# Rodrigo Kobashikawa Rosa

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## About me

My goal is to develop innovative solutions by implementing machine learning models for real-world applications and enhancing industrial efficiency through data-driven solutions. I have four years of experience applying machine learning to real-world problems such as price/demand forecasting and predictive maintenance for the oil/gas industry, rotating machinery, and HVAC-R systems.

## Education

**Master's degree in Electrical Engineering** (Exp.) Nov 2021–Mar 2024
Federal University of Santa Catarina

**Bachelor of Science in Electronics Engineering** 2014–2021
Federal University of Santa Catarina IAA: 8.37

## Experience

**Machine Learning and Applications Research Group (GAMA-UFSC)** Nov 2021– Feb 2024
*Machine Learning Researcher*

- Applied machine learning algorithms for predictive maintenance using real vibration data;
- Worked with state-of-the-art convolutional network models and a public bearing fault dataset;
- Conducted exploratory data analysis and data cleaning;
- Performed extraction, transformation, and loading (ETL) pipelines;
- Experiment tracking using MLOps tools.

**Aquarela Advanced Analytics** Feb 2021– Oct 2021
*Machine Learning Engineer*

- Developed and deployed a failure forecasting and classification model for HVAC-R systems;
- Trained machine learning models for demand and price forecasting for the automotive sector;
- Built data pipelines and machine learning model pipelines using Airflow;
- Monitoring of deployed models' performance;
- Data wrangling and exploration.

**Aquarela Advanced Analytics** Feb 2020– Feb 2021
*Machine Learning Engineer Intern*

- Developed and evaluated several ML models for stress corrosion cracking failures in the gas industry;
- Developed and deployed an anomaly detection model for HVAC-R monitoring systems;
- Performed data wrangling and exploration and helped with the model data ingestion by creating ETL pipelines.

## Projects

**Bearing fault diagnosis using convolutional networks on vibration data**
Graduate research supervised by Prof. Danilo Silva, PhD, in collaboration with the partner company Dynamox. Due to many of the faults occurring in rotating machinery being caused by bearings, the project was done to classify bearing faults (inner-race, outer-race, ball element) using state-of-the-art convolutional models, introducing a robust methodology of training and evaluation and experimenting with different signal processing techniques for the signal representations used as inputs.

**Training of state-of-the-art Text-to-Speech (TTS) deep learning models**
Undergraduate research supervised by Prof. Danilo Silva, PhD, where it was trained the model Tacotron-2 for spectrogram construction, combined with the Griffin-Lim Vocoder. Experiments were made by fine-tuning a pre-trained model using a dataset in the English language with our Brazilian Portuguese dataset. The final results were presented as the undergraduate final project.
[Final Project] [github]

## PUBLICATIONS

**Diagnóstico de Falhas em Rolamentos usando Redes Convolucionais: Otimização da Representação de Sinais e uma Nova Metodologia de Avaliação**
Rodrigo Kobashikawa Rosa, Vicente Knobel Borges, Danilo de Souza Braga, Danilo Silva
XLI Simpósio Brasileiro de Telecomunicações e Processamento de Sinais-SBrT 2023
[link]

**Fault detection for rotating machinery based on vibration data using machine learning**
Lucas de Toledo Barreto, Rodrigo Kobashikawa Rosa, Danilo Silva, Danilo Braga
XX Encontro Nacional de Inteligência Artificial e Computacional
[link]

**Conversão Texto-Fala para o Português Brasileiro Utilizando Tacotron 2 com Vocoder Griffin-Lim**
Rodrigo Kobashikawa Rosa, Danilo Silva
XXXIX Simpósio Brasileiro de Telecomunicações e Processamento de Sinais-SBrT 2021
[link]

## SKILLS

**Programming languages:** Python, SQL, C/C++, Matlab, Latex, Bash

**Technologies:** Pytorch, Tensorflow, Sklearn, Pandas, Numpy, Hydra, WandB, MLFlow, DVC, Docker, Postgresql, MongoDB, Git, Github Actions, Aws S3, EC2, Lambda

## LANGUAGES

**Brazilian Portuguese** – native

**English** – fluent

**Japanese** – intermediate