Updated: 10/06/2022

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Experience

RESEARCH ASSISTANT — **APR 2022 — JUN 2022**
Aalto University — *Helsinki, Finland*

- Researched usage of AI in music and creative processes coordinated by Koray Tahiroğlu in collaboration with Google Brain (Magenta Team).
- Implemented a deep neural network architecture that combines VQ-VAE to compress the audio and an autoregressive transformer that operates on latent representations, and generates a latent response, in an endeavor to simulate musical call and response interaction.
- Technologies used – Python (NumPy, TensorFlow 2, Keras), Git, Linux, Aalto University's Triton Cluster Computer and slurm

DATA SCIENTIST INTERN — **JUL 2021 — AUG 2021**
RealNetworks Inc. — *Zagreb, Croatia*

- Researched and tested multiple deep learning architectures for speech classification (robocall detection) and recognition using transformers (ViT) and various CNNs.
- Acquainted myself with various dimensionaity reduction and data visualization methods (t-sne, PCA, k-means, SVD).
- Technologies used – Python (NumPy, PyTorch, sklearn), Git, Linux

SOFTWARE ENGINEERING INTERN — **JUL 2020 — AUG 2020**
Koncar – Power Plant and Electric Traction Engineering Inc. — *Zagreb, Croatia*

- Developed a GUI client for network communication via Modbus protocol.
- Technologies used – Python (PyQt, Asyncio), Git, Linux

SOFTWARE ENGINEERING INTERN — **JUL 2019**
Koncar – Power Plant and Electric Traction Engineering Inc. — *Zagreb, Croatia*

- Developed a web application for real time tracking and management of data on a SCADA based wind turbine systems.
- Technologies used – Web (Javascript, HTML, CSS), Python

UNDERGRADUATE TEACHING ASSISTANT — **FEB 2019 — JUL 2019**
Faculty of Electrical Engineering and Computing, University of Zagreb — *Zagreb, Croatia*

- Assisted students during laboratory examinations in Fundamentals of Electrical Engineering course.

Research

Contrastive Unpaired Translation using Focal Loss for Patch Classification — **SEP 2021**
arXiv preprint - [PDF]

Education

Master of Science - Signal Processing and Data Science — **SEP 2021 — JUN 2023**
Aalto University — *Helsinki, Finland*

- 1st minor: Acoustics and Audio Technology
- 2nd minor: Human Neuroscience and Technology
- relevant courses: *Speech Processing, Speech Recognition, Statistical NLP, Large Scale Data Analysis, Methods of Data Mining, Machine Learning, Deep Learning, Audio Signal Processing, Communication Acoustics*

Bachelor of Science - Computer Science — **SEP 2018 — JUL 2021**
Faculty of Electrical Engineering and Computing, University of Zagreb — *Zagreb, Croatia*

- BSc thesis: Contrastive Unpaired Translation using Focal Loss for Patch Classification
- BSc project: Semi-Supervised Image Classification
- 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*

Volunteering

Workshop Organiser **APR 2018**
III. gymnasium *Zagreb, Croatia*
- Organised and held workshops for students on the topic of drug abuse and crime prevention among youth.

Achievements

Google Foobar	Received an invitation to Google's Foobar secret coding challenge.	2022
UNODC Youth Forum	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.	2018
STEM Scholarship	Received a scholarship for being among the top students on matriculation exam in fields of Mathematics and Physics.	2018

Technical Skills

Advanced	**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, TensorFlow, Keras, scikit-learn, SciPy, matplotlib, Pandas, asyncio, PyQt, etc.) **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 **LaTeX** – used for writing thesis, project reports, etc.
Intermediate	**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* **SQL, SQLite, PostgreSQL** – used in various university courses and during internships
Basic	**R** – used for a project in *Statistical Data Analysis* course **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 (limited), Finnish (elementary), Italian (elementary)
Interests	Deep Learning, Artificial Intelligence, Acoustics, Music Production and Sound Design, Guitar and Piano Playing, Sailing