Miguel Â. Simões Valente

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Education

- **Utrecht University** — Utrecht, Netherlands
  Master of Science in Artificial Intelligence — *Sep. 2019 - Feb. 2022*
  - **Thesis**: Generative Based Zero-Shot Learning: Classifying Images from Text
- **Instituto Politécnico de Castelo Branco** — Castelo Branco, Portugal
  Bachelor of Computer Engineering — *Aug. 2016 – Jun. 2019*
  - **Thesis**: Compendium of three publications in applied object detection. [1], [2], [3]

Experience

- **Oddity.ai** — Utrecht, Netherlands
  Deep Learning Developer — *May 2022 - Dec 2022*
  - **Deep Learning Modeling**: Architected custom models in PyTorch and Tensorflow using CNNs, RNNs, and self-attention as building blocks. Leveraged pre-trained weights for different styles of transfer learning from CNN and transformer-like architectures. Researched and applied novel approaches for action recognition.
  - **Model Training & Experimentation**: Introduced automatic experiments to decrease timesinks on hyperparameter searches while providing an overview of results. Introduced experimentation best practices to reduce friction between colleagues' workflow and ensure model lineage.Created datasets for action recognition. Experimented with different approaches for data augmentation, on the image and video level.
  - **Model Optimization/Testing**: Exported models to ONNX and optimized them with TensorRT. TensorRT models were combined with a RUST backend to speed up inference time.
- **TNO(Netherlands Organization for Applied Scientific Research)** — The Hague, Netherlands
  Deep Learning Research Intern — *Feb 2021 - Dec 2021*
  - **Research**: Zero-shot image classification through text embeddings.
  - **Nutshell**: Encoding of noisy text descriptions into a per-class embedding representation. Trained Normalizing Flows to generate images conditioned on the class embeddings. Generated images for classes without visual examples. Trained a classifier on the generated images and real images to obtain zero-shot capacities.
  - **Methodology**: Work was done on vector space with the sole intent of classification. Images were encoded with pre-trained networks from the timm library. The text was encoded with TF-IDF and recent models from the HuggingFace library. The images were sourced from ImageNet and the text was sourced from Wikipedia.
- **Evox** — Castelo Branco, Portugal
  Deep Learning Developer — *Sep 2018 - Jun 2019*
  - **MVP for Waste Container Detection**: Manually collected and labeled a dataset. The dataset was used to finetune a YOLOv2 model. The model was deployed on a Jetson Nano. Three publications resulted from this work [1], [2], [3], which include a review of a classic computer vision approach using ORB features and VLAD. Used technologies such as YOLOv2 darknet written in C++ and OpenCV.

Projects & Certifications

- **Whisperer**: Automatic creation of text-audio datasets with Audio Deep Learning Models. Does: Transcription, diarization, and ids speakers across audio files with hierarchical clustering.
- **MLOps Specialization**: Machine Learning Engineering for Production (MLOps) Specialization
- **CUDA NVIDIA Specialization**: Fundamentals of Accelerated Computing with CUDA Python
- **Greenhouse**: Application of data science methods on time series for weather prediction and next-day electricity consumption forecasting.

Programming Skills

- **Languages:** Python, SQL, Latex, Rust(entry-level)
- **Technologies:** PyTorch, TensorFlow, OpenCV, ONNX, TensorRT, HuggingFace, Weights&Biases, Scikit-Learn, Pandas, Scipy, Docker, GitHub Actions, GNU/Linux, Typer, FastAPI, Streamlit, AWS