Davide **Belli**

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). Participated in the integration of research outcomes 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, decreasing memory footprint by 45% and increasing throughput by 40%.
- Topics: Domain generalization, Personalization, Transfer learning, Multi-modal learning, Kalman Filters, Efficient LLMs, 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

- 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 Sogancioglu and B van Ginneken, *Context Encoding Chest X-rays*, arXiv preprint.
- E Sogancioglu*, S Hu*, D Belli and B van Ginneken, *Chest X-ray Inpainting with Deep Generative Models*, arXiv preprint.

Volunteering

2020-24 **Conference Reviewer:** WACV (2022-2023-2024-2025), LoG (2023-2024), ICCV (2021)

2020-24 **Workshop Reviewer:** ML on Graphs (GLF @ NeurIPS 2022-2023, GLB @ WWW 2022-2023, GRL+ @ ICML 2020)

2019-24 **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

2022-24	**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*.