Aki Ariga

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Principal "Machine Learning in Production" Engineer

Customer-centered Principal Machine Learning Engineer with over 15 years of experience at both startups and large enterprises. Proven technical architect specializing in designing, implementing, and deploying scalable MLOps and recommendation systems. An experienced engineering lead and backend engineer dedicated to delivering customer value through deep, cross-team collaboration with product, UX, and sales.

TECHNICAL PROFICIENCIES

Languages: Python, Ruby, Kotlin, JavaScript, R, C/C++, Java
ML, Data & Backend Frameworks: scikit-learn, LightGBM, TensorFlow, RecTools, PySpark, Trino, FastAPI, Ruby on Rails
DevOps & MLOps: Terraform, Kubernetes, Docker

PROFESSIONAL EXPERIENCE

Principal Software Engineer | Treasure Data Tokyo, Japan & Vancouver, Canada | August 2018 – Present
Leading machine learning product development as a technical architect. Responsible for writing technical roadmaps, defining requirements with Product Managers, designing end-to-end ML architectures, and leading implementation by ICs.

- Optimized legacy RFM implementations, achieving a **100x performance increase** and scaling support to 1 billion users.
- Led a "next best product" recommendation project from initial PoC and logic implementation to full production release, supporting 1 billion users.
- Led the re-design of a scalable ML platform, designing the high-level architecture to enable flexible accelerators and scalable ML jobs.
- Implemented a container-based Python execution system for ML solutions using Python frameworks and PySpark.

Technical Consultant (Part-time) | LegalOn Technologies Tokyo, Japan | January 2020 – March 2021

- Consulted on the architecture of a next-generation, Kubernetes-based machine learning platform.
- Advised on MLOps capabilities to achieve more frequent experiments, model serving, and model management, which resulted in the firm's architecture being presented at an academic workshop.

Sales Engineer | Cloudera Tokyo, Japan | March 2016 – June 2018
Engaged clients to enhance data-driven use cases with machine learning techniques and developed prototypes of ML demo applications.

- Authored the book "Machine Learning at Work" (O'Reilly Japan, 2017).
- Implemented six data science and ML demo use cases, contributing to open-source projects (like sparklyr and fastFM) to enhance product capabilities.
- Presented at the Strata Data Conference in Singapore (2017).

Software Engineer | Cookpad Inc. Tokyo, Japan | *July 2013 - March 2016*
Designed and implemented the company's core recipe recommendation service using machine learning and NLP on a Ruby on Rails application.

- The recommendation service became the **highest-paid user acquisition feature** for six consecutive months.
- Developed and published a word2vec model based on a recipe corpus for academic use, resulting in an interview with a leading Japanese technical magazine.

- Organized a machine learning hackathon that led to the hiring of three graduate students.

Research Engineer | Toshiba Corporation *April 2008 - July 2013*
Researched and built systems for spoken dialogue, NLP, search, and big data.

- Created a TV scene genre classifier from closed captions that achieved **over 80% precision** and was released as a production system feature.
- The work on the classifier resulted in a credit for a **new patent**.
- Designed and built a distributed web crawler (Apache Nutch, Hadoop) to collect **two hundred million websites** for a text corpus.
- Constructed large-scale regression trees using MapReduce on **100GB of training data** to identify anomalies in factory sensor data.

EDUCATION & CREDENTIALS

Master of Engineering in Electrical Engineering and Computer Science (2008)
Nagoya University School of Engineering, Nagoya, Japan
Thesis: "Mental Tension Detection in the Speech Based on Physiological Monitoring."

Bachelor of Engineering in Electrical Engineering and Computer Science (2006)
Nagoya University School of Engineering, Nagoya, Japan

Languages: Japanese (Native), English (Professional proficiency; IELTS 7.0)

Publications, Patents & Presentations

- **Patents:** Recipient of **14 Patents** (10 in Japan, 4 in the United States).
- **Books:**
  - *Machine Learning at Work 2nd Edition*, O'Reilly Japan, 2021.
  - *Machine Learning at Work*, O'Reilly Japan, 2016.
  - *An introduction of MLOps*, Lambda Note, Vol. 1, No. 1, 2019.
- **Selected Presentations & Papers:**
  - Presenter, The 22nd Information-Based Induction Science Workshop (Nagoya, 2019).
  - Presenter, Strata Data Conference (Singapore, 2017).
  - "Development of TV Program Searching System for Natural Sentences" (NLP Meetup, 2010).
  - "Detecting a Genre of TV Programs using a Non-Semantic Frame Keyword on TV Program Searching by Natural Language" (The Japanese Society for Artificial Intelligence, 2009).
  - "Mental Tension Detection in the Speech based on Physiological Monitoring" (IEEE International Conference, 2007).

Awards & Community Leadership

- **Awards:**
  - Cloudera APJ SE Award Grow with Cloudera (Dec 2017).
  - Cookpad Staff Award, Member of R&D Team (Jan 2016).
- **Community:**
  - Founder: kawasaki.rb and Machine Learning Casual Talks meetups.
  - Co-organizer, ML Infrastructure and Productionization Working Group, MLSE (2018-2021).
  - Public Relations Committee Member, The Japanese Society for Artificial Intelligence (2011-2013).
  - Co-organizer of ML Infrastructure and Productionization Working Group(2018-2021), MLSE: SIG Machine Learning Systems Engineering