ERIK LOUIE

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PROFILE

With 12 years of experience in software engineering, including roles as a tech lead at Apple and startups Gridware and Nana, I have developed an expertise in integrating distributed systems, machine learning, and data infrastructure.

WORK EXPERIENCE

Senior Software Engineer
January 2022 - Current
Gridware, Inc.
Walnut Creek, CA

- Architected a data science platform for scientific analysis over 50 TBs of time series data.
- Advised science team on convolutional neural networks for IoT sensor stream anomaly detection.
- Led the re-architecture of data infrastructure to reduce queries from 200-300ms to under 50ms.
- Built analytics data pipelines with Spark for near-real time device health analysis of 4000 devices.

ML Engineer
Aug 2021 – Oct 2022
Nana Technologies, Inc.
Oakland, CA

- Led the development of a machine learning-based recommender system for part approvals. This removed manual validation on 1/3 of jobs, reducing average job completion by 1 day from 2 weeks.
- Architected and deployed the foundation of the data warehouse using Databricks and Spark, which was used for incremental model training, validation on business metrics, and deployment.
- Fostered an environment of mentorship and growth, and established engineering best practices.
- Led the automation of business analytics and metrics, unveiling previously obscured trends in gross profit margins per job type, empowering the operations team to identify and eliminate low- or negative-profit jobs, increasing profit margins by more than 5%.

Researcher, Data Driven Air Quality
Jan 2020 – April 2021
Prof. Max Zhang's reasearch group, Cornell University
Ithaca, NY

- Trained neural networks with grid search to predict city air pollution concentration with 95% R^2.
- Applied transfer learning methods and fine-tuning to adapt models to cities for few-shot learning.

Researcher, Learning to Cluster
Sept 2020 – April 2021
Prof. David Bindel's research group, Cornell University
Ithaca, NY

- Applied PCA / MOD and interpolation to high-dimensional graph clustering approximation.

Software Engineer
June 2014 – Jan 2020
iWork, Apple, Inc.
Pittsburgh, PA

- Team Lead, Backend Services Team (2017 - 2019): led a geographically dispersed team of four, focusing on the development and modernization of iWork's cloud-based distributed infrastructure, enhancing system reliability, scalability, and performance.
- Led the architectural design and implementation of a direct-to-iBookstore publishing infrastructure with Kafka, Redis, and Apache Zookeeper, increasing the number of books published by thousands.
- Introduced the containerization of services using Docker and Kubernetes, transitioning from on-premise servers to a scalable cloud-based system, preventing overflow cascading failures and enabling dynamic scaling to meet demand surges.
- Participated in machine learning working groups and workshops, presenting ML opportunities to management.
- Collaborated with other team managers to triage incoming requests and feature development, ensuring alignment with strategic objectives and efficient resource allocation.
- Gained experience with Kubernetes, Kafka, Apache Cassandra, Redis, and contributed to the adoption of these technologies in iWork's ecosystem to support larger documents, reduce latency, and improve overall system performance.

Software Engineer I
Amazon, Inc.
Feb 2012 – May 2014
Seattle, WA

On Amazon's Digital Music team, I contributed to enhancing music discovery and user engagement:
- Developed infrastructure for training an ML recommender system for 'smart playlists,' applying user listening data to generate personalized playlists.
- Contributed to the development of a music metadata service aggregator, optimizing data retrieval and reducing page latency by up to 300 ms.
- Transitioned to a more cost-effective big data storage solution, reducing storage costs by 33% and leveraging technologies such as DynamoDB, Hive, and AWS EMR for scalable data processing.
- Mentored a jr. engineer in designing recommendation de-duplication by employing similarity metrics.

Data Mining
Pitney Bowes
Jan 2011 – Apr 2011
Ansonia, CT

- Productionized an end-to-end regression-based data mining system on geographic business data.

Instructional Assistant
University of Waterloo
Sept 2009 – Dec 2009
Waterloo, ON

- Taught and prepared course material for a course on software abstraction and specification.

Embedded Device Developer, Undergrad Research Assistant
University of Waterloo
Jan 2009 – Aug 2009
Waterloo, ON

- Integrated a smart-home energy management system with the BACnet network protocol.

Kernel Developer
Xandros, Inc.
May 2008 – Aug 2008
Bells Corners, ON

- Profiled and optimized OS booting, including the windowing system and kernel booting.

Linux Product Developer
AMD, Inc.
Jan 2007 – Dec 2007
Markham, ON

- Improved graphics driver performance by resolving issues such as tearing and translation anomalies.

EDUCATION

Cornell University
Masters (Computer Science)
Jan 2020 – Dec 2020
Ithaca, NY

University of Waterloo
B. Math (Computer Science)
Sept 2006 – Dec 2011
Waterloo, ON

TECHNICAL SKILLS

Languages: Python, Spark SQL, Java, C++
ML Frameworks: Keras, Pytorch, Spark MLLib, TensorFlow, Scikit Learn, nltk
Service Frameworks: Kubernetes, Redis, Kafka, Docker, ActiveMQ, Node.js
Libraries: PySpark, Pandas, NumPy, Matplotlib, Pillow

VOLUNTEER EXPERIENCE

Animator
Junior Youth Spiritual Empowerment Program
2014 – 2021
Pittsburgh, PA; Ithaca, NY

- Empowered and mentored junior youth to develop and conduct service activities.

Board Member / Vice President / HR Committee Chair
Waterloo Cooperative Residence Inc. (WCRI)
Oct 2010 – Sept 2011
Waterloo, ON

PROJECTS

Apple, Embedded Videos announcement: https://bit.ly/3kQ2HBz
Apple, Publishing Books: https://apple.co/3kV9l9C
Apple, Keynote Live announcement: https://bit.ly/3kWudNM
Amazon, Prime Playlist annoucement: https://bwnews.pr/35U5ci1