Robert **Balayan**

📍 Nerima-ku Tokyo-to, Japan | 📱 +81 80 7802 6118 | ✉ robert@balayanr.com | 🔗 ⚙ balayanr

AI and Full Stack Engineer in Tokyo, Japan. Working on everything from backend (Django + DRF) to frontend (React.js) to CI/CD on AWS. Previously worked in Machine Learning and Data Engineering.

summary

- Experienced in architecting and developing web applications with React and Django Rest Framework. Designed and implemented ETL pipelines and web scrapers with a custom-made framework. Academic experience with Machine Learning, Natural Language Processing and Computational Linguistics, General AI Theory, and Knowledge Representation.
- Programming Languages: Python, JavaScript (ES6), SQL, PL/pgSQL, C, Java, Matlab, R.
- Natural Languages: English (Native), Russian (Native), Armenian (Conversational), Japanese (Basic).
- Frameworks and tools: Django + Django REST Framework, JavaScript (ES6) + React, AWS, NumPy, TensorFlow, keras, Luigi, Selenium, BeautifulSoup, Kubernetes, Docker, Hadoop, NLTK, LaTeX, Draw.io for ERD design, GitHub for version control, MkDocs.

work experience

December 2020 - Now

PRINCIPAL ENGINEER
Genba Systems K.K., Tokyo, Japan (ゲンバシステムズ株式会社)
Lead development of a social network for Meiji University's Alumni Association. Handled everything from specification and design to frontend and backend development (React.js and Django REST Framework on AWS). Was responsible for architecting the entire project from the top.
Mentored and trained an engineer to become a Django developer and join the Meiji project.
Lead backend development and deployment of Otokun, a mobile application for locating campaigns at nearby businesses. The project utilized web scraping, Django + DRF, and Google Maps API. Worked on developing a client-facing administrative portal using React.
Relevant skills: Django + Django REST Framework, React.js (+ HTML and CSS), AWS, PostgreSQL, Mentorship, Web Architecture

May 2020 - November 2020

LEAD SOFTWARE ENGINEER
K.K. TREE, Osaka, Japan (株式会社ＴＲＥＥ)
Lead the team handling web-scraping. Designed an ETL pipeline around the Luigi framework, which allowed us to maximize server utilization with great scalability as most tasks can run in parallel.
Designed and implemented a Python framework that allowed for new scrapers to be created in minutes with less than 20 LOC while still providing great flexibility for complex websites.
Relevant skills: Python, Web Scraping, Luigi, Selenium, AWS, PostgreSQL, ETL

November 2019 - May 2020

FREELANCE SOFTWARE ENGINEER

During my tenure at Kuon Technologies I worked with K.K. TREE on freelance basis before joining them full-time, with a goal of learning new tools. Projects during this period include Database design for a system managing a retirement facility and a system that scraped job listings and displayed them on the client's page.
Relevant skills: Python, AWS, PostgreSQL, Web Architecture

April 2018 - February 2020

LEAD AI ENGINEER
Kuon Technologies, Osaka, Japan (クオンテクノロジーズ株式会社)
Lead engineer of the AI of the company's main product - beepShift, a scheduling AI that assigns part-time employees to the positions required by different businesses. Modelled the problem as a Constraint Satisfaction Problem, which included constraints like various position requirements, employee availabilities and skills, Labor Laws, etc.
Handled everything related to the AI side of the project: from database architecture and API design to AI development and deployment.
Consulted the ownership on viability of various AI projects.
Relevant skills: Python, PostgreSQL, AWS, Constraint Programming, ETL

Projects are explained in greater detail in a section below.

education

2014-2017	**HONOURS BACHELOR OF SCIENCE**

University of Toronto, Canada
Computer Science Specialist with Focus in Artificial Intelligence
Fields studied:

- Machine Learning, Convolutional and Recurrent Neural Networks
- Computational Linguistics and Formal languages, Natural Language Processing, Phonetics
- General AI theory, Knowledge Representation and Reasoning
- Graph Theory and Algorithm Design
- Statistics, Linear Algebra and Multivariable Calculus

Relevant Projects:

- CSC412 Solo Research Project: Exploiting Structure For Classification Of Handwritten Japanese Characters
- CSC384 Group Research Project: CSP Algorithm Analysis
- CSC343 Solo Project: SQL-based course recommendation engine

2012-2014 ACCELERATED HIGH SCHOOL COMPLETION & UNIVERSITY TRANSFER PROGRAM

Columbia College, Vancouver, Canada
Completed grades 11 and 12 in two semesters and took first year courses in preparation to transfer to University of Toronto

- Studied basic Computer Science, Calculus and Introduction to Physics
- Created Video Gaming Club and hosted weekly meetings for 2 years

2017- CERTIFICATIONS AND ONLINE COURSES

Coursera, Academind
Coursera: Hadoop Platform and Application Framework, License D6W6PEBPALWW
Academind: JavaScript - The Complete Guide 2020 (Beginner + Advanced); React - The Complete Guide (incl Hooks, React Router, Redux); CSS - The Complete Guide 2021 (incl. Flexbox, Grid and Sass); Python Django - The Practical Guide

skills and experiences

- 5+ working years of experience **programming in Python**: from RESTful backend development in Django REST Framework to Neural Networks and Deep Learning using Numpy, TensorFlow and Keras to Chart parsing and word sense disambiguation using NLTK to Data Mining with Selenium and BeautifulSoup. This is my language of choice for work, personal projects and research.
- 3 years of experience with **JavaScript and React**. When it comes to front end development, React is my framework of choice. Used it to write complex websites from scratch, as well as using templates and component libraries to quickly create usable websites for clients. I always try to use the most recent technologies, so I'm experienced with Functional Components, Hooks and Contexts in React, and my JavaScript experience is predominantly in ES6.
- Web Software Architecture experience - for all projects I saw through their entirety I was responsible for choosing the technology stack and deployment strategy. Depending on the project's scale and expected usage I have deployed projects as server-less, elastic cloud and cloud swarms. Made diagrams, specification documents and MkDocs documentation. Mentored an engineer to become a Django developer.
- Experience with a wide variety of services across **AWS**, specifically EC2, S3, RDS and DynamoDB, ECS + ECR, Lambda, CloudFront, SNS, CodePipeline and more. Used it for both professional project deployment and temporary cloud compute for researching Machine Learning models while in University.
- Experience making discriminative models for image classification, voice recognition and language modelling. Interest in Natural Language Processing and Computational linguistics. Academic experience with a wide variety of machine learning and AI technologies.
- Experience designing relational databases and implementing them in PostgreSQL, MySQL and SQLite. Academic experience with HDFS and HBase as part of Hadoop Platform and Application Framework certification.
- Experience formatting publications and documents using LaTeX.

projects

June 2022 - August 2023
Otokun @ Genba Systems K.K.
Our company was hired by K.K. Ology to work on their mobile application called Otokun. I worked on implementing the backend based on the specification provided by the customer, as well as the web portal used by advertisers. For the API I used Django REST Framework, which integrated with Google Maps API to get places data, then match it with chain data and decorate the data with campaign information from our system. Was in constant contact with external mobile and web developers to ensure everybody was up to speed and everything worked as expected.
Deployed on AWS (ECS, Database on EC2); Github and CodeBuild for CI/CD.

December 2020 - June 2022
Meiji University Graduate Association Social Network @ Genba Systems K.K.
The project's goal was to provide Graduate Associations of different regions with a single platform where they could reach their members, as well as provide members with an opportunity to get in touch with any other graduate. Future goals include providing a jobs platform that could be utilized by recruiters and integrating with the Meiji student services. I was responsible for taking CEO's ideas about the platform, designing a realistic specification around it, then implementing it. During this project we hired a recent University graduate, who I mentored to become a Django developer.
Currently the front end is a PWA implemented using React with an expectation that it will be ported to React Native in the future. The backend was implemented using Django REST Framework to allow for both Web and Mobile Applications to use a single API. Everything is deployed on AWS, with the PWA hosted on S3, the backend on ECS, and the Database on RDS, Github and CodeBuild for CI/CD.

February 2020 - November 2020
Web scraping @ K.K. Tree
Designed and implemented an ETL pipeline for a website that unifies listings from government tender websites. The project is designed around **Luigi**, which schedules tasks to maximize server utilization. Each task handled a different website: loaded and navigated the page with **Selenium**, parsed the data by locating elements with XPATHs and used **Tabula** and **PDFMiner** to extract data from PDFs. The data is then handed back to Luigi in CSV files to be inserted into the **PostgreSQL database** in batches to optimize load. **Psycopg2** is used to get data from the database, **Boto3** is used to talk to AWS S3 to store PDFs and screenshots.
Deployed on AWS EC2; Database is in PostgreSQL on AWS RDS; AWS S3 is used to store files for listings.

June 2018 - January 2020
beepShift @ Kuon Technologies
At Kuon Technologies I worked on creating an AI that would assign employees to shifts created by the manager. The shifts were represented as a step curve, with number of people required at each time. The AI would transform that into a Constraint Satisfaction Problem, with time constraints on employees (Overtime, maximum salary, etc) and on the shop (budget, position requirements). The model also allowed for managerial preferences, which the AI interpreted as a selection order via a heuristic function. Once the AI was ready, our customers provided us with text files with raw receipt printout data, which I had to parse and load into a database, perform feature selection and extraction from the parsed data and create a model that would predict the number of employees required to run the shop.

CSC412
Research Project: Exploiting Structure For Classification Of Handwritten Japanese Characters.
- Developed a parser for the Electrotechnical Laboratory datasets, which come incredibly compressed and required a bespoke decoding library.
- Tested 4 different architectures with 2 different goals: direct kanji classification and multilabel classification of radicals that make up the kanji.
- Used AWS EC2 p2.xlarge and c4.8xlarge instances to train the models in parallel.
- Compiled the report in LaTeX, generally following standards used for publications.
- Published all source code and the report on Github

interests and hobbies

Sports: I am an avid cyclist, gym junkie and hiker. I used to train with the University of Toronto Road Racing team and participate in various local cycling events. Hiked to the top of Mount Fuji, as well as many mountains in Kansai region.
Fashion: I have recently developed an interest in high fashion. Some of my favourite brands are Colina Strada, Maison Margiela, Acne Studios, Online Ceramics, EYTYS and Li-Ning. I would love to work with a fashion company and learn the trade.