Prospective Student Day

Doctoral Study Programme Computer and Information Science

www.fri.uni-lj.si/en | doctoral.studies@fri.uni-lj.si | +386 1 479 8123
What doctoral students like the most?
Doctoral study = Research

19 Laboratories

60 Mentors

fri.uni-lj.si/en/research/laboratories

fri.uni-lj.si/en/mentors
Research

Integrated Systems

Cyber Security

Biometry

Language technologies
Research

Blockchain and Cloud Computing

Data mining

Artificial Intelligence

Supercomputing

Computer Vision
Modern Facilities

12 Computer Classrooms

Access to Supercomputing technologies

19 Research Laboratories
Computing infrastructure
Computing infrastructure

- 9x Mellanox ConnectX-6 VPI HDR InfiniBand/200Gb Ethernet
  - 450GB/sec Bi-directional Bandwidth
- Dual 64-core AMD CPUs and 2TB System Memory
  - 3.2X More Cores to Power the Most Intensive AI Jobs
- 8 NVIDIA A100 GPUs with 320GB TOTAL GPU Memory
  - 12 NVLinks/GPU
  - 600GB/sec GPU-to-GPU Bi-directional Bandwidth
- 6 Second Generation NVSwitches
  - 4.8TB/sec Bi-directional Bandwidth
  - 2X More than Previous Generation NVSwitch
- 30TB Gen4 NVME SSDs
  - 25GB/sec Peak Bandwidth
  - 2X Faster than Gen3 NVME SSDs
What is your research topic?
What is your research topic?
What is your research topic?
What is your research topic?
Meet Doctoral Student
Yannick Kuhar
1st Year

Individual Research Work (35 ECTS)  Seminar 1 and 2 (10 ECTS)

2nd Year

Individual Research Work (40 ECTS)  Seminar 3 and 4 (10 ECTS)

3rd Year

Individual Research Work (60 ECTS)

4th Year

Doctoral dissertation preparation (45 ECTS)  Seminar 5 (10 ECTS)
Elective Courses

- Lecture-type courses (biennially)
- Individual-research-type courses

- Incremental Learning from Data Streams
- Tensor Networks for Machine Learning
- Advanced Topics in Ubiquitous Sensing and Learning
- Selected Topics in Software Engineering
- Recent Advances in Combinatorial Solvers
- Heterogeneous Computing Platforms
- Selected Topics in Analysis of Sound Signals

- Selected Topics from Computer Graphics and Visualization
- Deep Learning for Computer Vision
- In-Depth Computer Vision Research
- Advanced Image-based Biometrics
- Advanced Algorithms for Search and Planning
- Machine Learning for Language and Graphs
- INFOSEC of Socio-Technical Systems
Doctoral theses defences

Selection 2022-24

- Explainable artificial intelligence
- Information security
- Secure software development
- Deep reinforcement learning for target-driven robot navigation
- Face deidentification with generative neural networks
- Obstacle detection for autonomous surface vehicles
- Detecting surface anomalies with deep learning
- Cross-lingual word embeddings

https://repozitorij.uni-lj.si/Statistika.php
# Doctoral Students’ Careers

**Alumni 2021-2024**

<table>
<thead>
<tr>
<th>Academia</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Assistant</td>
<td>Data Scientist</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>Lead Data Analyst</td>
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<tr>
<td>Researcher</td>
<td>Data Science Team Lead</td>
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<td></td>
<td>Software Architect</td>
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<td></td>
<td>Tech Lead</td>
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<tr>
<td></td>
<td>Senior DevOps Engineer</td>
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<td></td>
<td>Cloud Solution Architect</td>
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<tr>
<td></td>
<td>Senior DevOps Engineer</td>
</tr>
<tr>
<td></td>
<td>Product Steward Lead</td>
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</tbody>
</table>

**Industry**

- Databox
- Genialis
- Viaduct
- Outbrain
- Aleph Group Inc.
- Novartis
- Playrix
- Philips
Most Successful Doctoral Students

Asst. Prof. dr. Marinka Žitnik, 2015, Harvard University

dr. Martin Možina, 2009, Lead Data Scientist, Mercator d.d.

dr. Sanja Fidler, 2010, Vice-President of AI Research, NVIDIA

dr. Jure Žbontar, 2016, Research Engineer, OpenAI

dr. Miha Štajdohar, 2012, CTO & Co-founder, Genialis

dr. Martin Jakomin, 2019, Data Science Team Lead, Outbrain
Meet Doctoral Student
Eva Boneš
Doctoral Study Research

Eva Boneš

4D Reconstruction for High-Dose Cryo-Electron Tomography Data
Computer graphics and visualization

**Biological processes and data on micro/nano level**

Asst. prof. dr. Ciril Bohak: ciril.bohak@fri.uni-lj.si

- Reconstruction of electron microscopy data: e.g. cryo-ET.
- Segmentation and analysis of microscopy data: e.g. structure, background segmentation.
- (Procedural) Modeling of biological systems on a molecular level: e.g. viruses, bacteria, cell organelles.
- Simulating parts of electron microscope using deep learning models: e.g. Simulating noise, electron beam, sensors.
- Deep learning methods in computer graphics: e.g. end-to-end differentiable rendering of volumetric data.

https://cemse.kaust.edu.sa/vcc
International Collaborations

Collaborations with world-renowned institutions:

- Joint Research Centre of European Commission (Italy),
- The European Organization for Nuclear Research – CERN (Switzerland);
- Kyungpook National University (South Korea),
- University College London (UK),
- Baylor College of Medicine (USA),
- University of Birmingham (UK);
- Czech Technical University in Prague (Czech republic);
- Alpe-Adria University Klagenfurt (Austria);
- KAUST – King Abdullah University of Science and Technology (Saudi Arabia);

200 + Collaborating institutions

Internal fund for research and study visits abroad!
Student Life in Ljubljana

- Peaceful and safe city
- Low living costs:
  - 400–600€/month
  - Subsidized lunch, transportation
  - Dorms for exchange students
- Tech events for students

About Slovenia

Slovenia is one of the greenest European countries. Mediterranean Coast, snowy mountain tops of Julian Alps or thermal spa resorts in the Eastern part, famous for its wines, are all just an hour’s drive from Ljubljana, the lively and picturesque capital of Slovenia.
How to Apply for the Doctoral Programme?

**Apply Online**
Apply at eVŠ Portal
portal.evs.gov.si/prijava

Master or pre-bologna equivalent study programme

**Application Deadline**
1 June 2024
Enrolment in September 2024

**Application Enclosures**
- a well-structured CV
- a certified copy of your bachelor or master's degree
- a GPA certificate of exams and tutorials
- a motivation letter
- 2 recommendation letters
- mentors's acceptance statement
- short conceptual design of the research work

**Tuition Fees**
4200 € for 1st and 2nd year
3000 € for 3rd and 4th year

**Contact**
Mrs. Zdenka Velikonja
E: zdenka.velikonja@fri.uni-lj.si
T: +386 1 479 8123
Assistance to International Students by International Office

Assistance in applying for:
- study programme online via eVŠ platform
- visa, residence permit
- JRC call

Advising on:
- documentation for recognition of education
- finding an apartment in Ljubljana
- basic information about living in Slovenia

Contact Information
Ms. Vesna Gračner
E: international.office@fri.uni-lj.si
T: +386 1 479 8249
Open positions for Doctoral Students

- Teaching assistants
- Junior researcher positions
- Researcher positions

https://fri.uni-lj.si/en/career-faculty
Junior Researcher positions: 5
*Mladi raziskovalci (MR)*

**Mentors with positions:**

- **Ciril Bohak**: engineering, computer and information science, humanities and linguistics,
- **Luka Čehovin Zajc**: computer vision, deep learning and remote sensing,
- **Franc Jager**: automated biomedical signal processing and digital signal processing,
- **Matjaž Kukar**: computer science and informatics, intelligent systems - software and interdisciplinary research,
- **Denis Trček**: computer science and informatics, cyber security.

**Application deadline: 9 April 2024**
Open positions
Laboratory for data technologies

Researchers

• Software engineering and DevOps, full-stack development,
• development of software solutions for decentralised digital identity,
• micro-competency microcredentials,
• cloud computing and service orchestration, integration with sensor systems,
• development of new languages for describing artificial intelligence methods,
• mobile applications,
• the use of decentralised knowledge bases,
• the development of Semantic Web technologies; and others.
• Contact: vlado.stankovski@fri.uni-lj.si
Open positions

Language and speech technologies

- **Researcher**
  
  Work on applied and research projects related to the use of language and speech technologies (speech recognition and synthesis, text processing, large language models, model learning and adaptation, high-performance infrastructure management, inference and microservices).
  
  Contact: ilb@fri.uni-lj.si

- **Researcher**
  
  Work on applied and research projects related to the use of language and speech technologies
  
  Contact: Marko.Bajec@fri.uni-lj.si
Other Open Positions

- Researcher
  Machine learning with a focus on explainable artificial intelligence, large language models
  Contact: Marko.RobnikSikonja@fri.uni-lj.si

- Researcher
  Natural Language Processing
  Contact: Marko.RobnikSikonja@fri.uni-lj.si

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Other Open Positions

- Research assistant and teaching assistant
  **Computer vision; participation in projects related to image biometrics**
  Contact: Peter.Peer@fri.uni-lj.si

- Research assistant and teaching assistant
  **Context-aware AI through distributed LLM fine-tuning on mobile devices**
  Contact: Veljko.Pejovic@fri.uni-lj.si

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