

# Alexander Moore-Niemi

*Software Engineer*

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## Keywords

Rust, Python, Faiss, Elasticsearch, Lucene, Unix, AWS, Spark, Kubernetes

## Professional Experience

- 2021 – **Senior Software Engineer III**, AMAZON, Boston
  - Lead engineer on Web search for AGI. Billions-scale fully neural search engine.
  - 2024 Rewrote internal engine code to support per-document mutability and improve time-sensitive recall
  - 2024 Led scaling of index into tens of billions range across online, offline, and control plane
  - 2023 Training data pipeline lead; scaled data and training compute to double recall
  - 2022 Launch of ANN indices in Eureka to serve dense and hybrid retrieval
  - 2021 Launch of "Eureka," custom Rust search engine on Amazon ECS, led operational readiness and security review. Scaled team from 2 people to 20.
- 2017 – 2021 **Software Engineer II**, AMAZON, Boston
  - 2021 Implementation of CloudAuth (Amazon internal distributed OAuth protocol) client in Rust, used by dozens of internal teams as of 2025
  - 2020 Paired with Applied Scientist on port of PISA cpp library into Rust with deployment on Amazon EKS (Kubernetes) as foundation of custom search engine
  - 2020 Paired with Applied Scientist on spam filtering pipeline. Presented paper on spam filtering in AMLC (Amazon Machine-Learning Conference), 2nd author.
  - 2020 Used custom "hyper-parameter tuning" to cut cost (millions of dollars per year) of Elasticsearch infrastructure while improving performance; enabled us to quadruple index size.
  - 2020 Spark infrastructure for indexing hundreds of millions of documents.
- 2017 – 2019 Work on configurable DAG of RPC services in Java and Python, serving 1000-10,000 TPS.
- 2016 – 2017 **Software Developer**, RAIZLABS, Boston
  - Consultancy. Building scalable, performant cloud REST APIs to serve iOS apps.
- 2014 – 2016 **Software Engineer**, ZIPCAR, Boston
  - Building Ruby and Java services. On call and release engineer.
  - 2016 User and authorization service
  - 2015 Secure mobile vehicle unlock
  - 2014 "Fleetsharing" with Avis cars while also improving vehicle availability

## Education

- 2019 **Certificate: Machine Learning University ("MLU") Math**, Amazon, Boston
- 2012 **Certificate: Computation and Algorithms**, MIT, Boston