Claudio Fanconi

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Education

University of Cambridge *Cambridge, United Kingdom*

PH.D. MACHINE LEARNING *4/2024 - Present*

- Focus: Machine learning and large language models
- Researching large language model reasoning, (inverse) reinforcement learning, and alignment for human decision-making
- Fully funded 4-year scholarship by Canon Medical
- Supervisor: Mihaela van der Schaar - Expected graduation 10/2027

ETH Zürich *Zürich, Switzerland*

M.SC. INFORMATION TECHNOLOGY & ELECTRICAL ENGINEERING *9/2020 - 10/2022*

- Focus: Machine learning and signal processing with Master thesis at **Stanford University** (3/2022 - 10/2022)
- Awarded a scholarship from ETH AI Center and the Talent Kick Foundation for entrepreneurial students
- Relevant subject: computer vision, natural language processing, probabilistic AI, deep learning
- GPA: 5.53/6.00

ETH Zürich *Zürich, Switzerland*

B.SC. INFORMATION TECHNOLOGY & ELECTRICAL ENGINEERING *9/2016 - 8/2019*

- Studied abroad at the **Chinese University of Hong Kong** during the autumn semester of 2018
- Relevant subjects: datastructures & algorithms, probability & statistics, calculus, linear algebra, machine learning

Professional Experience

Sony AI *Zürich, Switzerland*

RESEARCH SCIENTIST INTERN *3/2023 - 12/2023*

- Collected, processed, and labelled data set (200K+ samples) to train and evaluate models for computer vision tasks
- Researched and fine-tuned deep learning models for object detection, achieving < 2px error, for robotic perception.
- Deployed proposed model in a system using TensorRT in C++ to achieve real-time predictions with sub-2ms latency

McKinsey & Company *Zürich, Switzerland*

MANAGEMENT CONSULTING INTERN *6/2020 - 8/2020*

- Implemented an algorithmic pricing engine for a retail company in Python to price 60K products quarterly
- Analysed, visualised, and engineered features from dataset (1M+ entries) of retail transactions using Python and SQL
- Developed impact scenarios of sales revenues, presented and explained these findings to non-technical stakeholders

IBM *Böblingen, Germany*

MACHINE LEARNING ENGINEER INTERN *10/2019 - 03/2020*

- Prototyped near-duplicate text detection using TensorFlow neural networks, reducing matching time by 50%.
- Implemented a data extraction tool from an MDM system in Java with HTTP requests and wrote unit tests
- Co-invented five patents on near-duplicate detection and data quality (Google Patents)

Skills

Programming: Python (proficient), Java (advanced), C++ (intermediate), SQL (intermediate)

ML Frameworks: PyTorch (proficient), SciKit-Learn (proficient), TensorFlow (advanced), PyMC (advanced)

Languages: German (native), Italian (native), English (proficient), Romansh (advanced), French (basic)

Preprints

C. Fanconi, N. Astorga, M. van der Schaar - 2025
Learning a Dense Reasoning Reward Model from Expert Demonstration via Inverse Reinforcement Learning
Submitted to ICLR 2026 (Paper, GitHub)

Conference Publications

C. Fanconi, M. van der Schaar - 2025
Cascaded Language Models for Cost-effective Human-AI Decision-Making
NeurIPS 2025 (& ICML 2025 Workshop on Multi-Agent Systems) (Paper, GitHub)

C. Lu*, S. Holt*, **C. Fanconi***, A.J. Chan, J. Foerster‡, M. van der Schaar‡, R. T. Lange‡ - 2024
Discovering Preference Optimization Algorithms with and for Large Language Models
NeurIPS 2024 (& ICML 2024 Workshop on AutoRL) (Paper, GitHub, Blog) *Equal contribution

C. Fanconi*, M. Vandenhirtz*, S. Husmann, and J. Vogt - 2023
This Reads Like That: Deep Learning for Interpretable Natural Language Processing
EMNLP 2023. (Paper, GitHub, YouTube) *Equal contribution

C. Fanconi, M. van Buchem, and T. Hernandez-Boussard - 2023
Natural Language Processing Methods to Identify Oncology Patients at High Risk for Acute Care with Clinical Notes
AMIA 2023 Informatics Summit (Paper, GitHub)

Journal Publications

M. van Buchem, A. de Hond, **C. Fanconi**, V. Shah, M. Schüszler, I. Kant, E. Steyerberg, and T. Hernandez-Boussard - 2024
Applying Natural Language Processing to Patient Messages to Identify Depression Concerns in Cancer Patients
Journal of the American Medical Informatics Association (Paper)

A. de Hond, M. van Buchem, **C. Fanconi**, M. Roy, D. Blayney, I. Kant, E. Steyerberg, and T. Hernandez-Boussard - 2024
Predicting Depression Risk in Patients With Cancer Using Multimodal Data: Algorithm Development Study
JMIR Medical Informatics (Paper, GitLab)

C. Fanconi, A. de Hond, D. Peterson, A. Capodici, and T. Hernandez-Boussard - 2023
A Bayesian Approach to Predictive Uncertainty in Chemotherapy Patients at Risk of Acute Care
The Lancet eBioMedicine (Paper, GitHub)

F. Sanmarchi, **C. Fanconi**, D. Golinelli, D. Gori, T. Hernandez-Boussard, and A. Capodici - 2023
Predict, Diagnose, and Treat Chronic Kidney Disease with Machine Learning: a Systematic Literature Review
Journal of Nephrology (Paper)

Workshop Publications

K. Kobalczyk*, **C. Fanconi***, H. Sun, M. van der Schaar - 2025
Few-shot Steerable Alignment: Adapting Rewards and LLM Policies with Neural Processes
ICML 2025 Workshop on Human Feedback for AI Alignment (**oral, top 10%**) (Paper, GitHub) *Equal contribution

A. Hoffmann*, **C. Fanconi***, R. Rade*, J. Kohler - 2021
This looks like that... Does it? Shortcomings of Latent Space Prototype Interpretability in Deep Networks
ICML 2021 Workshop on Explainable AI (Paper, GitHub, YouTube) *Equal contribution

Patents

L. Bremer, J. Roesner, **C. Fanconi**, M. Oberhofer, K. Steckler - 2020
Method and System for Processing Data Records
Publication Number: 20210374525 (Google Patents)

T. Stuart, B. Elasioty, **C. Fanconi**, M. Grasselt, H. Babu, Y. Saillet, R. Kern, M. Oberhofer, L. Bremer, J. Roesner, J. Woods - 2020
Method for Duplicate Determination in a Graph
Publication Number: 20210374525 (Google Patents)

L. Bremer, M. Oberhofer, T. Stuart, **C. Fanconi**, J. Roesner, D. Suski - 2020
Sample Pair Selection in Entity Matching Analysis
Publication Number: 20210374525 (Google Patents)