Susumu Okazawa

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Experience

Savantic AB, Senior Data Scientist
Sweden
Aug 2020 – present

- Recommended as the most efficient developer that can deliver valuable machine learning solutions despite the short project duration
- Experienced with projects of all sizes and all ML phases
- Highly regarded not only for the coding skills, but also for the ability to prioritize tasks

TMI Associates, Patent Attorney
Japan
Oct 2016 – present

- Expanded business of patent prosecution by 200% in the field of machine learning and quantum computer
- Presented patent strategy in the field of machine learning to pharmaceutical company and IT startups
- Supervised 3 junior attorneys

HARUKA Patent & Trademark Attorneys, Patent Engineer
Japan
Apr 2013 – Oct 2016

- Documented more than 100 patent specifications of software, semiconductor device, etc.
- Assisted clients with obtaining more than 100 patents in Japan, the US, Europe, China, and Korea

Japan Society for the Promotion of Science, Researcher
Japan
Apr 2012 – Mar 2013

Education

PhD   **The Graduate University for Advanced Studies**, Physics
Japan
Apr 2008 – Mar 2013

- Thesis: Non-equilibrium aspects of the black hole thermodynamics
- Scholarships: Research Fellowship for Young Scientists

BS   **Tokyo Institute of Technology**, Physics
Japan
Apr 2004 – Mar 2008

Skills

Programming: Python, OpenAI, Transformers, PyTorch, FastAPI, Qdrant, Streamlit, Gradio, Apache Spark, Databricks, SQL, BigQuery, Kafka, Elasticsearch, Google Analytics, Power BI, Docker, Git, VS Code, Cursor, CI/CD, Agile, Scrum

Cloud Platforms: Microsoft Azure, Google Cloud, Amazon Web Services

Languages: English (fluent), Japanese (native)

Certifications

Certified ScrumMaster (CSM)
June 2024

Databricks - Data Science Professional
June 2021

Databricks - Delta Lake Essentials
June 2021

Japanese Patent Attorney
Apr 2016

Publications

Workload assessment: Time to emanate from accurate conclusions instead of preconceived notions
2023

Dan Hasson, Susumu Okazawa, Karin Villaume

10.1111/joop.12436 ⧉

Natural language processing as work support in project tendering   2022

Linda Cusumano, Rasmus Rempling, Robert Jockwer, Ricardo Alencar Saraiva, Mats Granath, Nilla Olsson, Susumu Okazawa

Extracurricular Activities

- 2024-05 - present: A board member of Japanese School Association in Stockholm

Projects

LLM Agents Development   May 2025 – present

Led the team to develop a backend for an agentic system integrated in the existing client's application.

- Delivered strong results in 2 days hackathon as a starting point
- Designed the architecture of the agentic system using MCP server
- **Azure OpenAI**, **FastAPI**, **OpenAI Agents SDK**, **MCP (Model Context Protocol)**, **Docker**
- *LLM agents*, *Agile*, *Hackathon*

Agentic Application Development   Jan 2025 – present

Developed an agentic application to interect with private data through chat.

- Developed agents system on top of an open source chat interface
- Led the project to deliver a progress in fast iterations
- **Azure OpenAI**, **Open Web UI**, **FastAPI**, **PydanticAI**, **BigQuery**, **Docker**
- *LLM agents*, *Agile*

LLM-based Document Generator   Jan 2025 – Mar 2025

Mentored a colleague to build a proof of concept application using ChatGPT for document generation.

- Built a RAG system to generate a document based on the past documents
- Led the project to deliver the proof of concept application in 2 months
- **Azure OpenAI**, **Gradio**, **Chroma**, **Docker**, **Microsoft Azure**
- *Retrieval Augmented Generation (RAG)*, *LLM agents*, *Agile*

Water Leakage Prediction   Oct 2024 – May 2025

Mentored a developer to get started with machine learning to predict water leakages in the water distribution network.

- Mentored a developer to create a machine learning model to predict water leakages in the water distribution network
- Predicted leak time and location based on the given network topology and the pressure sensor data
- **scikit-learn**, **SciPy**, **NumPy**, **plotly**
- *Exploratory data analysis*, *Data visualization*

Fruit Quality Assessment Device   Sept 2024 – Feb 2025

Led a team to develop hardware, GUI, and ML models for non-destructive fruit quality assessment.

- Facilitated communication to achieve the fastest and the best quality of delivery
- **Raspberry Pi**, **Sensors**, **3D printing**, **Python**
- *IoT*, *Infrared spectroscopy*, *Agile*, *Scrum*

RAG-based Chatbot   Sept 2024 – Nov 2024

Led a team to develop a chatbot prototype that generates answers based on internal documents.

- Mentoring new hires to get up and running as quickly as possible
- Created a CI/CD pipeline to automate container deployment to Azure
- **Azure OpenAI**, **Azure AI Search**, **Azure Document Intelligence**, **Azure App Service**, **Gradio**, **GitLab CI/CD**, **Docker**
- *Retrieval Augmented Generation (RAG)*, *Agile*, *Scrum*, *Code review*

LLM-based Consultant Profile Generation   Feb 2024 – Apr 2024

Supervised a master's thesis on generating consultant profiles using LLMs such as Mistral.

- Gave advice on open source vector databases and LLMs
- Supported setting up infrastructures such as Azure OpenAI and RunPod (serverless GPU)
- **Azure OpenAI**, **Qdrant**, **Mistral**, **Serverless GPU**

- *Retrieval Augmented Generation (RAG)*, *Prompt engineering*

Data Pipeline Modernization
May 2023 – June 2024

Developed and modernized data pipelines using Azure Databricks and CI/CD tools.

- Introduced several modern features of Databricks such as Unity Catalog, Delta Live Tables and Databricks Asset Bundles
- Developed DAX code for Power BI to process the data for dashboarding
- **Apache Spark**, **PySpark**, **SparkSQL**, **Databricks**, **Unity Catalog**, **Delta Live Tables**, **Databricks Asset Bundles**, **Github Actions**, **Power BI**, **DAX**
- *Data modeling*, *CI/CD*, *Agile*, *Scrum*

ChatGPT Document Generator
Apr 2023 – May 2023

Built a proof of concept application using ChatGPT for document generation and vector database for PDF embeddings.

- Built a vector database to store text embedding vectors extracted from PDF documents
- Developed the prompt for ChatGPT to include the relevant past document in the context
- **ChatGPT**, **Qdrant**, **Streamlit**, **Docker**, **Microsoft Azure**
- *Prompt engineering*, *Agile*

ChatGPT Workshop
May 2023 – May 2023

Delivered a one-day workshop on using ChatGPT with vector search, including Python and F# code samples.

- Prepared sample code in both Python and F# because the client mainly works on .NET
- **ChatGPT**, **.NET**, **F#**
- *Workshop*

Streaming Data Processing Research
Dec 2022 – Dec 2022

Explored streaming data processing using Apache Kafka for an internal hackathon.

- Prepared a stack of Confluent Kafka on an internal server for an internal hackathon
- Prepared an IoT device as a data source as well as a sample MQTT consumer
- **Apache Kafka**, **MQTT**, **Docker**
- *IoT*, *Hackathon*

LIA Internship Supervision
Sept 2022 – Nov 2022

Supervised a LIA (Lärande i Arbete) internship focused on practical machine learning and data analysis.

- Guided the interns on how to perform exploratory data analysis on the real data
- Provided advice on how to present findings to a broader audience
- **pandas**, **scikit-learn**, **plotly**
- *Exploratory data analysis*, *Code review*

Machine Translation API and ML Pipelines
Sept 2022 – Apr 2023

Developed a machine translation API, ML pipelines, and a dashboard for ChatGPT testing.

- Built the machine learning pipeline using Amazon SageMaker
- Built the translation API using FastAPI and Amazon Lambda
- **FastAPI**, **AWS SageMaker**, **AWS Lambda**, **Amazon ECR**, **Docker**
- *Machine translation*, *MLOps*, *Agile*

Mobile Device Location Estimation
Nov 2021 – June 2022

Developed ML models and algorithms for mobile device location estimation and statistics aggregation.

- Developed new machine learning models to estimate the location of mobile device based only on the ping time series
- Developed new gridding algorithms which are used in the aggregation of statistics
- Applied geospatial functions in BigQuery, taking care of the amount of data, which is a few hundred GB per day per country
- **BigQuery**, **OpenStreetMap**, **GeoPandas**, **NumPy**, **Shapely**, **NumPyro**, **PyStan**, **Google Cloud**, **Docker**
- *Exploratory data analysis*, *Geospatial analysis*, *Bayesian hierarchical model*, *Agile*

Physics Parameter Optimization
Feb 2022 – Apr 2022

Supported strategy and used Optuna for optimal physics parameter search in fluid property models.

- Suggested using Optuna to find the optimal physics parameters in the model which estimate the fluid properties flowing through pipe
- **Optuna**, **scikit-learn**, **SciPy**, **NumPy**, **pandas**
- *Exploratory data analysis*, *Hyper parameter tuning*

Travel Mode Detection Model   Sept 2021 – May 2022

Developed an unsupervised model to estimate public transport share and travel time ratios, with dashboard presentation.
- Presented the results in a dashboard developed by Plotly Dash
- Developed an unsupervised model to estimate public transport share and travel time ratios
- **scikit-learn**, **SciPy**, **NumPy**, **pandas**, **Plotly**, **Dash**, **Docker**
- *Exploratory data analysis*, *Data visualization*

Spare Parts Return Analysis   Nov 2021 – Dec 2021

Analyzed returns of spare parts and created SQL queries for data aggregation and visualization.
- Created SQL queries which aggregate data from a bunch of tables
- Visualized the results to grasp an overview of the returns
- **Microsoft SQL Server**, **pandas**, **Plotly**
- *Exploratory data analysis*, *Agile*

GPT-2 Chatbot for Domestic Abuse Support   Sept 2021 – Dec 2021

Designed and trained a GPT-2 chatbot for domestic abuse support, deployed as a web API.
- Designed the training data for a GPT-2 based chatbot which consults people suffering in domestic abuse
- Trained the GPT-2 based chatbot on a GPU in Azure
- Deployed the model in Azure Functions as a web API, which can be invoked from the mobile app
- **pandas**, **GPT-2**, **Plotly**, **Streamlit**, **Docker**, **Microsoft Azure**
- *NLP*, *Training on GPU*, *Agile*

Procurement Document Analysis Tools   May 2021 – June 2021

Developed text analysis and visualization tools for procurement documents, published a paper with the client.
- Developed text analysis and visualization tools using Elasticsearch, Kibana, and Streamlit for procurement documents in PDF
- Deployed the applications as containerized web applications on Azure
- Published a paper in proceeding ⧉ with the client
- **Elasticsearch**, **Kibana**, **Streamlit**, **Docker**, **Word2Vec**, **Plotly**, **Microsoft Azure**
- *NLP*, *Agile*

What-if Tool for Public Transport   Mar 2021 – Apr 2021

Built a prototype what-if tool for analyzing driver and target values, with Bayesian modeling.
- Built a prototype of a what-if tool which analyzes relationship between various driver values, such as punctuality, and target values, such as customer satisfaction index
- Developed the dashboard in one week, including the requested feature and two novel features
- Developed Bayesian hierarchical models to estimate relationship between the drivers and the targets for each user group
- **NumPy**, **pandas**, **scikit-learn**, **NumPyro**, **GPy**, **Plotly**, **Dash**, **Voilà**, **Heroku**
- *Exploratory data analysis*, *Data visualization*, *Bayesian hierarchical model*

Stress Management Data Analysis   Jan 2021 – Feb 2021

Analyzed stress management app data, identified personality clusters, and published a peer-reviewed paper.
- Identified clusters of personality traits that have strong confounding relationships with stress related variables
- Published a peer reviewed paper ⧉ with the client
- **NumPy**, **pandas**, **scikit-learn**, **tslearn**, **GPy**, **Matplotlib**, **Plotly**
- *Statistical test*, *Time series analysis*

Customer Journey Analysis   Nov 2020 – Dec 2020

Analyzed customer journey factors using NLP and Bayesian models.
- Used Natural Language Processing (NLP), which involves text classification, topic modelling, and feature extraction

- Gained insights from time series analysis using Bayesian probabilistic models
- **Gensim**, **PyTorch**, **NumPyro**, **Matplotlib**
- *NLP*, *Exploratory data analysis*, *Bayesian probabilistic model*

Swedish Question Answering System   Oct 2020 – Nov 2020

Developed a closed domain QA system based on BERT for English and Swedish, published dataset and model.

- Published the Swedish SQuAD 2.0 ⧉ dataset and the fine-tuned model ⧉
- Established better scores on question answering task compared to the publicly available model
- **Transformers**, **Google Cloud Translation**, **Tensorflow**, **PyTorch**
- *Training on GPU*