Davide **Belli**

Senior Deep Learning Research Engineer

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Education

University of Amsterdam — *Amsterdam, NL*

MSc in Artificial Intelligence — *Sep. 2017 - Sep. 2019*

- Graduated **Cum Laude**, GPA 8.8/10 (A+)
- Main Courses: Machine Learning, Computer Vision, NLP, Deep Learning, Reinforcement Learning, Information Retrieval
- Skills and technologies: Python (NumPy, Matplotlib, PyTorch, scikit-learn), MATLAB, Git, LaTeX

University of Trento — *Trento, IT*

BSc in Computer Science — *Sep. 2014 - Jul. 2017*

- Graduated **Cum Laude**, GPA 110/110
- Main Courses: Calculus, Linear Algebra, Probability and Statistics, Logics, Algorithms and Data Structures, Functional and Object Programming, Web and Mobile Programming, OS, Networks, Databases, Compilers, Software Engineering
- Skills and technologies: C++, Java, Android, Node.js, Git, HTML/CSS, XML

Work Experience

Qualcomm AI Research — *Amsterdam, NL*

Senior Research Engineer, Deep Learning — *Nov. 2019 - Present*

- Designed and implemented novel DL methods for Perception (visual and RF domains) and Model Efficiency teams (LLMs). Integrated solutions in products released to customers and internal departments.
- Improved the performance of a biometric classifier from 90% to 99% AUC on challenging real-world data.
- Reduced the positioning error of a GNSS localisation system by 50% in noisy urban canyon scenarios
- Improved inference efficiency in recent LLMs (Phi 3, Llama 3, Mistral), decreasing memory footprint by 45% and increasing throughput by 40%.
- Topics: Domain generalization, Personalization, Transfer learning, Multi-modal learning, Kalman Filters, LLM efficiency, Dynamic Sparsity.
- Skills and technologies: Python (PyTorch, NumPy, Matplotlib, Pandas, Hydra), Bash, Git, Docker.

University of Amsterdam — *Amsterdam, NL*

Graduate Teaching Assistant — *Oct. 2018 - Jun. 2019*

- Graduate Teaching Assistant for the core courses Machine Learning 1, Deep Learning and Information Retrieval in the MSc AI at UvA.
- Held lab sessions, designed and corrected exams, homework and lab assignments.

Publications

- H Gorp*, D Belli*, A Jalalirad, B Major. *Neural Augmented Kalman Filters for Road Network assisted GNSS positioning*, **Under review.**
- M Federici*, D Belli*, M van Baalen, A Jalalirad, A Skliar, B Major, M Nagel P Whatmough. *Efficient LLM Inference using Dynamic Input Pruning and Cache-Aware Masking*, **MLSys 2025**
- A Jalalirad, D Belli, B Major, S Jee, H Shah, W Morrison, *GNSS Positioning using Cost Function Regulated Multilateration and Graph Neural Networks*, **ION GNSS+ 2023**
- D Belli , D Das, B Major and F Porikli, *Online Adaptive Personalization for Face Anti-spoofing*, **ICIP 2022**.
- D Belli , D Das, B Major and F Porikli, *A Personalized Benchmark for Face Anti-spoofing*, **WACV 2022 MAP-A workshop**.
- D Belli and T Kipf, *Image-Conditioned Graph Generation for Road Network Extraction*, **NeurIPS 2019 GRL workshop**.
- G Bani*, D Belli*, G Dagan*, A Geenen*, A Skliar, A Venkatesh, T Baumgartner, E Bruni and R Fernández, *Adding Object Detection Skills to Visual Dialogue Agents*, **ECCV 2018 SiVL workshop**.
- D Belli, S Hu, E Soganciogl u and B van Ginneken, *Context Encoding Chest X-rays*, **arXiv preprint**.
- E Soganciogl u*, S Hu*, D Belli and B van Ginneken, *Chest X-ray Inpainting with Deep Generative Models*, **arXiv preprint**.

Volunteering

2020-25 **Conference Reviewer**: WACV (2022-2023-2024-2025), LoG (2023-2024), ICCV (2021)

2020-25 **Workshop Reviewer**: ML on Graphs (GLF @ NeurIPS 2022-2023, GLB @ WWW 2022-2023, GRL+ @ ICML 2020)

2019-25 **Mentor at LeadTheFuture**: mentorship organization for selected top students in STEM from Italy.

2017-19 **Member and Treasurer at Master Committee**: organizing educational events for master students at UvA.

2015-17 **School Tutor**: teaching Maths, Physics and Computer Science to High School and Bachelor students.

Honors & Awards

2022-25	**Top 4%:** LeetCode worldwide programming contests	*Amsterdam, NL*
2019	**1st Place:** Amsterdam Programming Contest	*Amsterdam, NL*
2018	**Top 50%:** ACM-ICPC Nwerc (European Semi-Finals)	*Eindhoven, NL*
2018	**Top 50%:** BAPC Regionals	*Louvain-la-Neuve, BE*
2016	**Bronze Medal:** ACM-ICPC Swerc (European Semi-Finals)	*Porto, PT*
2016-19	**Top 15%:** Google Hashcode	*Amsterdam, NL*
2008-13	**Top 0.1% (7^{th} out of 9000):** International Championships of Mathematical Games (Italian Finals)	*Milan, IT*

2019	Travel Scholarship Gouda de Vries	*Amsterdam, NL*
2019	Scholarship EEML Summer School	*Bucharest, RO*
2018	MSc Scholarship Giuseppe Favrini	*Trieste, IT*
2017	BSc Merit Award University of Trento	*Trento, IT*
2014	High School Merit Award Confindustria	*Mantova, IT*

Academic Research Projects

Image-Conditioned Graph Generation with Transformers *2019*

- Designed a new transformer-based model for image-to-graph generation, outperforming existing generative models for graphs. Released a new dataset and metric for the extraction of road networks from segmentation of satellite images.
- Master Thesis project supervised by Thomas Kipf (AMLab, UvA).
- *Image-Conditioned Graph Generation for Road Network Extraction* was accepted at NeurIPS 2019, GRL workshop.

Improving Visual Dialogue agents with Mask R-CNN *2018*

- Improved a multi-modal learning agent for Visual Question Answering using Mask R-CNN.
- Research project supervised by Elia Bruni (ILLC, UvA).
- *Adding Object Detection Skills to Visual Dialogue Agents* was accepted at ECCV 2018, SiVL workshop.

Image Inpainting for anomaly detection in medical imaging *2018*

- Applied Deep Generative Models to inpainting for the unsupervised discovery of anomalies in medical images.
- Research project part of the 'Honours Programme' for top students at UvA, supervised by Shi Hu (AMLab, UvA).
- Presented our work in the papers *Chest X-ray Inpainting with Deep Generative Models* and *Context Encoding Chest X-rays*.