Martin Beneš

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Experience

09 – 10 2025	**Short term scholar,** Binghamton University
	Grant application UIBK Travel grant
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. {Tag der MIP} {Gymnázium Brno-Řečkovice}
	Workshop [C++]: Prototype of real-time steganography in a video stream. {InDay Students} {LNDF}
	Workshop [Python]: Drum synthesizer. {InDay Students}
	Lecturer Information hiding · Watermarking and fingerprinting for natural and generated media. *Designing and conducting the courses.*
	Guest lecture Real-world steganography and steganalysis. {University of Twente}
05 2020, 09 2020	**Core-team Contributor,** COVID-19 Data Hub (JOSS paper, Nature paper), Emanuele Guidotti
	Data Hub [R, Python]: Open 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}
	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
	MSc. thesis supervision Demosaicing impact on forensics: how color channel dependencies comprimise PRNU
	BSc. thesis supervision Accelerated implementation of syndrome-trellis codes for steganography
	Summer school Steganography and steganalysis (lecturer, CTF team lead) · Privacy-preserving maching 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. *Joint 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/probabilistic modelling (machine learning, deep learning, bayesian statistics) · Computer vision · Data mining and visualization
	Signal processing and series analysis (spectral analysis, coding, forecasting) · Optimization (discrete, continuous)
	MLOps · Data engineering · SQL (MySQL, PostgreSQL, SQLite) · NoSQL (MongoDb, Redis) · Database modelling (UML)
Computing	HPC (Slurm) · Parallel programming (MPI) · Acceleration (GPU, multi-GPU, JIT) · Cloud computing (Docker, AWS, Terraform)
Software development	Python (PyTorch, TensorFlow, scikit-learn) · R · C/C++ · Bash · Web (Node.js, jQuery, web scraping) · **Networking** (socket, openAPI)
	IoT (Arduino, Raspberry Pi) · Hardware (FPGA/VHDL, x86 Assembly, SSE/AVX) · Project management (Scrum/Jira, Git, Jenkins)
Computer security	Steganography and steganalysis · Digital watermarking (fingerprinting) · Digital forensics (deep-fake detection) · Cryptography
	Adversarial ML · Privacy-preserving ML · Reverse engineering
Audiovisual skills	TeX/Tikz · Typography · Graphics (Tikz, CorelDraw/Inkscape, Photoshop) · Video production and editting (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)
Academia and research	Research skills (empirical, fundamental) · Critical assessment (peer review) · Academic and technical writing · Presentation skills
	Grant applications · Teaching and mentoring · Designing a university course · Thesis supervision
Other skills	Intercultural communication · Responsibility · Time management · Problem solving · Creativity · Teamwork · Adaptivity · Social skills
	Driving license B (car) · Ultralight backpacking · Bass guitar

Other projects and work

08 2022	Jura jede [D3.js/jQuery]: Data dashboard.
03 2021, 10 2021	Data engineer, University of Neuchâtel [Python]: Database merging.
06 – 09 2020	Data engineer, Linköping University [Python]: project M/F Ratio of current excess mortality, data collection and cleaning.
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 employees.
08 2016/2017/2018	Vice-manager, GenAgro a.s.: Managing a temporary camping for grand prix event and its employees.