

Martin Beneš

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Experience

Since 09 2021

Research Assistant, Security and Privacy Lab, Rainer Böhme

Research in steganalysis, machine learning and forensics.

UNCOVER: development of steganalysis framework, funded by EU.

• *End users are the law enforcement agencies. Working with confidential information.*

jpeglib [Python, C]: Python envelope for C library libjpeg for handling JPEG files.

stegolab2 [Python, C++]: implementation of cutting-edge steganographic algorithms and primitives.

steganographic demo [C++]: prototype of real-time steganography in video stream, presented at events InDay Students and LNDF.

06 – 09 2020

Data Engineer, M/F Ratio of current excess mortality, Krzysztof Bartoszek

Data engineering on death data for research project.

covid19sweden, **covid19czechia**, **covid19poland**, **eurostat_deaths** [Python]: Automated Data On-line Collection and Cleansing.

waybackmachine [Python]: fetching historical snapshots of a page from archive.org

04 – 05 2020

08 – 09 2020

Core team contributor, COVID-19 Data Hub [10.21105/joss.02376], Emanuele Guidotti

Data collection of COVID-19 data for research purposes.

Data Hub [R]: Data Cleansing and Collection. Unification into Hub.

covid19dh [Python]: Envelope of the Data Hub for Python.

09 2019 – 03 2020

11 2020 – 06 2021

Software Developer, AB TaxiCaller Nordic

QA engineer. Web backend development.

Driver app [React.js]: Tester, iterative development.

Scrum master [Jira]: Sprint planning.

QA engineer [Node.js, Jenkins]: Integration and deployment testing.

Revenu Quebec Certification [Java/Android]: Certification of sales-recording system for mandatory billing.

BloodHub Integration [Node.js]: Integration of blood delivery system.

API definition [OpenAPI]: JSON schema for API - Jackson, TypeScript middleware request checker, documentation.

Maps [Python, MariaDB, Node.js]: OpenStreetMap solution: Map tiles server, geocoding (Pelias), address interpolation.

01 2017 – 01 2019

Software developer, Artisys s.r.o.

Real-time air traffic control systems development. Deployed worldwide on civil/military airports.

Air Traffic Control Display Panel [C++/Qt5]: Display panel for air-traffic controllers, visualizing the radar targets.

Education

Since 10 2021

PhD., Computer Science

University of Innsbruck

2022

Beneš, Hofer, Böhme: Know Your Library: How the libjpeg Version Affects Compression and Decompression Results.

Beneš, Hofer, Böhme: The Effect of the JPEG Implementation on the Cover-Source Mismatch Error in Image Steganalysis.

• *Presented as a poster at EUSIPCO 2022, Belgrade, Serbia.*

Reviewer for IEEE Transactions on Information Forensics and Security (IEEE TIFS).

06 2021

MSc., Statistics and Machine Learning

Linköping University

Master thesis [Python]: HMM modelling of the spread of the SARS-CoV-2. [A]

• *Presented at NordicMathCovid Oslo Workshop 2023 (by the thesis supervisor).*

Research project [Python]: Covid-19 regional comparison. [A]

Teacher Assistant [R]: Courses Advanced R Programming, Computational Statistics, Machine Learning.

08 2019

Bc., Information Technology [GPA 1.51]

Brno University of Technology

Bachelor thesis Counting People Using PIR Sensor [Arduino/C++, Python]: HW / SW solution. Cooperate research of FHV / FIT BUT.

Erasmus Computer Science, FH Vorarlberg. [GPA 1.31]

06 2016

Gymnázium Brno – Řečkovice. High school, final *maturita* exam: Czech, Math, IT.

Skills

Machine Learning (R, Python)	Statistical modelling · Deep learning · Predictive analysis/Forecasting · Data mining/Clustering · Computer vision Model selection and regularization · Model deployment · High-performance computing/Slurm · ML/Ops Big data/Distributed computation · Web scraping · Data engineering · Data Analysis and Visualization Probabilistic and Bayesian inference · Statistical testing · Stochastic optimization · Continuous and Discrete simulation
Programming	Python (PyTorch, TensorFlow, NumPy, Scikit-Learn, Pandas, Flask) · R Node.js · React.js · jQuery C/C++ · Parallel programming · GPU and multi-GPU acceleration (CUDA) · JIT acceleration · Networking · Java · PHP MySQL/MariaDb · Oracle SQL · PostgreSQL · MongoDB · SQLite · Redis · Conceptual modelling Arduino · Raspberry Pi · FPGA/VHDL · Assembly x86 · SSE/AVX Git · Linux/GNU · Instrumentation · AWS · Scrum/Jira · DevOps
Specific skills	Steganography · Steganalysis · Digital forensics · Cryptography Signal and image processing · Coding theory Academical and technical writing · R&D · TeX/Tikz Video editing (Vegas) · Sound processing (Cubase, Audacity) · Graphics (CorelDraw/Inkscape, Adobe Photoshop)
Languages	Czech/Slovak/Polish (mother tongue/intelligible) · English (C1/CAE) · Russian (~B2) · German (~B1) · Swedish (B1) · French (~A2)
Other skills	Presentation skills · Teaching and mentoring · Teamwork · Intercultural communication and social skills Responsibility · Problem solving · Adaptivity · Creativity · Time management Driving license B (car) · Hitchhiking · Ukulele

Miscellaneous projects and work

01 2023

08 2022

03 2021, 10 2021

11 2020

09 2018 – 12 2019

09 2013 – 03 2018

06 – 09 2018

08 2016/17/18

Meeting organization: Organization of a major EU project meeting with 50 attendants.

Jura jede [D3.js/jQuery]: Data dashboard.

Externist, University of Neuchâtel: Database merging.

Externist, CEVRE Consultants, s.r.o.: Facility documentation for BREEAM certification.

Lecturer, Top Learning s.r.o.: Individual teaching – math, physics. Preparing study materials.

Sound Engineer, ZiveOzvuceni.cz: Installation and configuration of sound systems on various live events.

Manager, I Love Sugar: Work & Travel J1 program in USA. Management of stock and organization of employees.

ViceManager, Camping Transit, GenAgro a.s.: Management of temporary camping for grand prix event. Organization of employees.