Curriculum Vitae

Gašper Podobnik

University of Ljubljana, Faculty of Electrical Engineering
Tržaška cesta 25
1000 Ljubljana, Slovenia

gasper.podobnik@fe.uni-lj.si
+386 1 476 8780
Google Scholar, LinkedIn, Website

I recently completed my PhD in Medical Image Analysis, where I focused on segmentation of computed tomography and magnetic resonance images, the development of validation metrics, and generative models for synthetic data creation. My research interests lie in building scalable, general, and robust tools for biomedical imaging. Recently, I have been developing methods to support in-silico trials, including human anatomy modeling and large-scale CT data synthesis – i.e. tools that will be made publicly available to support research and development community.

Education

University of Ljubljana, Slovenia — 2020-2025
Ph.D. in Electrical Engineering
Department Biomedical Engineering, Laboratory of Imaging Technologies
Advisor: Prof. Tomaž Vrtovec

Johns Hopkins University, United States — 2024-2025
Laboratory for Computational Sensing + Robotics
Research Internship with Assoc. Prof. Mathias Unberath (7 months)

Eastern European Machine Learning summer school — July 2024
Summer School on Machine Learning

University of Cambridge, United Kingdom — 2022
Department of Computer Science and Technology – Computer Laboratory
Research Internship with Prof. Mateja Jamnik (3 months)

University and ETH Zürich, Switzerland — Sep. 2019
Summer School on Biomedical Imaging – EXCITE Zürich

University of Ljubljana, Slovenia — 2018-2020
M.Sc. in Biomedical Engineering, Faculty of Electrical Engineering
Summa cum laude (GPA 10.00/10)

University of Ljubljana, Slovenia — 2015-2018
B.Sc. in Electrical Engineering, Faculty of Electrical Engineering
Summa cum laude (GPA 10.00/10), *Best Student Award*

Teaching, Advising & Mentoring

- **Master thesis advisor (2):** D. Ocepek, R.M. Šter — 2023-2025
- **Head teaching assistant:** Image and video processing, M.Sc. course — 2020-2024
- **Mentor:** Seminar in Biomedical Engineering, M.Sc. course — 2021, 2022
- **Private tutor:** Mathematics, Physics and Chemistry — 2016-

Publications

- **Articles in Peer-Reviewed Journals** (**Shared first authorship*)

G. Podobnik and T. Vrtovec. MeshMetrics: A Precise Implementation of Distance-Based Image Segmentation Metrics. *Under review.*

G. Podobnik, B. Ibragimov, P. Strojan, P. Peterlin and T. Vrtovec. Dosimetric Acceptability of Deep Learning Based Organ-at-Risk Segmentation: Insights from the HaN-Seg Challenge. *Under review.*

G. Podobnik and T. Vrtovec. Understanding implementation pitfalls of distance-based metrics for image segmentation. *Under review.*

G. Podobnik*, C. Borg*, P. Strojan, C. J. Debono, S. Mercieca and T. Vrtovec. Geometric, dosimetric and psychometric evaluation of three commercial AI software solutions for OAR auto-segmentation in head and neck radiotherapy. *Scientific Reports*. 2025.

G. Podobnik, B. Ibragimov, et al. HaN-Seg: The head and neck organ-at-risk CT and MR segmentation challenge. *Radiother. Oncol.*, 198, 110410.

G. Podobnik, B. Ibragimov, P. Strojan, P. Peterlin and T. Vrtovec. vOARiability: Interobserver and intermodality variability analysis in OAR contouring from head and neck CT and MR images. *Med. Phys*. 2024; 1-12.

G. Podobnik, B. Ibragimov, P. Strojan, P. Peterlin and T. Vrtovec. HaN-Seg: The head and neck organ-at-risk CT and MR segmentation dataset. *Med. Phys*. 2023; 50: 1917– 1927.

- **Articles in Peer-Reviewed Conference Proceedings**

G. Podobnik, N. Balodi, B. Killeen, T. Vrtovec and M. Unberath. AnatomyGen: Generating Anatomically Plausible Human Phantoms at High Resolution. *International Workshop on Shape in Medical Imaging*. 2025.
G. Podobnik and T. Vrtovec. Centerline Dice Metric Implementation is not Streamlined. *SPIE Medical Imaging: Image Processing*. 2025.
R.M. Šter, **G. Podobnik** and T. Vrtovec. Diffusion-Based MR-to-CT Translation of Head and Neck Images. *SPIE Medical Imaging: Image Processing*. 2025.
G. Podobnik and T. Vrtovec. HDilemma: Are Open-Source Hausdorff Distance Implementations Equivalent? *MICCAI.* 2024. p. 308-317.
G. Podobnik, D. Ocepek, L. Škrlj and T. Vrtovec. Implicitly Explicit: Segmenting Vertebrae with Deep Implicit Statistical Shape Models. *International Workshop on Shape in Medical Imaging*. 2024.
D. Ocepek, **G. Podobnik**, B. Ibragimov and T. Vrtovec. Deep implicit statistical shape models for 3D lumbar vertebrae image delineation. *SPIE Medical Imaging: Image Processing*. 2024.
K. Ibragimov, **G. Podobnik**, T. Trojner, G. Rečnik and T. Vrtovec. Mid-sagittal cross-section identification for vertebra landmarking in MR spine images. *SPIE Medical Imaging: Image Processing*. 2024.
G. Podobnik, B. Ibragimov, P. Strojan, P. Peterlin and T. Vrtovec. Multimodal CT and MR Segmentation of Head and Neck Organs-at-Risk. *MICCAI*. 2023. p. 745-755.
G. Podobnik, B. Ibragimov, P. Strojan, P. Peterlin and T. Vrtovec. Segmentation of Organs-At-Risk from CT and MR Images of the Head and Neck: Baseline Results. *ISBI*. 2022. pp. 1-4.
G. Podobnik, B. Ibragimov, P. Strojan, P. Peterlin and T. Vrtovec. Parotid gland segmentation with nnU-Net: deployment scenario and inter-observer variability analysis. *SPIE Medical Imaging: Image Processing*. 2022. 120321N. *Oral presentation at SPIE 2022*

- **Data Collections**

G. Podobnik, P. Strojan, P. Peterlin, B. Ibragimov and T. Vrtovec. (2023). HaN-Seg: The head and neck organ-at-risk CT & MR segmentation dataset (1.0). Zenodo. https://doi.org/10.5281/zenodo.7442914

- **Theses**

G. Podobnik. Regression models for predicting cerebrospinal fluid biomarkers of Alzheimer's disease. M.Sc. Thesis, University of Ljubljana, 2020.

Fellowships & Funding

- *Fulbright Scholarship* 2024-2025
- *Research Scholarship*, University Foundation of Eng. Lenarčič Milan 2023
- *Research Scholarship*, American-Slovenian Education Foundation (ASEF) 2022
- *Research Fellowship*, Slovenian National Research Institute 2020
- *Travel Fellowship* for EXCITE Zürich Summer School 2019
- *Zois Scholarship for Gifted Students*, top 0.1% students nationwide 2011-2019

Academic Honors & Awards

- *MICCAI 2025 Outstanding Reviewer Award* 2025
- *Best Technical Implementation Award*, Computer Vision Projects Expo 2024 2025
- *University of Ljubljana Best Student Award*, Highest award given to 30 students 2018
- *Outstanding Student Award*, 5 times awarded as the best B.Sc. and M.Sc. student 2015-2020
- *First place at Local and Second at Regional European BEST Engineering Competition*, Case study team competition 2016
- *Golden Certificate in National Chemistry Competition*, third place nationwide 2015

Scientific Community Activities

- **Challenge organizer.** *The head and neck organ-at-risk CT & MR segmentation challenge: HaN-Seg 2023*, https://han-seg2023.grand-challenge.org/
- **Open Source Contributor.** MeshMetrics.
- **Society Secretary.** Slovenian Society for Medical and Biological Engineering (2023-)
- **Journal Reviewing.** IEEE Transactions on Medical Imaging, International Journal of Radiation Oncology, Biology, Physics. Expert Systems With Applications. Journal of Applied Clinical Medical Physics. Journal of Medical Imaging, etc.

Community service

- **Invited Talk at Društvo VTIS.** Gave a talk on AI in medicine. 2024
- **Member of organization team.** *Brain Awareness Week*, Science public lecture series on brain and neuroscience, organized by Slovenian Neuroscience Association. 2022-2024
- **Invited Talk.** Gave a talk on applicability of AI in clinical practice. 2022
- **President of Student Council.** Department of Electrical Engineering, University of Ljubljana. Managed and led a team of 19 student representatives. 2018-2019
- **Member of Faculty Senate, Managing Board & Study Committee** 2017-2020