# Curriculum Vitae

**Gašper Podobnik**

Department Electrical Engineering
University of Ljubljana
Tržaška cesta 25
1000 Ljubljana
Slovenia

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

I am a PhD candidate in Medical Image Analysis, interested in 3D semantic segmentation, modeling of human anatomy, development of validation metrics, and generative models for synthetic data creation. I am particularly interested in virtual imaging trials, digital patient twins, and their applications in radiotherapy, disease diagnosis, AI tool validation, and the creation of next-generation tools for precision and personalized medicine.

## Education

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

**Johns Hopkins University**, United States — Nov. 2024-
Laboratory for Computational Sensing + Robotics
Research Internship with Assoc. Prof. Mathias Unberath

**Eastern European Machine Learning summer school** — July 2024
Summer School on Machine Learning
https://www.eeml.eu/previous-editions/eeml2024

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

**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
Department Electrical Engineering
*summa cum laude* (GPA 10.00/10)

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

## Teaching, Advising & Mentoring

- **University of Ljubljana,** Image and video processing, M.Sc. course (head teaching assistant with Prof. Tomaž Vrtovec) — 2020-2024
- **University of Ljubljana,** Seminar in Biomedical Engineering, M.Sc. course (mentor) — 2021, 2022
- Instructor of Mathematics, Physics and Chemistry — 2016-

## Publications

### ▪ Articles in Peer-Reviewed Journals

**G. Podobnik** and T. Vrtovec. HDilemma: Metrics Revolutions: Groundbreaking Insights into the Implementation of Metrics for Biomedical Image Segmentation. *Under review.*

**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** and T. Vrtovec. Centerline Dice Metric Implementation is not Streamlined. *To be presented at SPIE Medical Imaging 2025.*

R.M. Šter, **G. Podobnik** and T. Vrtovec. Diffusion-Based MR-to-CT Translation of Head and Neck Images. *To be presented at SPIE Medical Imaging 2025.*

**G. Podobnik** and T. Vrtovec. HDilemma: Are Open-Source Hausdorff Distance Implementations Equivalent? *MICCAI.* 2024. p. 308-317.

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*

### ▪ 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

## Data Collections

- **Gašper Podobnik**, Primož Strojan, Primož Peterlin, Bulat Ibragimov, & Tomaž Vrtovec. (2023). HaN-Seg: The head and neck organ-at-risk CT & MR segmentation dataset (1.0) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.7442914 2023

**Academic Honors**

- *Outstanding Student Award*, 2 times awarded as the best M.Sc. student in the class of 115 (based on average grade) at the University of Ljubljana — 2018-2020
- *University of Ljubljana Best Student Award*, Highest award given to 30 students nationwide — 2018
- *Outstanding Student Award*, 3 times awarded as the best B.Sc. student in the class of 150 (based on average grade) at the University of Ljubljana — 2015-2018
- *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**

- **Head organizer.** *The head and neck organ-at-risk CT & MR segmentation challenge: HaN-Seg 2023*, https://han-seg2023.grand-challenge.org/
- **Open Source Contributor.** Reported and fixed some bugs in medical imaging related frameworks (MONAI and MetricsReloaded).
- **Society Secretary.** Slovenian Society for Medical and Biological Engineering (2023-)
- **Journal Reviewing.** International Journal of Radiation Oncology, Biology, Physics. Expert Systems With Applications. Journal of Applied Clinical Medical Physics. Journal of Medical Imaging.

**Community service**

- **Invited Talk.** 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-
- **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 Department's Senate, Managing Board & Study Committee** — 2017-2020