RAFAEL HENRIQUE TIBÃES

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Data Scientist with experience in insurance, computer vision, biometrics and high-performance computing. Holding a master's degree in Computer Science from Federal University of Bahia (UFBA) and a bachelor's degree in Computer Science from Federal University of Parana (UFPR).

SKILLS

Python, C/C++, Swift, Julia, CUDA
OpenCV, TensorFlow, SciKit Learn, Pandas

Unix, Git, Docker, GCP, AWS, Agile
Portuguese, English

PROJECTS

RISK ANALYSIS MODELLING

- Objective: increase profits by accepting more clients and reducing claims
- Developed models to predict claims based on financial status of clients
- Performed data ingestion, cleaning and balancing using SQL, Pandas and Airflow
- Explored a range of algorithms and modelling strategies, such as tree-based models (LGBM, XGBoost), clustering (KMeans, GMM, HDBScan) and neural networks (Perceptron, AutoEncoders, FeedForward, Convolutional, AutoML)
- Ensured temporal stability by analyzing the performance degradation over time
- Ensured interpretability using SHAP values for features importance, and custom metrics for profitability and estimated claims
- Developed a serverless architecture based on AWS Lambda to deploy the models
- Tech: Python, Numpy, Pandas, Scikit-Learn, TensorFlow, SHAP, Seaborn, Matplotlib, YellowBricks, ImbLearn, Shell Script, Docker, AWS, SQL-Server, Luigi, Airflow, Julia

FINGERPRINT RECOGNITION UNDER ROBUST SCALE VARIATION

- Objective: solving the fingerprints matching under robust image scale variance caused by the individual growing, to help finding missing children
- Performed data acquisition using custom fingerprint hardware in maternities
- Developed image processing algorithms for fingerprint segmentation, frequency estimation and scale adjustments required before a matching operation
- Built a Fully Convolutional Neural Network (FCN) classifier and regressor to better generalize the fingerprint segmentation and frequency estimation algorithms
- Achieved good performance for matching fingerprints under a 4x scale variation whereas without the proposed solution the performance is similar to random guess
- Tech: C++, Python, Pandas, OpenCV, TensorFlow, Augmentor, Matplotlib, Julia

FACE ANALYSIS

- Objective: providing a correct face image to use in documents
- Developed image processing algorithms, such as white balance adjustment, motion stability analysis for automatic capture and cropping the image in the face area

- Building a solution for face and landmarks detection and neutral face classification
- Explored a range of solutions for face segmentation, including deep learning segmentation models, motion analysis and Intel RealSense RGBD cameras
- Tech: C/C++, CMake, Docker, OpenCV, DLib, TensorFlow, Python, Qt

SCENE UNDERSTANDING

- Objective: understanding motion analysis techniques
- Developed an object tracking solution using object detection and optical flow to guide PTZ cameras to follow a given target
- Developed a classifier for actions in videos, using Gaussian Mixture Models of motion patters based on optical flow and Kullback-Leibler divergence
- Tech: C/C++, Make, OpenCV, OpenCL, CUDA

EXPERIENCE

Postgraduate Professor (AI, ML & Cloud) — ***05/2019 – Now***
Universidade Positivo, Curitiba — Education
https://www.up.edu.br

Senior Data Scientist — ***11/2018 – Now***
Junto Seguros (JMalucelli), Curitiba — Insurance
https://www.juntoseguros.com

Machine Learning Consultant — **07/2018 - 08/2018**
Wolk Software, Curitiba — Logistics
http://www.wolk.com.br

Computer Vision Engineer — **04/2015 - 06/2018**
Akiyama, Curitiba — Biometrics
https://www.akiyama.com.br

Computer Vision Researcher — **08/2008 – 03/2015**
IMAGO Research Group, UFPR, Curitiba — Education
http://www.imago.ufpr.br

EDUCATION

Master's in Computer Science *(2019)* — Federal University of Bahia (UFBA, Brazil)
Bachelor's in Computer Science (2012) — Federal University of Paraná (UFPR, Brazil)
Machine Learning Engineer (2018) — Udacity Nanodegree

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