Bernard Spiegl

Helsinki, Finland

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github.com/bronemos
Google Scholar - Bernard Spiegl

WORK EXPERIENCE

RealNetworks Inc., Zagreb, Croatia

Data Scientist Intern - Development of acoustical and linguistic models for robocall detection

Jul 2021 – Aug 2021

- researched various deep learning methods for speech classification and recognition using both NLP (transformers) and computer vision (CNNs) approaches
- acquainted myself with various dimensionality reduction and data visualization methods (t-sne, PCA, k-means, SVD)

Koncar – Power Plant and Electric Traction Engineering Inc., Zagreb, Croatia

Software Engineering Intern

Jul 2020 – Aug 2020

- developed a GUI Client for network communication via Modbus protocol
  - Python, Git, Linux
  - Python specific libraries used: PyQt, Asyncio

Koncar – Power Plant and Electric Traction Engineering Inc., Zagreb, Croatia

Software Engineering Intern

Jul 2019

- developed a web application for real time tracking and management of data on a SCADA based wind turbine systems
  - Javascript, HTML, CSS, Python, Git

Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia

Undergraduate Teaching Assistant in *Fundamentals of Electrical Engineering* course

Feb 2019 – Jul 2019

- assisted students during laboratory examinations throughout the semester

EDUCATION

Aalto University, Helsinki, Finland

MSc in Acoustics and Audio Technology

Sep 2021 – Jun 2023
(expected)

- minor: Machine Learning, Data Science and Artificial Intelligence
- relevant courses: *Speech Processing, Speech Recognition, Methods of Data Mining, Machine Learning, Deep Learning, Audio Signal Processing, Communication Acoustics*

Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia

BSc in Computer Science

Sep 2018 – Jul 2021

- BSc thesis: Contrastive Unpaired Translation using Focal Loss for Patch Classification (arXiv preprint - https://arxiv.org/abs/2109.12431)
- BSc project: analyzed impact of hyperparameters and different architectures in deep neural networks on their performance using CIFAR-10 dataset
- interests: deep learning, DSP, audio processing, computer vision, sound reproduction, speech recognition
- relevant courses: *Linear Algebra, Mathematical Analysis 1 and 2, OOP in Java, Probability and Statistics, Statistical Data Analysis, Physics, Information Processing, Algorithms and Data Structures, Design Patterns, Discrete Mathematics 1, Artificial Intelligence*

III. gymnasium, Zagreb, Croatia

Mathematics & Natural Sciences Department   Sep 2014 - Jun 2018

VOLUNTEERING

III. gymnasium, Zagreb, Croatia

Workshop organiser   April 2018
- organised and held workshops for students on the topic of drug abuse and crime prevention among youth

ACHIEVEMENTS

Google Foobar 2022.	Received an invitation to Google's Foobar secret coding challenge.
UNODC Youth Forum 2018.	Participated as a representative of Croatia at an international youth forum in Vienna, Austria organised by the United Nations Office on Drugs and Crime in March of 2018.
STEM Scholarship 2018.	Received a scholarship for being among the top students on matriculation exam in fields of Mathematics and Physics

TECHNICAL SKILLS

Intermediate	**Python** – used in various university courses, during internships, for making a C compiler and for various other purposes, e.g. a project on Deep Neural Networks, BSc thesis, Speech Recognition project, etc. (Python specific libraries used: PyTorch, NumPy, scikit-learn, matplotlib, Pandas, asyncio, PyQt...) **C++** – used in the university course *Introduction to Programming*, *Algorithms and Data Structures* and *Design Patterns* **C** – used in the university course *Introduction to Programming* and *Design Patterns* **Java** – used in the university course *Object Oriented Programming* **GIT** – used for managing and storing both personal and work related projects **Linux** – used as a primary OS **Ableton Live** – used for personal music projects
Basic	**R** – used for a project in *Statistical Data Analysis* course **SQL, SQLite, PostgreSQL** – used in various university courses and during internships **Bash, Perl** – used for *Scripting Languages* course and writing personal automation scripts **Matlab** – used for *Acoustical Measurements* and *Acoustics and Physics of Sound* courses **COMSOL** – used for various experiments and simulations in *Acoustics and Physics of Sound* course **Web technologies** - **Javascript (& Vue.js), HTML, CSS** – used during the first internship and both in *Web and Mobile Software Development* and *Software Design* (used to make a web app for laundry services in student campuses) university courses

OTHER SKILLS AND INTERESTS

Languages	Croatian (native), English (fluent - C2 (TOEFL iBT 114/120)), German (basic), Italian (basic)
Interests	Deep Learning, Artificial Intelligence, Machine Learning, Acoustics, Music Production and Sound Design, Guitar and Piano playing