Vaibhav **Kulkarni**

Data Engineering Lead (System Architecture | Applied Machine Learning | System Security) · PhD - Information Systems

Lausanne - Switzerland

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Work Experience

Debiopharm *Lausanne, Switzerland*

Data Engineering Lead *July 2022 - Present*

- Architect & implement a validated enterprise-data-warehouse solution to collect-harmonize-process clinical data
- Build an entity-extraction & search engine to construct knowledge-graphs & perform trend-monitoring & analysis
- Conduct due-diligence of the technical stacks of AI-based startups to aid digital health investment decision

SOPHiA Genetics *Lausanne, Switzerland*

Senior Data Engineer *April 2021 - Present*

- Scalable infrastructure development for optimal extraction, transformation, & loading of large-complex datasets
- Analytical tool development for data-pipelines to provide actionable insights into business performance metrics
- API & CLI tools development to expose database functionalities; Formal specification write-ups for requirements

GenLots *Lausanne, Switzerland*

Software Engineer | Research & Development Lead *Sept. 2019 - Mar. 2021*

- Implemented & scaled microservices-based architecture to ingest & serve client data to our production ML service
- Optimized(C/C++ bindings) & removed bottlenecks in the machine-learning service, shipped end-to-end features
- Developed reporting & logging tools to automate client delivery services, Led & supervised industrial R&D projects

Distributed Object Programming Lab *Lausanne, Switzerland*

Research Scientist *Nov. 2015 - Aug. 2019*

- Implemented an infrastructure to load high-frequency streaming public transport ridership data to a relational DB
- Implemented a supervised ML-based service to minimize ticket-free riding on Lausanne public transport network
- Led a large-scale open geospatial data collection campaign; Worked with the team to implement backend system

ETH Zürich *Zürich, Switzerland*

Project Intern *Jan. 2015 - Aug. 2015*

- Implemented software-defined-radio based platform to generate repeatable & controllable interference patterns
- Deployed the platform on open IoT testbeds; Designed tools & APIs to control & perform automated benchmarking

BOLT IoT *Goa, India*

Embedded Systems Engineer *Aug. 2011 - Aug. 2013*

- Designed & optimized PCB layouts of embedded platforms for robotics & IoT applications; Set-up testing strategies
- Implemented tools & applications to benchmark platform performance; Led client support & troubleshooting teams

Education

University of Lausanne *Lausanne, Switzerland*

PhD, Computer Science *Nov. 2015 - Aug. 2019*

Thesis: Information Systems for Privacy-Aware Machine Learning

Technische Universiteit Eindhoven *Eindhoven, Netherlands*

MS, Embedded Systems (Graduated with Cum Laude) *Aug. 2014 - Aug. 2015*

Technische Universität Berlin *Berlin, Germany*

MS, Information & Communication Technology (Graduated with Honours) *Feb. 2013 - Aug. 2014*

Goa University *Goa, India*

BS, Electronics & Telecommunication Engineering (Graduated with Honours) *Aug. 2008 - Jun. 2012*

Skills & Competencies

- **OO-Programming, Scripting, Test-driven Development:** Java, Python, C/C++, Bash (6 years); Scala, Javascript (3 years); JUnit, pytest
- **Database Development:** SQL, PostgreSQL, MySQL (5 years); SQLite, MongoDB, Redis, Elasticsearch (2 years), pgAdmin (debugging tools)
- **Microservices-driven Architecture:** Docker-compose, Kubernetes, RabbitMQ, Kafka, Flask, Spring, Jersey, Airflow, AWS, Azure (4 years)
- **Observability, Logging, CI/CD:** Elasticsearch-Kibana-Logstash stack (2 years); Setting Gitlab/Jenkins/Bitbucket CI/CD pipelines (3 years)
- **ML & Data Science Stack:** NumPy, SciPy, pandas, Dask, scikit-learn, TensorFlow, Keras, R (4 years), Apace Spark/Spark streaming (2 years)
- **Version Control & Data Visualisation:** Git, SVN, Jetbrains Toolbox (6 years); matplotlib, seaborn, Tableau, D3, deck.gl, Folium (4 years)
- **Security Audit Tools & Project Management:** npm-audit, kubeaudit, docker-bench-security, Bandit, Git-Secrets (2 years); Atlassian suite
- **Languages**: English (Fluent), French (working proficiency), German (elementary proficiency), Hindi (Fluent), Marathi & Konkani (Native)