

*Internship*, Reference: Marius Klimavicius, CEO, [marius@blackswanspace.com](mailto:marius@blackswanspace.com)

*Vilnius, Lithuania*

- Working on making robust, fast and accurate pose estimation machine learning models for satellite refueling.
- Significantly improved synthetic dataset generation process, shortening training times and increasing robustness.

### European Space Agency, ESTEC

July – December 2024

*Internship*, Reference: Jonathan Grzymisch, [jonathan.grzymisch@esa.int](mailto:jonathan.grzymisch@esa.int)

*Noordwijk, The Netherlands*

- Development of a new view synthesis-based approach for validation of Vision-Based Navigation. Demonstrated that this approach can be used to validate pose estimation neural networks with less than 1% pose error relative to the inter-satellite range, relying on an image density 3-8 times smaller than that of existing datasets.
- Also focused on learning about the European space industry. Currently preparing a conference publication.

### Laboratoire de Mécanique des Fluides "Kampé de Fériet"

Jan 2023 – Feb 2023

*Research Internship*

*Lille, France*

- Performed preliminary CFD simulations with Star-CCM++ and used the wind tunnel of the laboratory to characterize the stall angle, lift performance and pressure profile of the blade designs, analyzed the results.

## EDUCATION

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### École Centrale de Lille

2022 - 2024

*Diplôme d'Ingénieur, General Engineering*

*Lille, France*

- Double Degree in General Engineering to obtain the "Diplôme d'Ingénieur" equivalent to a Master's degree.
- Relevant Modules: Fluid Mechanics, Estimation Theory, Control Theory, Manufacturing and Machining, FEM.
- Successfully completed various group projects including development of an AI for facial recognition, design of a radial piston pump and construction of cold gas thrusters for rocket attitude control (for details see portfolio).

### RWTH Aachen

2020 - 2025 (Ongoing)

*Bachelor of Science, Mechanical Engineering*

*Aachen, Germany*

- Relevant modules: Mechanics & Dynamics of Rigid Bodies, Mathematics, Fluid Mechanics, Thermodynamics.
- Heavily involved in the aerospace association "Space Team Aachen" for the development of a nanosatellite.

## POSITIONS OF RESPONSIBILITY

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- **Young ESA Entrepreneurship Group Event coordinator:** Organization of internal Masterclasses inviting accomplished start-up founders from European Aerospace. Inspiring aerospace graduates for entrepreneurship..
- **Team lead of PERSEUS Avionique IV:** Was responsible for the work of our team of 5 people over 1 ½ years. Developed the pneumatic subsystem. Negotiated the product specification with our client, CNES, facilitated internal communication and managed the development schedule for this project with a budget of over 4000€.
- **Délégué de promotion:** Representing international students and their concerns to the school administration.

## LANGUAGES, SOFTWARE SKILLS & INTERESTS

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- **Languages:** German (native language), French (DALF C1), English (C2, TOEIC 990/990), Spanish (beginner).
- **Software Skills:** Advanced - MATLAB, Simulink, Python, CAD, Git, Machine Learning (especially CNN). Intermediate - C/C++, LaTeX, FEM (Catia). Basic - CFD (Star-CCM+), Circuit Design (KiCad).
- **Interests:** Entrepreneurship and Founding, Improvisational theater (performing several times a year), Piano.