

# Claudio Fanconi

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## Education

### University of Cambridge

Cambridge, United Kingdom

#### PH.D. MACHINE LEARNING

4/2024 - Present

- Focus: Machine learning fundamentals and applications in medicine
- Researched steerable large language model reasoning and alignment for 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 RESEARCH 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)

## Publications

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**C. Fanconi**, M. van der Schaar - 2025

*Towards a Cascaded LLM Framework for Cost-effective Human-AI Decision-Making*

ICML 2025 Workshop on Multi-Agent Systems ([Article](#), [GitHub](#))

K. Kobalczyk\*, **C. Fanconi**\*, H. Sun, J. 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%**) ([Article](#), [GitHub](#)) \*Equal contribution

C. Lu\*, S. Holt\*, **C. Fanconi**\*, A.J. Chan, J. Foerster<sup>‡</sup>, M. van der Schaar<sup>‡</sup>, R. T. Lange<sup>‡</sup> - 2024

*Discovering Preference Optimization Algorithms with and for Large Language Models*

NeurIPS 2024 & ICML 2024 Workshop on AutoRL ([Article](#), [GitHub](#), [Blog](#)) \*Equal contribution

M. van Buchem, A. de Hond, **C. Fanconi**, V. Shah, M. Schüzler, 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 ([Article](#))

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 ([Article](#), [GitLab](#))

**C. Fanconi**\*, M. Vandenhirtz\*, S. Husmann, and J. Vogt - 2023

*This Reads Like That: Deep Learning for Interpretable Natural Language Processing*

EMNLP 2023. ([Article](#), [GitHub](#), [YouTube](#)) \*Equal contribution

**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 ([Article](#), [GitHub](#))

**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*

American Medical Informatics Association 2023 Informatics Summit ([Article](#), [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 ([Article](#))

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 ([Article](#), [GitHub](#), [YouTube](#)) \*Equal contribution

## Patents

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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. Sallet, R. Kern, M. Oberhofer, L. Bremer, J. Roesner, J. Woods - 2020

*Method for Duplicate Determination in a Graph*

Publication Number: 20210374525 ([Google Patents](#))

M. Oberhofer, M. Grasselt, **C. Fanconi**, T. Stuart, Y. Sallet, B. Elasioty, H. Babu, R. Kern - 2021

*Method for Weighting 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](#))

Y. Sallet, **C. Fanconi**, M. Oberhofer, H. Babu, B. Elasioty, M. Grasselt, R. Kern, T. Stuart - 2020

*Measuring Quality of Data in a Graph Database*

Publication Number: 20210374525 ([Google Patents](#))