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

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‡, 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 (Article, GitHub, Blog) *Equal contribution

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 (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

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)

M. Oberhofer, M. Grasselt, **C. Fanconi**, T. Stuart, Y. Saillet, 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. Saillet, **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)