

# Stefan Kapunac

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## Basic information

**Date of birth:** 08.01.1997.

**Languages:** Serbian (native), English (fluent), Spanish (basic), German (basic)

**Area of interest:** Machine learning, Optimization, Bioinformatics

## Work experience

**Faculty of Mathematics, University of Belgrade**

*Teaching Assistant*

**Belgrade, Serbia**

*2020 –*

**Faculty of Mathematics, University of Belgrade**

*Junior Teaching Assistant*

**Belgrade, Serbia**

*2019 – 2020.*

## Education

**Faculty of Mathematics, University of Belgrade**

*PhD studies - Informatics*

**Belgrade, Serbia**

*2020 –*

**Faculty of Mathematics, University of Belgrade**

*Master's degree - Informatics*

GPA: 9.71

**Belgrade, Serbia**

*2019 – 2020.*

**Faculty of Mathematics, University of Belgrade**

*Bachelor's degree - Informatics*

GPA: 9.80

**Belgrade, Serbia**

*2015 – 2019.*

## Skills

**Programming languages:** Python, C++, C, Java, C#, Haskell, SQL, R, Scala, JavaScript, Matlab

**Other:** HTML, CSS,  $\text{\LaTeX}$ , Isabelle/HOL, KNIME, SPSS Modeler, Git, Docker

## Projects

**WTDP**

*Research project*

**Belgrade, Serbia**

*dec. 2021 – may. 2023.*

○ Variable Neighborhood Search for Weighted Total Domination Problem and Its Application in Social Network Information Spreading

○ Implemented in Python (networkx)

○ Published in Applied Soft Computing journal - coauthored with Aleksandar Kartelj and Marko Djukanovic

**Generative tabular**

*Research project*

**Belgrade, Serbia**

*feb. 2023 – jun. 2023.*

○ Generative model for tabular data

○ Implemented in Python (PyTorch)

**Serbian sentence Bert**

*Research project*

**Belgrade, Serbia**

*nov. 2022 – jan. 2023.*

○ Sentence transformer for Serbian language - English teacher model and Serbian student model

○ Implemented in Python (PyTorch)

**Bioclustering**

*Research project*

**Belgrade, Serbia**

*aug. 2022 – nov. 2022.*

○ Clustering and feature selection for DNA expression data

○ Implemented in Python (scikit-learn)

**Waterpolo VAR**

*Research project*

**Belgrade, Serbia**

*jun. 2022 – aug. 2022.*

- Waterpolo goal and assist detection - YOLOv5 player and ball detection
- Implemented in Python (PyTorch, OpenCV)
- Collaborated with The Institute for Artificial Intelligence Research and Development of Serbia

### **NAR RL**

*Research project*

**Belgrade, Serbia**

*mar. 2022 – aug. 2022.*

- Neural algorithmic reasoning application to reinforcement learning
- Implemented in Python (JAX)

### **Coronavirus**

*Research project*

**Belgrade, Serbia**

*mar. 2021 – aug. 2021.*

- Analysis of DNA repeats in SARS-CoV-2
- Implemented in Python (scikit-learn)

### **ECG digitization**

*Master thesis*

**Belgrade, Serbia**

*feb. 2019 – sep. 2020.*

- Digitization of scanned ECG images
- Implemented in Python (OpenCV)

### **Pineapple**

*Faculty team project*

**Belgrade, Serbia**

*aug. 2020 – sep. 2020.*

- Multiplayer game platform based on microservices
- Implemented in C# (.NET) and JavaScript (Angular)

### **Monocular Depth Estimation**

*Faculty team project*

**Belgrade, Serbia**

*aug. 2020 – sep. 2020.*

- Estimation of depth from a single image
- Implemented in Python (PyTorch)

### **Word Sense Disambiguation**

*Faculty team project*

**Belgrade, Serbia**

*aug. 2020 – sep. 2020.*

- Word sense disambiguation using PageRank
- Implemented in Python (NLTK)

### **Mouse Run**

*Faculty team project*

**Belgrade, Serbia**

*feb. 2019 – jun. 2019.*

- NEAT algorithm for playing a game
- Implemented in C++ (Qt)

### **Flight Control**

*Faculty team project*

**Belgrade, Serbia**

*nov. 2018 – jan. 2019.*

- Flight control simulation - landing schedule optimization
- Implemented in C++ (Qt)

### **Projective Geometry**

*Faculty individual project*

**Belgrade, Serbia**

*nov. 2018 – jan. 2019.*

- Projective distortion removal from an image and 3d reconstruction from two images
- Implemented in C++ (Qt, Eigen)

## **Awards and competitions**

### **„Nedeljko Parezanović“ award**

*Best graduate students of informatics*

**Belgrade, Serbia**

*2019.*

### **TADHack global hackathon**

*1st place globally and locally*

**Belgrade, Serbia**

*2019.*

### **Scholarship for exceptionally gifted students**

*Ministry of Education, Science and Technological Development*

**Belgrade, Serbia**

*2014 – 2019.*