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

- **Self-employed** — The Hague, Netherlands
  AI Software Engineering & Technology Consultant — *Feb 2023 - Present*
  - **Text Image Translation**: Directed full-cycle project, delivering a WebApp MVP in two weeks. Activities encompassed backend development in FastAPI, implementation of CI through GitHubActions, deployment via GCP, coordination of subcontracted frontend development, and client interactions. On-going phase of pilot testing for Feature Enhancement.
- **Oddity.ai** — Utrecht, Netherlands
  Deep Learning Developer — *May 2022 - Dec 2022*
  - **Deep Learning Modeling**: Designed bespoke models in PyTorch and Tensorflow employing CNNs, RNNs, and self-attention mechanisms. Utilized pre-trained weights for diverse transfer learning from CNN and transformer-like structures. Explored and implemented innovative techniques for action recognition.
  - **Model Training & Experimentation**: Incorporated Weights&Biases for experiment tracking to streamline hyperparameter searches and encapsulate results. Instituted best practices for experimentation to enhance team workflow and maintain model lineage. Developed action recognition datasets and explored diverse data augmentation methods for images and videos.
  - **Model Optimization/Testing**: Transitioned models to ONNX and enhanced them using TensorRT. Integrated these optimized models with a Rust backend to accelerate 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**: Encoded noisy text descriptions into class-specific embeddings. Trained Normalizing Flows to produce images based on these class embeddings, generating visuals for classes lacking examples. Trained a classifier on both real and generated images to achieve zero-shot capabilities.
  - **Methodology**: Focused on vector space for classification purposes. Used pre-trained networks from the timm library to encode images and TF-IDF along with recent HuggingFace models to encode text. Image data was obtained from ImageNet, and text data was sourced from Wikipedia.
- **Evox** — Castelo Branco, Portugal
  Deep Learning Developer — *Sep 2018 - Jun 2019*
  - **MVP for Waste Container Detection**: Assembled and annotated a dataset manually, utilized to fine-tune a YOLOv2 model. Deployed the model on a Jetson Nano. This effort culminated in three published works [1], [2], [3]. The publications included a review of a traditional computer vision approach leveraging ORB features and VLAD. Employed technologies like YOLOv2 darknet in C++ and OpenCV.

Programming Skills

- **Software:** Python, Rust(entry-level), TDD
- **Areas:** Machine Learning/Deep Learning, MLOps, Software Engineering
- **Technologies:** PyTorch, TensorFlow, ONNX, TensorRT, HuggingFace, Weights&Biases, PostgreSQL, FastAPI, Docker, CI, GitHub Actions, Typer, GCP