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Presentation Letter

I am a Data Scientist and AI/ML Engineer with a strong background in electronic engineering, optimization, and MLOps. I focus on developing scalable AI solutions and deploying them into production. Currently, I am leading the development and deployment of AI voice agents for a real estate operation, enabling automated phone interactions by integrating tools for real-time information retrieval, messaging, and email communication. I hold a Bachelor's in Electronic Engineering and a Master's in Information Systems, with international academic experience across Japan, the United Kingdom, and Canada. This diverse background has equipped me with strong analytical skills, the ability to quickly understand and implement state-of-the-art research, and a scientific approach to solving complex industry challenges.

In my industry experience, I have worked extensively with machine learning and deep learning frameworks to train and fine-tune models for predictive modeling, anomaly detection, and computer vision. In MLOps, I build end-to-end pipelines that ensure reproducibility and scalability. Leveraging tools like MLflow, Docker, Kubernetes, and the cloud platform AWS, I have successfully deployed machine learning models and integrated them into production via API services. My experience also spans IoT systems, from firmware development to model deployment on edge devices.

I am eager to contribute to impactful, production-grade AI solutions and collaborate with teams building the future of intelligent systems at scale.

Professional Experience

- **Dry Ground AI** — Texas, United States of America

  AI Engineer — *Mar. 2025 – Present*

  - **AI Voice Agent Development**: Developed and deployed AI voice agents to answer real estate-related calls; integrated tools to retrieve up-to-date information, send messages and emails, and automate client interactions.
  - **Client Profiling & Lead Generation**: Developed a data science workflow for classifying user profiles and identifying potential clients, supporting strategic sales initiatives.

- **WEG** — Jaragua do Sul, Brazil

  Data Scientist — *Jun. 2024 – Mar. 2025*

  - **Predictive Maintenance & Anomaly Detection**: Designed and deployed machine learning and deep learning models for predictive maintenance and condition monitoring of wind turbines.
  - **End-to-End MLOps**: Developed a scalable and automated MLOps pipeline using MLflow, Docker, and AWS, ensuring reproducible model training, deployment, and continuous monitoring in production environments.

- **AI Deployment & Cloud Integration**: Deployed ML models via API services, optimizing real-time inference for anomaly detection and predictive analytics.

- **Macnica DHW** Florianópolis, Brazil

  Data Scientist *Nov. 2022 – Oct. 2023*

  - **Smart Sensors**: Developed machine learning models for data classification to support the development of an intelligent IoT sensor.
  - **Computer Vision APIs**: Built and deployed APIs for computer vision applications, including an anonymization API that removes people from videos.
  - **IoT Development**: Led IoT product development, implementing MQTT communication and utilizing InfluxDB for time series data storage.

- **University of Warwick, Warwick Business School** Coventry, United Kingdom

  Research *Oct. 2019 – Apr. 2022*

  - **Field of Research**: Ranking & Selection; Bayesian Optimization; Reinforcement Learning.
  - **Research**: Under the supervision of Juergen Branke, focused on budget-efficient policy learning in sequential decision problems, improving sampling efficiency in Monte Carlo Tree Search (MCTS).
  - **Collaboration**: Worked with Prof. Chun-Hung Chen (George Mason University, US) on Bayesian approaches for optimal decision-making.

- **Shinshu University** Nagano, Japan

  MSc Research *Apr. 2017 – Mar. 2019*

  - **Field of Research**: Multi-objective Optimization; Genetic algorithms; Evolutionary Computation.
  - **Research**: Studied the impact of Pareto set topologies on multi-objective evolutionary algorithms (MOEAs) and developed a novel method to enhance their performance.
  - **International Collaboration**: Worked with researchers from Japan, Mexico, and France.
  - **Recognition**: Received the Student Best Paper Award at EMO-2019 (Michigan State University, US).

- **SSE Gridtech** Curitiba, Brazil

  Internship *Oct. 2014 – Dec. 2015*

  R&D Engineer *Jan. 2016 – Aug. 2016*

  - **Smart Grid & IoT Solutions**: Developed a long-range LoRaWAN-based communication system to optimize smart metering infrastructure, reducing GSM dependency.

Education

- **Shinshu University** Nagano, Japan

  Master of Engineering in Electronics and Information System *Apr. 2017 – Mar. 2019*

  - MEXT Monbukagakusho Scholarship (Japanese Government)

- **Concordia University** Montreal, Canada

  Exchange Student, Electrical Engineering *Aug. 2012 – Aug. 2013*

  - Science Without Borders Scholarship (Brazilian Government)

- **Federal University of Technology - Parana** Curitiba, Brazil

  Bachelor of Engineering in Electronics *Jan. 2010 – Jul. 2016*

Technical Expertise

Programming Languages:	Python, C, C++, Bash (Unix Shell).
AI & Machine Learning Frameworks:	PyTorch, scikit-learn, XGBoost, LangChain.
MLOps & Deployment Tools:	Docker, Kubernetes, MLflow, Git, CI/CD, FastAPI, Grafana.
Embedded Systems:	ARM Cortex-M, Jetson Nano, Arduino, FreeRTOS, MQTT.
Data Engineering & Pipelines:	PostgreSQL, Redshift, InfluxDB.
Cloud Platforms:	AWS (SageMaker, ECR, S3, EC2, Lambda Functions).
Optimization:	Bayesian Optimization, Multi-objective Evolutionary Algorithms.
Operating Systems:	Linux (Fedora, Ubuntu), Windows.

Languages

Portuguese: Native

English: Fluent

Japanese: Conversational

Projects

- **End-to-End Machine Learning Pipeline for Short-Term Rental Price Prediction**

  https://github.com/yurimarca/build-ml-pipeline-for-short-term-rental-prices
  - Developed a reproducible ML pipeline to predict short-term rental prices in New York City, ensuring scalability for weekly data updates.
  - Implemented data ingestion, cleaning, validation, and feature engineering processes to prepare datasets for modeling.
  - Trained and optimized a Random Forest regression model, employing hyperparameter tuning to enhance predictive performance.
  - Utilized MLflow for experiment tracking and model management, and integrated Weights & Biases for artifact tracking and visualization.
  - Designed the pipeline for seamless retraining with new data, facilitating continuous model improvement and deployment.

Publications

- **Y. Marca**, H. Aguirre, S. Zapotecas, A. Liefooghe, B. Derbel, S. Verel, and K. Tanaka. Approximating Pareto set topology by cubic interpolation on bi-objective problems. 10th International Conference on Evolutionary Multi-Criterion Optimization (EMO 2019), Lecture Notes in Computer Science (LNCS), Michigan, USA. **(Best Student Paper Award)**

- **Y. Marca**, H. Aguirre, S. Zapotecas, A. Liefooghe, B. Derbel, S. Verel, and K. Tanaka. NSGA-II with Spline Interpolation on Bi-objective Problems with Difficult Pareto Set Topology. JPNSEC 2018 Symposium on Evolutionary Computation, Fukuoka, 2018. **(Young Research Award)**
- **Y. Marca**, H. Aguirre, S. Zapotecas, A. Liefooghe, B. Derbel, S. Verel, and K. Tanaka. MOEAs on Problems with Difficult Pareto Set Topologies. IEICE Shin-etsu Branch IEEE Session, Niigata University, 2018, p. 169.**(Young Research Award)**
- **Y. Marca**, H. Aguirre, S. Zapotecas, A. Liefooghe, B. Derbel, S. Verel, and K. Tanaka. Pareto dominance-based MOEAs on problems with difficult pareto set topologies. In Proceedings of the Genetic and Evolutionary Computation Conference Companion (GECCO '18). ACM, New York, NY, USA, 189-190.
- C. E. A. L. Rocha, **Y. P. Marca**, F. K. Schneider. Support Platform for Decision-Making in Research and Technological Development in Public Health. ESPACIOS (CARACAS), v. 39, p. 14-26, 2018.
- **Y. P. Marca**, S. Scholze. Proposta de Substituição da Comunicação GSM em Smart Grids por Rádios de Longo Alcance. XXXIII Simpósio Brasileiro de Telecomunicações, 2015, Juiz de Fora, MG. Anais Completo da Programação Técnica, 2015.
- **Y. P. Marca**, C. E. A. L. Rocha, B. Schneider Jr , F. K. Schneider. Plataforma de Apoio ao Processo Decisório em Pesquisa e Desenvolvimento Tecnológico em Saúde. Congresso Brasileiro de Engenharia Biomédica, 2012, Porto de Galinhas. ANAIS - CBEB 2012, 2012.
- M. P. Krause, D. M. Nakato, **Y. P. Marca**, F. K. Schneider. Gerenciamento do Controle da Glicemia Utilizando um Aplicativo para Celular. Congresso Brasileiro de Engenharia Biomédica, 2012, Porto de Galinhas. ANAIS - CBEB 2012, 2012.