



Ir. Justas Savinijus Petrulis

MSc Mechanical Engineering graduate specialising in numerical modelling, structural analysis and optimisation, and precision engineering. Interested in research and innovation in the high-tech industry. Motivated by continuous improvement, both technically and personally.

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Education & Awards

MSc Mechanical Engineering (Track: High-tech Engineering), Technical University Delft (2023 September – 2025 September)

- Focus on dynamics, solid mechanics, mechatronics, finite element modelling and optimisation.
- Active in the Computational Design and Mechanics research group (Precision and Microsystems Engineering department).
- GPA: 8.3 / 10.0; MSc thesis grade: 9.0.

Dissertation: “Topology Optimisation for Passive Viscoelastic Vibration Isolators Using a Modal Design Approach”

Bachelor of Mechanical Engineering, University of Manchester (2019 September – 2022 July)

- GPA: 78.6 / 100, graduated with First Class Honours.

Dissertation: “Development of a Soft Deformable Mannequin for the Apparel Industry”

Vilnius Jesuit Gymnasium (2015 September – 2019 July)

- Award from the Prime Minister of Lithuania for Excellent Final Exam Results (100 in mathematics, physics and English).
- Bronze Medal in the National Physics Olympiad (12th Grade).

Experience

TNO, Research Intern, (2024 September – 2025 September)

- Developed a Python-based FEM framework and extended the PyMOTO topology optimisation platform with reduced integration formulations to model nearly incompressible rubber materials.
- Validated my own FEM framework against COMSOL Multiphysics through small-scale test cases, developing proficiency in both commercial and custom FEM tools while working with minute modelling details.
- Designed topology-optimised vibration isolators for satellites, achieving compact, stiff, and highly damped layouts adapted to payload dynamics.
- Identified new damping substructures not previously described in the literature, indicating potential for novel design approaches in damping treatment..

Ekspla, Junior Laser Engineer, (2022 November – 2023 August)

- Assembled and refurbished NL200 nanosecond DPSS lasers, including customer returns, carrying out design updates and complete rebuilds for low-volume and one-off production.
- Conducted optical alignment and metrology of laser and harmonic units in a cleanroom environment, and recorded performance data to confirm compliance with specifications.
- Introduced and optimised stress-test workflow by combining thermal, vibrational, impact, and radiation trials (short- and long-term) and documented the method for further use.

Baltics Institute of Advanced Technologies, Electrical Engineering Intern, (2021 June – 2021 August)

- Independently designed and assembled a prototype low-cost radar module for national security applications, sourcing and integrating compatible components under cost and performance constraints.
- Performed oscilloscope-based testing and debugging of the radar prototype, confirming it met range and cost requirements and documenting directions for further research.

Publications

Tian, Y., Fang, G., Petruilis, J. S., Weightman A. & Wang C. C. L., (2022). Robotic Mannequin: Design and Algorithm for Deformation Control. *IEEE/ASME Transactions on Mechatronics*, 27(4), 1-10. doi:10.1109/TMECH.2022.3175759

Additional Skills & Interests

Languages: Lithuanian (native), English (full professional proficiency), Dutch (elementary proficiency)

Programming languages: Python (advanced), MATLAB (advanced), NI LabView (beginner)

FEM software: COMSOL Multiphysics (intermediate), Ansys Products (Mechanical, Fluent) (beginner)

CAD software: Solidworks (intermediate), Rhino + Grasshopper (intermediate), Blender (beginner)

Hobbies: Bouldering, reading, meditation, cycling, running, sailing, drawing, cinema, music and audio equipment

References

Prof. Charlie C. L. Wang – Bachelor's dissertation and journal article supervisor

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Dr. ir. Arnoud Delissen – Master's dissertation supervisor (TNO supervisor)

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Dr. Jieun Yang – Master's dissertation supervisor (TU Delft supervisor)

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