Sebastian **Mežnar**

MACHINE LEARNING RESEARCHER

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| sebastian-meznar

About me

Machine learning enthusiast with a strong interest in interpretable machine learning, machine learning on graphs, symbolic regression (equation discovery), and data science. In my free time I enjoy watching/playing sports and reading fantasy novels.

Work Experience

Actual I.T.   *Koper, Slovenia*

SOFTWARE ENGINEER   *Summer 2017*

- Programed different parts of a web application (JavaScript),
- Build JSON schemes for validating API request and responses.

Mercury Processing Services International   *Koper, Slovenia*

SOFTWARE ENGINEER   *Summer 2017 - 2019*

- Developed parts of a mockup Android application (Android/Java),
- Ported functionality between different versions of an Android application (Android/Java),
- Made unit tests for various parts of a web application (C# & JavaScript),
- Developed and improved parts of a web application (C# & JavaScript).

Jožef Stefan Institute, Department of Knowledge Technologies   *Ljubljana, Slovenia*

MACHINE LEARNING RESEARCHER   *Mar 2020 - Present*

- Developed machine learning algorithms for various tasks on graph (network) data,
- Developed an approach for symbolic regression,
- Wrote several papers on general ML tasks, graph (network) related ML tasks, and symbolic regression.

Education

Srednja tehniška Šola Koper   *Koper, Slovenia*

HIGH SCHOOL GRADUATE   *Sep. 2012 - Jun. 2016*

- High school diploma with a focus on CS.

University of Ljubljana, Faculty of Computer and Information Science   *Ljubljana, Slovenia*

DIPLOMIRANI INŽENIR RAČUNALNIŠTVA IN MATEMATIKE (UN)   *Oct. 2016 - Sep. 2019*

- Bachelor's degree in computer science and mathematics with a focus on courses related to machine learning, algorithms, and data science.
- Bachelor's thesis from the field of machine learning with the title: "Modeling the playstyle of a basketball team from spatial data"

University of Ljubljana, Faculty of Mathematics and Physics   *Ljubljana, Slovenia*

MAGISTER INŽENIR RAČUNALNIŠTVA IN MATEMATIKE   *Oct. 2019 - Aug. 2022*

- Master's degree in computer science and mathematics with focus on courses related to machine learning and data science.
- Helped as a tutor for CS and machine learning related subjects during third (extra) year.
- Master's thesis from the field of deep learning and equation discovery with the title: "Efficient generative model for algebraic expressions and equation discovery"

Publications

SNoRe: Scalable Unsupervised Learning of Symbolic Node Representations   *IEEE Access*

SEBASTIAN MEŽNAR, NADA LAVRAČ, BLAŽ ŠKRLJ   *2020*

Paper presents SNoRe, an unsupervised node embedding algorithm that achieves state-of-the-art performance and is interpretable.

Prediction of the Effects of Epidemic Spreading with Graph Neural Networks   *Complex Networks 2020*

SEBASTIAN MEŽNAR, NADA LAVRAČ, BLAŽ ŠKRLJ   *2020*

In this paper we explore how well epidemic spreading problems can be predicted with machine learning.

Predicting Generalization in Deep Learning via Metric Learning – PGDL Shared task   *NeurIPS 2020 - competition*

Sebastian Mežnar, Blaž Škrlj   *2020*

A technical report for the approach my team submitted to the PGDL NeurIPS 2020 competition.

Link Analysis meets Ontologies: Are Embeddings the Answer?   *arXiv*

Sebastian Mežnar, Matej Bevec, Nada Lavrač, Blaž Škrlj   *2021*

In this paper we present an approach for finding and recommending missing and redundant links in ontologies solely based on the structure of the underlying network.

Transfer Learning for Node Regression Applied to Spreading Prediction   *Complex Systems*

Sebastian Mežnar, Nada Lavrač, Blaž Škrlj   *2021*

This paper explores how effects of epidemic spreading on networks can be studied with more accuracy and fewer simulations. It is to our knowledge one of the first papers to explore transferability of the learned representations for the task of node regression.

Efficient Generator of Algebraic Expressions for Symbolic Regression   *Neurips 2022 (under review)*

Sebastian Mežnar, Sašo Džeroski, Ljupčo Todorovski   *2022*

The paper presents an efficient approach for generating algebraic expressions with a variational autoencoder by looking at them as binary expression trees.

Competitions and Awards

Notable

2015	**Gold award, 11th place**, Vegovo tekmovanje	*Ljubljana, Slovenia*
2019	**1st place in Slovenia, 256 place overall**, Google Hash Code	*Virtual*
2020	**Dean's award for outstanding academic performance**, FMF school year 2019/20	*Ljubljana, Slovenia*
2020	**8th place**, Predicting Generalization in Deep Learning, NeurIPS 2020 competition	*Virtual*

Other

2008 - 2019	**Attendance**, Vegovo tekmovanje	*Slovenia*
2016, 2018, 2019	**Attendance**, Univerzitetni Programerski Maraton (UPM)	*Slovenia*
2018, 2019, 2020, 2022	**Attendance**, Google Hash Code	*Virtual*

Skills

Programming	Python (main), Java (competent), C# (competent), Rust (basic), JavaScript (basic), R (basic), SQL (basic), …
Writing	LaTeX, Markdown, HTML
Libraries	SciPy, PyTorch, Pandas, Matplotlib, Seaborn, …
Languages	Slovenian, English, Italian

Extracurricular Activity

Education

Univerza v Ljubljani, Fakulteta za šport   *Ljubljana, Slovenia*

Volleyball Coach, third rank   *Sep. 2015 - Oct. 2015*

- Coaching licence needed for coaching children.

Complex Networks 2020   *Virtual*

Conference attendance   *Dec. 2020*

Attended a conference about complex networks and applications on them.

NeurIPS 2020   *Virtual*

Conference attendance   *Dec. 2020*

Attended a conference about machine learning.

ICML 2021   *Virtual*

Conference attendance   *Jul. 2021*

Attended a conference about machine learning.

Zemanta Data Science Summer School 2022   *Ljubljana*

Summer school attendance   *Jul. 2022*

Summer school focused on data science and recommender systems.

Extra Experience

Volley Club Portorož
Portorož, Slovenia

BUILDING CARETAKER
Summer 2012 - 2016

- Took care of beach volleyball courts and buildings surrounding them,
- Rented beach volleyball courts,
- Helped with the organization of beach volleyball tournaments.

Volley Club Portorož & Športno društvo Piran
Piran, Slovenia

COACH
Jun. 2015 - Sep. 2016

- Couched children from different age groups.

Klub Študentov Občine Piran
Piran, Slovenia

COUNCIL MEMBER
Nov. 2018 - Jan. 2022

- Helped with the organization of different events,
- Attended meetings and voted at ŠKIS/ŠOLS as club's representativ,
- Was in charge of editing the club's website.

Free time

GO Volley & Volley Club Portorož
Slovenia

VOLLEYBALL
2011 - 2016

- Top 4 finish 5 times with GO Volley,
- U18 national champion in the 2013/14 season with GO Volley,
- Third division champions with Volley Club Portorož in 2015/16 season.