PIERO ESPOSITO

pi@piesposi.to — Member of Technical Staff @ Runway

EXPERIENCE

Runway   New York, NY
Member of Technical Staff, Research   2023 - Present

- Implemented, created dataset and trained Text-to-Image and Text-to-Video Diffusion models on large scale
- Implemented second generation of AI Magic Tools, such as Text-to-image, image-to-image, inpainting
- Implement and maintain inference pipeline of models that run millions of predictions per day.
- Led research project on Debiasing Text-to-image Diffusion models, presented at Neurips 2023 Algorithmic Fairness through the Lens of Time workshop
- Improved inference pipeline of diffusion models reducing in 50% their memory footprint.

Sticker Mule   Amsterdam, NY
Senior Machine Learning Engineer, Tech Lead   2021 - 2023

- Led implementation of background removal tool (Trace)
- Reduced in 66% serving cost of image-upscaling tool (Upscale)
- Migrated model training and serving from Tensorflow to PyTorch

Previous experiences   Remote
Internship, Software Engineer, Freelancer, OSS contributor   2018 - 2023

- Co-authored Intel Labs' Bayesian Torch lib
- Introduced sequential cpu offloading on Diffusers, reducing Stable Diffusion memory footprint in 90%
- Introduced 2x faster checkpoint loading on Diffusers
- Created open, highly liked Stable Diffusion 1.5 fine-tune
- Taught Brazilian Government Officials on a coding bootcamp

EDUCATION

University of São Paulo, São Paulo, Brazil   Enrolled: 01-2019 — Dropout
BSc in Applied Mathematics

RESEARCH, PROJECTS

Mitigating stereotypical biases in text to image generative systems   ACT Workshop @ Neurips 2023
https://arxiv.org/abs/2310.06904   10-2023

- Reduced stereotypical biases on Stable Diffusion models by training on synthetically, debiased data across biased feature
- Diversity finetuned (DFT) model improves the group fairness metric by 150% for perceived skin tone and 97.7

Cabrita: closing the gap for foreign languages
https://arxiv.org/abs/2308.11878   06-2023

- Improved LLM performance across foreign language (Portuguese), by training tokenizer on new language and continuing pre-training.
- With our approach OpenLLaMA 3B got a better performance in portuguese than OpenLLaMA 7B with only only pre-training, keeping the same amount of tokens trained for.

Vintedois Diffusion
https://huggingface.co/22h/vintedois-diffusion-v0-1   01-2023

- Fine-tuned Stable Diffusion 1.5 on curated high-quality data
- Introduced new token associated with high-quality data
- On early 2023, was the second trendiest model on HF Hub, after only Runway's Stable Diffusion 1.5
- Was downloaded more than 300,000 times, and is still downloaded ¿ 10,000 times monthly since open-sourced.

Bayesian Torch
https://github.com/IntelLabs/bayesian-torch   2020

- It is Intel Labs' library for Bayesian neural network layers and uncertainty estimation in Deep Learning

Blitz - Bayesian Layers in Torch Zoo
https://github.com/piEsposito/blitz-bayesian-deep-learning   2020

- It is a simple and extensible library to create Bayesian Neural Network layers on top of PyTorch
- It is one of the largest Bayesian Deep Learning frameworks on top of PyTorch with 800 Github stars.