Luke J. Pereira

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Employment

The RNAlab - UofT MoGen *(Research Software Engineer, ML Engineer)*   **Mar 2023 - Jan 2025**

- Contributed to largest genomic k-mer search engine: Project involved assembling & indexing > 50 petabases of sequences in the Sequence Read Archive (SRA) and mining metadata for queries. `https://logan-search.org/`
- AI4Science: LLM research agent workflows, graph machine learning, GraphRAG, MCP, & AI safety using motifs and metadata over entire SRA to accelerate human-cancer-virus scientific discoveries: `https://openvirome.com/`
- Contributed to open-source app for publicly sharing and citing critical microbial genomes: `https://loculus.org/`

Amazon *(Software Development Engineer)*   **March 2021 - April 2022**

- Full-stack development to support inbound transportation initiatives within the Fulfillment by Amazon organization. Worked on Java microservices, React UIs, data warehouse pipelines, infrastructure and DevOps.
- Led project for managing disruptions and updates to in-progress shipments. Created low-level design and implemented feature changes within complex legacy architecture for tendering and scheduling truck deliveries.
- Led projects for the migration and launch of two applications (shipment tracking and seller settings pages) from legacy Perl Mason to new React UI and Java REST APIs while improving test coverage and code maintainability.

BenchSci *(Full Stack Software Engineer)*   **July 2017 - December 2019**

- Early member and core contributor to ML reagent search engine used by scientists at top pharmaceutical companies.
- Contributed to web app, rewriting ElasticSearch API, decreasing some response times by 10x and improving test coverage and maintainability. DevOps related to ML bioinformatics pipeline and Neo4j Graph DB.

Education

University of Toronto *(Honours Bachelor of Science)*   **September 2015 - April 2020**
Computer Science and Mathematics Double Major   Final Year GPA: 3.75

York University *(Art Fundamentals Certificate)*   **January 2012 - August 2013**

Personal Projects

Animi   `https://www.animiapp.com/`
Technical cofounder, developed mobile and web app for mental health focused non-profit with over 35k users.

CloudFund   `http://bit.ly/3U0T32A`
Crowdfund cloud resources and manage deployments using React, Flask, Stripe, Kubernetes, and the GitHub API.

Skills

Languages and Frameworks	Database Technologies
Python, Java, Golang, NodeJS, C/C++, LISP	PSQL, Dynamo, RDS, ElasticSearch, Neo4J, Mongo
ES6 JS, React, Redux, Sagas, Selectors	**Cloud & Infrastructure**
REST, Flask, gRPC, GraphQL	AWS, GCP, Azure, Docker, Kubernetes, Serverless
TensorFlow, Pytorch, sklearn, numpy, R	Terraform, Ansible, Envoy, OpenCensus

Other Notable Courses and Knowledge   LaTeX notebooks: `https://git.io/JfwkR`

- **Computer Science:** Advanced Data Structures & Algorithms, SCRUM & other SDLC, Information Security, Distributed Systems, DevOps, Git, Unix, Performance Analysis, Stochastic Networks & Queuing Theory, Databases, OS & Computer Organization
- **AI and ML:** Machine Learning Specialization (Coursera), Practical Deep Learning for Coders (fast.ai), Neural Networks for Machine Learning (G. Hinton - UofT), Geometric Deep Learning (M. Bronstein - Pescara), AI Alignment (R. Grosse), Mech Interp (Misc)
- **Mathematics:** Statistics & Probability Theory, Differential Geometry, Gauge Theory, Algebraic Geometry, Combinatorics, Number Theory, Advanced Graph Theory, Multivariable Calculus, Differential Equations (ODE, PDE), Dynamical Systems, Linear Algebra, Abstract Algebra, Topology, Group Theory, Category Theory