

# Patrick Hirschi

12.01.1990 | Swiss

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## PROFILE SUMMARY

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I have extensive experience working with clinical data as well as in designing, implementing, and operating modern data products and platforms using the latest technologies. Through this work, I have acquired comprehensive expertise in data processing and streaming technologies, enabling me to efficiently integrate data from diverse systems.

During my master's studies, I expanded my knowledge specifically in the areas of Artificial Intelligence (AI) and Machine Learning (ML). I focused intensively on the development and application of AI/ML technologies to create innovative solutions and optimize data-driven processes.

I am a team player who places great value on supporting colleagues in their professional development by providing them with the necessary training and resources, and collaboratively solving complex problems. At the same time, I am highly motivated to further develop my own skills and am always eager to explore new technologies and engage with other professionals.

### Technical Skills:

- **Advanced:** Python, Microsoft Stack (SQL Server, MS SQL, T-SQL Procedures & Functions, SSIS, SSRS, Power BI, .NET / C#), Microsoft Office (Word, Excel, Powerpoint, Visio, Project), Code Versioning (SVN, GIT)
- **Proficient:** Open-Source Stack (java, .NET Core, Spark), Other Database Technologies (Oracle, PostgreSQL, MySQL, MongoDB)
- **Intermediate:** Web Development (HTML, CSS, javascript), Linux, Webservices (.NET Framework and .NET Core), Knowledge regarding Server / Storage / Network (Storage Systems, Load Balancer, Failover Clusters, Certificates, Proxy, Web Application Firewalls) for designing and understanding secure and state-of-the-art solution architectures

## PROFESSIONAL EXPERIENCE

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### Federal Office of Public Health

Liebefeld, Bern

*Project Lead Swiss Health Data Space DigiSanté - Deputy Section Head Domain Architecture* May 2025 – ongoing

### University Hospital of Zurich

Zurich

*Head of Clinical Data Platform for Research*

Sep 2020 – Apr 2025

- **Key Highlights:**

- Head of a team of 8-10 internal engineers and 3-5 associated virtual employees
- Responsibility and decision-making competence regarding methodology, technology, and architecture of the clinical data platform
- Cross-institutional collaboration with academia, private industry, as well as cantonal and university hospitals throughout Switzerland

- **Key Responsibilities:**

- Architecture, development, maintenance and administration of the clinical data platform and its underlying data lake, databases, and data marts
- Manage capacity and workload of the clinical data platform, including planning for additional large data sources, and their impact on the underlying infrastructure
- Manage support and development activities with software suppliers
- Responsible for the internal technical work packages related to the Swiss Personalized Health Network (SPHN) for building an infrastructure to enable nationwide use and exchange of health data for research, as well as the work packages of all clinical research projects associated
- Responsible for the technical implementation of interfaces from USZ to The LOOP Zurich Biomedical Informatics Platform (BMIP) to allow for translational data-driven research across Zurich hospitals
- Member of multiple decision-making bodies including the Information Security Board, as well as the Software Advisory Board and the Change Advisory Board
- Provide expert guidance to users in the clinical research domain, who include data science specialists, data analysts and the wider business such as physicians, nurses, and data managers regarding the data availability, clinical and other terminologies (ICD, CHOP, UCUM, SNOMED-CT, LOINC, etc.) as well as the data governance, data protection and IT security
- Project management (effort estimates, offers, invoices), resource allocation and customer communication

- Technical and use case documentation (security concept, operating concept, user manuals)

Clinical/R&D Data Platform Specialist – Research Data Service Center

Dec 2019 – Sep 2020

• **Key Highlights:**

- Developed solution for enterprise-wide distribution of general consent data from patients to ensure the data governance and the conformity to applicable internal directives, laws, and regulations (Web Application and API based on .NET Core)
- Developed backend and data delivery processes for national SPHN research projects Swiss Personalized Sepsis Study and Population Wide Screen
- Member of the hospital-wide expert panel for clinical and research projects

• **Key Responsibilities:**

- Architecture, development, and maintenance of the data integration layer especially the ETL processes from clinical and administrative source systems to the Research Datawarehouse
- Aggregation, cleansing and masking of clinical data to fulfill the requirements of internal and external research projects
- Architecture, development, and maintenance of processes to provide encoded and encrypted health-related data to SPHN (Swiss Personalized Health Network) and internal researchers
- Support the technical development and evolution of master and reference data models for specific data domains
- Provide domain expert guidance and specialist technical support to users in the research domain
- Technical and use case documentation (security concept, operating concept, user manuals)

Datawarehouse Developer – Research Data Service Center

Sep 2018 – Dec 2019

• **Key Highlights:**

- Developed solution for automated data encryption and delivery with PGP and LiquidFiles

• **Key Responsibilities:**

- Architecture, development, and maintenance of the data integration layer especially the ETL processes from clinical and administrative source systems to the Research Datawarehouse
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- Architecture, development and maintenance of processes to provide encoded and encrypted health-related data to SPHN (Swiss Personalized Health Network) and internal researchers
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Application Manager / Developer – Clinical Data Management

Jul 2016 – Sep 2018

• **Key Highlights:**

- Developed backend for a near-real-time care dashboard rolled out enterprise-wide and used by 1000+ users (physicians, nurses, etc.) a day
- Developed solution for traumatology to prefill a case report form for the Swiss and German trauma registry with data from the clinical data platform, as well as a yearly XML export to the registry providers

• **Key Responsibilities:**

- Maintenance, second-level support, and coordination of third-level support for clinical data management applications, interfaces, and solutions
- Testing and Rollout of the developed applications and interfaces
- Project management
- Analysis of source systems and interfaces
- Implementation of ETL processes from clinical and administrative source systems into the Clinical Datawarehouse (Caradigm Intelligence Platform)
- Technical specifications for data management and data warehouse applications and interfaces
- Programming and scripting with Microsoft .NET / ASP.NET / C# in Microsoft Visual Studio
- Writing complex T-SQL queries, views, procedures, triggers, and functions (MSSQL)
- Intensive use of database management and development tools incl. Business Intelligence (SQL Server Integration Services and SQL Server Reporting Services)
- Technical and use case documentation (security concept, operating concept, user manuals)

emineo AG

Zurich

Healthcare Consultant

Aug 2015 – Jul 2016

• **Key Responsibilities:**

- Project Management and Consulting of Hospitals
- Analysis of clinical source systems and interfaces
- Technical implementation of interfaces, reports, applications / solutions for various clinics (traumatology, infectiology, emergency department)

## TEACHING

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### Swiss Federal Institute of Technology Zurich ETH

Zurich  
2023-2025

#### MAS ETH in digital Clinical Research (MAS ETH diCR) – Real-World Data

- New, innovative and digital approaches to clinical research and their potential in a complex regulatory, ethical and practical environment, as well as the use of Big Data, Artificial Intelligence and Machine Learning, for advancing personalized medicine.

### University of Zurich UZH

Zurich  
2023-2025

#### Blockcourse Biomedicine – “Journey into Medical Research”

- Overview of the ethical and legal principles of preclinical and clinical research, including research with data and samples. Focus on the critical aspects of research projects with data and samples (privacy, information security, consent, ethics, etc.).

## EDUCATION

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### Swiss Distance University of Applied Sciences FFHS

Zurich  
2022 - 2025

#### Master of Advanced Studies in Data Science

##### Certificate of Advanced Studies in AI Engineering

2024-2025

- Development of Comprehensive Knowledge in Generative AI Systems: Deep understanding of modern neural networks, GPT models, and transformer architectures, including training techniques, prompt engineering, and RAG approaches
- AI Tools and Technologies: Proficiency in Python and specialized AI software such as FAISS, Langchain, and Pinecone for semantic search and vector databases
- Practical Implementation of AI Applications: Development and optimization of RAG-based applications through hands-on projects and case study analysis, encompassing embeddings, fine-tuning, and deployment

##### Master Thesis

2024

- “Multimodal Language Models for Information Extraction from Scanned Documents”

##### Certificate of Advanced Studies in IT Security

2023-2024

- In-depth Understanding of Network Security Management: Concepts and processes for establishing, monitoring, auditing, and continuously improving information security within an organization (ISMS development, risk analysis, security strategies, and ISO 2700x family standards)
- Focus Areas: Application security (secure communication, certificates, signatures, encryption), system and network security (firewalls, malware protection, and intrusion detection), crisis/process/incident management, and preventive security
- Practical Component (Hacking Lab): Simulation of attack scenarios and development of countermeasures

##### Certificate of Advanced Studies in Statistical Data Analysis and Data Visualization

2023

- Fundamentals of probability theory as well as descriptive and inferential statistics and their applications (with the use of R & Python), with which the most important statistical methods can be applied to solve real-world problems and to identify higher-level relationships (model building, regression and time series analysis, explorative data analysis)
- Using data visualization methods to recognize and convincingly convey the meaning of data (visual representations, animations and interactive graphics, evaluation of visualizations)

##### Certificate of Advanced Studies in Machine Learning

2022-2023

- Concepts of Machine Learning Technologies & Methodologies (Information Retrieval, Natural Language Processing, Recommender Systems)
- Classification of data (Naive Bayesfilter e.g. Spam-Filter, Decision Trees, Random Forests, Support Vector Machines, Neural Networks)
- Feature engineering and preprocessing of data

##### Certificate of Advanced Studies in Big Data

2022

- Concepts of Big Data Technologies & Methodologies (such as Apache Hadoop, Apache Kafka, Apache Cassandra, Apache Solr, Apache Spark), NoSQL, Document Stores, Object Stores
- Setup and Configuration of a small Big Data Cluster (Hadoop/YARN, Cassandra, Spark, Zeppelin) on a local MacBook with Parallels and 5 virtualized Ubuntu Server machines.
- Implementation of a real-time data stream from the Twitter API v2 with pyspark into a mongoDB to assess the tweet behaviour during governmental, environmental, or social crises.

- Computer Science, Statistics, Programming, Mathematics, Medical Terminologies and Classifications, Project Management, Ethics, Anatomy and Pathology, Hospital processes and patient pathways
- Achievements:
  - “Prix d’excellence” for the best degree “Silver” in 2015
  - “Prix d’excellence” for the best concept in the bachelor thesis in supply chain management (medication)

**OTHER RELEVANT COURSES**

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**Trivadis Training** Zurich  
Performance Tuning and Optimizing SQL Databases (5 days) 2021

- Official Microsoft Course (M-10987)
- Performance Monitoring, Scheduler, Wait Types, Indexing, Query Plan, Caching, Query Optimizing, I/O Concepts, Concurrency, Transactions, Isolation Levels

**University Hospital of Zurich** Zurich  
Leadership & Communication (7 days) 2020

- Communication skills, pressure handling, conflict resolution, employee engagement, delegation, feedback culture, change management, resource/time/budget planning

**Trivadis Training** Zurich  
Implementing a SQL Data Warehouse (5 days) 2019

- Official Microsoft Course (M-20767)
- Introduction to Data Warehousing, Planning / Designing / Implementing a Data Warehouse, ETL Solutions, Data Quality, Master Data Management, SQL Server Integration Services

**Udacity** Online  
Nanodegree Data Analysis (2 months, 5-10 hrs/week) 2019

- Practical Statistics Apply inferential statistics and probability to important, real-world scenarios, such as analyzing A/B tests and building supervised learning models
- Data Wrangling, gathering, assessing, and cleaning data. Use of Python to wrangle data programmatically and preparing it for deeper analysis.
- Data Visualization with Python. Apply visualization principles to the data analysis process. Explore data visually at multiple levels to find insights and create a compelling story.

**Udacity** Online  
Nanodegree Data Streaming (2 months, 5-10 hrs/week) 2019

- Fundamentals of stream processing, including how to work with the Apache Kafka ecosystem, data schemas, Apache Avro, Kafka Connect and REST proxy, KSQL, and Faust Stream Processing
- Build real-time analytics applications
- Understand the dimensions of Spark streaming, ingest streaming data to Apache Spark Structured Streaming, and integrate Spark streams into Kafka

**University Hospital of Zurich** Zurich  
Good Clinical Practice (3 days) 2018

- Concepts, principles, regulations, and guidelines for designing, conducting, and reporting (e.g., safety data, accrual reports, study status, protocol deviations, unanticipated problems, or final data) clinical trials and other clinical research projects.

**LANGUAGES & INTERESTS**

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**Languages:** German (native), English (fluent), French (proficient)

**Interests:** Sports, Hiking, Technology, Racing Pigeons