Diego **Antognini**

Natural Language Processing & Machine Learning Researcher

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Summary

5+ years of research experience in natural language processing (NLP), single- & multi-objective recommendation systems, and machine learning (ML). Experienced in the development of interpretable models that generate personalized and actionable textual explanations. Supervised 30+ B./M.Sc. projects/theses and assessed 50+ student projects. Offering consulting services in natural language processing, recommender systems, and machine learning.

Education

Ph.D. in Computer Science — **EPFL – École Polytechnique Fédérale de Lausanne**
May 2017 - Mar. 2022 (expected) — *Lausanne, Switzerland*

- **Advisor**: Prof. Boi Faltings. **Group**: the Artificial Intelligence Lab (LIA). **Program Committee & Reviewer**: ACL 20-21; EMNLP 2021; RecSys 2021.
- **Award**: Won $9,750 in the *IARPA Geopolitical Forecasting Challenge 2018*. Press coverage: *EPFL News (English)*, *24 Heures*, *Radio (French)*.
- **Thesis**: Focus on the intersection of text understanding, explainable AI, and conversational recommender systems.
- Implemented the 1st PyTorch graph attention network and its sparse variant. Starred and forked on Github 2.2k+, and still 6k+ views per month.

M.Sc. in Computer Science — **EPFL – École Polytechnique Fédérale de Lausanne**
Sep. 2014 - Apr. 2017 — *Lausanne, Switzerland*

- Focus on NLP, AI, ML, and distributed systems. It includes a mandatory extra year of 62 ECTS credits to be accepted in the program. **GPA**: 5.5/6.0.
- **Thesis**: From Relation Extraction to Knowledge Graphs (6.0/6.0). Developed a model that extracts concepts from large corpora and classifies the semantic relationship between them. It outperformed state-of-the-art models by 0.9 F1-score in the relation-classification task of SemEval-2010.

B.Sc. in Computer Science — **HES-SO - HE-ARC – University of Applied Sciences**
Sep. 2011 - Aug. 2014 — *Neuchâtel, Switzerland*

- Major software engineering. **Awards**: 1) Excellent thesis and 2nd best GPA; 2) Deserving student in 2nd year. **GPA** 5.6/6.0.
- **Thesis**: Computing Brain Neuronal Maps. Developed a multi-GPUs algorithm to compute an accurate 3D real-time rendering of the brain's electromagnetic activities. A speedup of ≈100,000x has been achieved, reducing the computation time from 20h to 700ms.

Experience

Visiting Researcher in Prof. Julian McAuley's group — **UCSD – University of California San Diego**
Jul. 2021 - Nov. 2021 (present) — *San Diego, CA, U.S.*

- Currently working on methods to allow unsatisfied users to interact iteratively with generated explanations to improve models' predictions.

Research/Teaching Assistant — **EPFL – École Polytechnique Fédérale de Lausanne**
May 2017 - Mar. 2022 (expected) — *Lausanne, Switzerland*

- Helped in teaching the courses: intelligent agents (M.Sc), introduction to natural language processing (M.Sc., 2x), artificial intelligence (B.Sc., 3x).
- Supervised 30+ B./M.Sc. semester projects & theses and worked with Swisscom (Dr. Claudiu Musat).

Consultant and Expert for B.Sc. & M.Eng. theses — **HES-SO - HE-ARC – University of Applied Sciences**
Sep. 2016 - present — *Neuchâtel, Switzerland*

- Gave talks on multiple technologies and offered consulting services for applied research in industrial projects in Prof. Hatem Ghorbel's group.
- Assessed 25+ B.Sc./M.Eng. theses and was an expert for the AI and GPU/parallel programming exams (Prof. Hatem Ghorbel, Prof. Cédric Bilat).

Machine Learning/Data Mining M.Sc. thesis Intern — **Iprova GmbH**
Sep. 2016 - Mars. 2017 — *EPFL Innovation Park, Lausanne, Switzerland*

- Deployed a system to extract concepts from large corpora and build interactive knowledge graphs for invention developers to gain new insights.

Publications (selected)

Interacting with Explanations through Critiquing — **IJCAI 2021**
Diego Antognini, Claudiu Musat, Boi Faltings

Fast Critiquing with Self-Supervision for VAE-based Recommender Systems — **RecSys 2021**
Diego Antognini and Boi Faltings

Multi-Dimensional Explanation of Target Variables from Documents — **AAAI 2021**
Diego Antognini, Claudiu Musat, Boi Faltings

Rationalization through Concepts **ACL 2021**
Diego Antognini and Boi Faltings *Findings*

Addressing Fairness in Classification with a Model-Agnostic Multi-Objective Algorithm **UAI 2021**
Kirtan Padh, Diego Antognini, Emma L. Glaude , Boi Faltings , Claudiu Musat

Multi-Gradient Descent for Multi-Objective Recommender Systems **AAAI 2020**
Nikola Milojkovic, Diego Antognini, Giancarlo Bergamin, Boi Faltings, Claudiu Musat *Workshop*

HotelRec: a Novel Very Large-Scale Hotel Recommendation Dataset **LREC 2020**
Diego Antognini and Boi Faltings

Talks

Fast Critiquing with Self-Supervision for VAE-based Recommender Systems **2021**
RecSys 2021, Amsterdam. *Planned*

Rationalization through Concepts
ACL 2021, Online. *Planned*

Interacting with Explanations through Critiquing
1) IJCAI 2021, Online; 2) University of Toronto, Online; 3) Swisscom Lab, Online.

Multi-Dimensional Explanation of Target Variables from Documents
AAAI 2021, Online.

T-RECS: a Recommender Generating Explanations and Integrating Critiquing **2020**
ECAI 2020, Online.

Multi-Dimensional Explanation of Ratings from Reviews
1) University of Zürich, Zürich; 2) NLP Meetup, Zürich; 3) Swisscom AI, Online.

1) What are attention mechanisms?; 2)Overview of principles & models in recommender systems
HES-SO - HE-ARC – University of Applied Sciences, Neuchâtel.

Learning to Create Sentence Semantic Relation Graphs for Multi-Document Summarization **2019**
EMNLP 2019, Hong-Kong.

Introduction to 1) PyTorch, 2) Spark, 3) [Contextualized] Word Embeddings, 4) Dialogue Systems
HES-SO - HE-ARC – University of Applied Sciences, Neuchâtel.

Constraint Satisfaction Problem **2018**
Artificial intelligence course at EPFL, Lausanne.

Introduction to ML & Insights on Alpha Go (Zero)
High school du Bugnon, Lausanne.

From Relation Extraction to Knowledge Graphs **2017**
1) NLP Meetup, Zürich; 2) NLP course at EPFL, Lausanne; 3) HE-Arc, Neuchâtel.

Skills

Software Efficient: Python, PyTorch, spaCy, Tensorflow, Bash. Prior Experience: Spark, C++, CUDA, Java, SQL, PHP, HTML/CSS.
Miscellaneous UNIX/Linux, Git, PyCharm, IntelliJ IDEA, Astah, Balsamiq Mockups, Visual Studio, Eclipse.

Interests

Languages French (native), English (fluent), German (conversational), Spanish (conversational).
Sport I ride motorbikes in spring or surf on the coast during summer. In-between, I go four times per week to the gym to stay fit.
Interests I regularly read self-development books and question myself to become a better person. I have traveled to 20 countries through 4 continents; I would like to keep going and discover new cultures. Finally, I love dancing salsa and bachata.

References

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