

# JOHN HARTQUIST

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Software Engineer | Full-stack, Machine Learning  
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## PROFILE

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Full-stack software engineer with expertise in fintech and machine learning. Skilled in building data pipelines and web applications using a range of technologies. Proven track record of delivering high-quality solutions that meet business needs. Lifelong learner with a strong desire to continuously improve and stay current with industry trends and techniques.

## EXPERIENCE

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Sept. 2021 –  
Present

**Lowe's Innovation Labs**, *Senior Software Engineer*

- Created prototype of AR experience for measurement estimation and virtual object simulation in user's spaces (Unity, C#, Swift, ML-Agents).
- Researched and prototyped with various graph database technologies for storing and manipulating home data from various data sources.
- Developed web app for inspecting and ingesting 3D assets, along with custom open-source product viewer using React, TypeScript, Babylon.js.

April 2019 –  
June 2021

**Sigma IQ**, *Senior Software Engineer, ML Platform*

- Developed financial reconciliation algorithm, transforming research prototype into production grade system in Python.
- Migrated parts of ML pipeline to Spark & Scala achieving >100x speedups.
- Wrote tools for managing datasets, training models, and evaluating performance improvements over time.
- Built full-stack platform for running Jupyter notebooks in production using TypeScript, React, Next.js, Docker, and GCP.

Jan. 2018 –  
April 2019

*Professional Development: ML + Audio*

- Self-directed study of machine learning, deep learning, linear algebra, and data science through books, courses, and papers.
- Placed in top 7% in a Kaggle competition for audio classification by fine-tuning ResNet models on spectrograms with PyTorch on GCP.
- Built library to load audio into fastai, batching spectral transforms and data augmentation on the GPU for performance.

April 2015 –  
Dec. 2017

**Ruvixx Inc**, *Senior Software Engineer*

- Developed enterprise web platform used to manage licensing and brand protection for large clients including HDMI, Dolby, and Philips.
- Engineered data model, optimized SQL queries for complex reports, and developed real-time dashboards using Ruby on Rails and Angular/JavaScript in multi-tenant architecture.
- Managed bi-weekly production releases, data migrations, and automated test suites.

- May 2014 – April 2015      **Emjoyment, Software Engineer**
- Wrote iOS app in Objective-C for “Tinder for Jobs” startup.
  - Developed features for backend API and web app using Python & Django.
- July 2012 – May 2014      **Amazon.com, Software Development Engineer**
- Worked on Royalties and Financials team to calculate royalties for independent publishers on CreateSpace platform.
  - Built internal Java/Spring services with test driven development, collaborating across many teams.
  - Supported feature requests and maintenance for legacy packages.
- Jan. 2011 – Jan. 2012      **iFixit.com, Software Developer**
- Developed website features using PHP, MySQL, JavaScript, and CSS, ensuring they worked consistently across supported browsers.
  - Created new drag-and-drop file uploader for uploading and validating image assets.

## EDUCATION

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- 2007 – 2012      California Polytechnic State University, *San Luis Obispo, CA*
- Master of Science in Computer Science
  - Bachelor of Science in Computer Science
- Thesis: Real-time Musical Analysis of Polyphonic Guitar Audio

## EXPERTISE

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|---------------------------|-------------------------------|
| • Machine Learning        | • TensorFlow, PyTorch         |
| • Data Analysis           | • NumPy, pandas               |
| • Rapid Prototyping       | • Svelte, React, Vue          |
| • Data Visualization      | • D3.js, Three.js, Babylon.js |
| • Continuous Integration  | • GCP, AWS, Git, Docker       |
| • Functional Programming  | • Rust, Scala                 |
| • Test-driven Development | • Figma, CSS, SCSS            |

## TECHNICAL SIDE PROJECTS

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- Experimental fine-tuning of ResNet-18 for audio classification
- FastAI audio module for generating spectrograms on GPU at training time
- Real-time audio analysis & visualization; Three.js, Shaders, Web Audio API
- Rubik’s Cube solver using reinforcement learning algorithms
- Hackathon finalist: web app for analyzing Ethereum transactions for MEV
- Implemented minimal Ethereum Virtual Machine (EVM) in Rust