

# Martin Beneš

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## Experience

- 07 – 09 2024 **Intern/R&D**, project *Stealthy Pixels*, Blindspot Solutions s.r.o.  
tatouage [Python]: Python package implementing modern watermarking.
- Since 09 2021 **Research Assistant**, Security and Privacy Lab, University of Innsbruck  
UNCOVER: Horizon 2020 project. Developing a steganalysis framework for law-enforcement agencies. *Handling confidential data.*  
conseal, sealwatch [Python]: Python packages implementing modern steganography and steganalysis.  
jpeglib [Python, C++]: Python package enveloping C library libjpeg.  
Workshop [Python]: Digital Magic Ink. Presented during Tag der MIP and at Gymnázium Brno-Řečkovice. *Lecturer.*  
Workshop [C++]: Prototype of real-time steganography in a video stream. Presented during InDay Students and LNDF.  
Workshop [Python]: Drum synthesizer. Presented during InDay Students.
- 06 – 09 2020 **Data Engineer**, project *M/F Ratio of current excess mortality*, Linköping University  
covid19sweden, covid19czechia, covid19poland, eurostat\_deaths [Python]: Automated data collection.  
waybackmachine [Python]: Fetching historical snapshots of a page from archive.org.
- 05 2020, 09 2020 **Core-team Contributor**, COVID-19 Data Hub (JOSS paper, Nature paper), Emanuele Guidotti  
Data Hub [R, Python]: Covid-19 data collection and cleaning.
- 09 2019 – 06 2021 **Backend Developer**, later **QA Engineer/Scrum master**, AB TaxiCaller Nordic  
Maps [Python, MariaDB, Node.js, Pelias]: OpenStreetMap solution: maptiles server, geocoding, address interpolation.  
BloodHub integration [Node.js]: Integration of blood delivery system.  
Revenu Quebec certification [Java/Android]: Certification of sales-recording system for mandatory billing.  
Driver app [React.js]: Tester, iterative development.  
API definition [OpenAPI]: JSON schema for API - Jackson, TypeScript middleware request checker, documentation.  
Scrum master [Jira]: Sprint planning.  
QA engineer [Node.js, Jenkins]: Integration and deployment testing.
- 01 2017 – 01 2019 **Software Developer**, Artisys s.r.o.  
Air-traffic control display panel [C++/Qt5]: Display panel for visualizing the radar targets.

## Education

- Since 10 2021 **PhD., Computer Science**, University of Innsbruck <GPA 3.64>  
Paper DCTdiff: intriguing properties of image generative modelling in the DCT space. {PMLR ICML 2025} *In review.*  
Paper Kerckhoffs in prison: a study of the steganalyst's knowledge. {IEEE WIFS 2024}  
Paper Exploring diffusion-inspired pixel predictors for WS steganalysis. {ACM IH&MMSec 2024}  
Paper Cover-source mismatch in steganalysis: systematic review. {EURASIP JIS 2024}  
Paper JPEG steganalysis using leaked cover thumbnail. {IEEE WIFS 2023}  
Paper The effect of the JPEG implementation on the cover-source mismatch error in image steganalysis. {EUSIPCO 2022}  
Paper Know your library: how the libjpeg version affects compression and decompression results. {ACM IH&MMSec 2022}  
Reviewer: Springer ESORICS · IEEE TIFS · IEEE SPL · IEEE TDSC  
Lecturer Information Hiding. *Designing and conducting the lectures.*  
Summer school Steganography and Steganalysis. *Lecturer. Team lead in CTF challenge.*  
Summer school Privacy-preserving Machine Learning.
- 06 2021 **MSc., Statistics and Machine Learning**, Linköping University <GPA 3.09>  
Master thesis [Python]: HMM Modelling of the Spread of the SARS-CoV-2. {NordicMathCovid Oslo Workshop 2023}  
Research project [Python]: Covid-19 regional comparison.  
Teacher assistant [R]: Advanced R Programming, Computational Statistics, Machine Learning. *Conducting the seminars.*
- 08 2019 **Bc., Information Technology**, Brno University of Technology <GPA 3.11>  
Bachelor thesis [Arduino/C++, Python]: Counting People Using PIR Sensor. *Cooperate research with FH Vorarlberg.*  
Erasmus Computer Science, FH Vorarlberg.
- 06 2016 **Gymnázium Brno-Řečkovice**. High school, final *maturita* exam: Czech, Math, IT. <cum laude>

## Skills

- Data science Statistical and probabilistic modelling (machine learning, deep learning, generative AI) · Computer vision · Data mining and visualization  
MLOps · Data engineering · SQL (MySQL, PostgreSQL, SQLite) · NoSQL (MongoDb, Redis) · Database modelling (UML)  
Signal processing and series analysis (spectral analysis, coding, forecasting) · Optimization (discrete, continuous)
- Programming Python · R · C/C++ · Parallel programming · Acceleration (GPU, multi-GPU, JIT) · HPC (Slurm) · Bash  
Web (Node.js, jQuery, web scraping) · Networking · Cloud computing (AWS, Terraform, Docker)  
IoT (Arduino, Raspberry Pi) · Hardware (FPGA/VHDL, x86, SSE/AVX) · Project management (Scrum/Jira, Git, Jenkins)
- Computer security Steganography and steganalysis · Digital forensics · Digital watermarking · Cryptography
- Audiovisual skills TeX/Tikz · Graphics (CorelDraw/Inkscape, Adobe Photoshop) · Video production and editing (GoPro, DaVinci, Vegas)  
Sound processing (Cubase, Audacity) · Audio synthesis · Music theory
- Languages Czech/Slovak (native) · English (C1/CAE) · German (B2/ÖSD) · Russian (~B2) · Polish (~B2) · Swedish (B1) · French (~A2)
- Other skills Academic research · Academic and technical writing · Presentation skills · Teaching and mentoring · Intercultural communication  
Responsibility · Time management · Problem solving · Adaptivity · Creativity · Social skills · Teamwork  
Driving license B (car) · Ultralight backpacking · Bass guitar

## Other projects and work

- 08 2022 Jura jede [D3.js/Query]: Data dashboard.
- 03 2021, 10 2021 Data engineer, University of Neuchâtel [Python]: Database merging.
- 11 2020 Externist, CEVRE Consultants, s.r.o.: Facility documentation for BREEAM certification.
- 09 2018 – 12 2019 Tutor, Top Learning s.r.o.: Individual tutoring in math and physics.
- 09 2013 – 03 2018 Sound engineer, ZiveOzvuceni.cz: Installation and configuration of sound systems on various live events.
- 06 – 09 2018 Stock lead, I Love Sugar: Work & Travel J1 program in USA. Managing stock and stock employees.
- 08 2016/2017/2018 Vice-manager, GenAgro a.s.: Management of temporary camping for grand prix event. Managing employees.