Leo BRINGER

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Portfolio

Experience

- **Machine Learning Researcher / VFX Pipeline & ML Engineer** — New York, NY
  Crafty Apes VFX — *Sept 2024 - Pres*
  - Built AI-powered VFX pipelines and artist-facing tools in Blender, Maya, ComfyUI, and Nuke for camera tracking, motion tracking, textured asset generation, automatic rigging, motion generation, and 3D environment reconstruction workflows.
  - Led research and integration of AI workflows for generated CG crowds, 3D-conditioned video generation, camera tracking, PBR texture generation, 3D scene reconstruction/relighting with Gaussian Splats, and 4D facial animation.
  - Trained and fine-tuned models for image/video generation and editing.
  - Contributed to the maintenance of a custom internal ComfyUI fork for secure offline deployment, including Dockerized builds, custom nodes, versioned releases, and production-safe workflow packaging.
- **Associate Researcher** — Ann Arbor, MI
  Barton Research Group — *Aug 2022 - Sept 2024*
  - Trained from scratch a Multimodal Diffusion model for Motion Predictions with uncertainty guided by text prompts & motion data, used for Dynamic Human-Robot Collaboration and obtained SOTA in Long-Term Motion Predictions
  - Trained a Point Transformer based Autoencoder from scratch for Robot Grasping, obtained SOTA in Semantic Segmentation
  - Implemented on ROS a 3D Vision system that enable to perform Human-Robot Collaboration using Human Pose Estimation
- **Mechatronics Software Engineer (Intern)** — Lyon, FRANCE
  Delair - Notilo Plus — *May 2021 - Aug 2021*
  - Integrated on the ROS system of an underwater drone an acoustic probes to detect leaks in pipelines
  - Developed a software system in Python using real-time data from laser sensors to detect incoming obstacles
  - Designed a prototype of Wireless Relay/Beacon integrating a GPS RTK and 4G modem

Publications

Leo Bringer, Joey Wilson, Kira Barton, Maani Ghaffari. *MDMP: Multi-modal Diffusion for supervised Motion Predictions with uncertainty.* CVPR 2025 (HuMoGen). [Paper] [Code] [Project]

Education

- **University of Michigan** — Ann Arbor, MI
  MSc in Mech Engineering Conc. Machine Learning & Robotics; GPA: 3.92/4.00 — *Aug 2022 - Dec 2023*
  - **Course Taken**: Deep Learning for Computer Vision (Justin Johnson); Deep Learning for Robot Perception; Robot Learning for Planning and Control; Matrix Methods for Signal Processing, Data Analysis & Machine Learning; Linear Systems Theory
- **Arts et Metiers ParisTech (ENSAM)/ CPGE: Lycée Saint-Louis** — Paris, FRANCE
  BSc in Engineering - Computer Science; GPA: 3.94/4.00 — *Sept 2018 - July 2022*

Relevant Projects

- **Research Project: Pose-Driven Video Reconstruction with Diffusion** — New York, NY (Remote)
  Advised by J.P. Lewis (NVIDIA); with Nithin Gopalakrishnan (NVIDIA) & Wan Duo Ma (WetaFX) — *June 2024 – Mar 2025*
  - Developing a pipeline for Motion Extraction from Video using Whole-body Pose Estimation (DWPose)
  - Retraining a Motion Editing model based on text to include facial and finger gestures
- **Computer Vision Projects using Deep Learning** — Ann Arbor, MI
  Personal projects using PyTorch — *Dec 2021 – Jun 2023*
  - **Semantic Segmentation**: Used residual Self-Attention to propose an improved version of PointNet
  - **Style Transfer**: Leveraged Stable-Diffusion to implement an Inversion-Based Style Transfer model
  - **Image Captioning**: Used Visual attention-based LSTMs to implement a Neural Image Caption Generator
  - **Object Detection**: Developed A 2-stage Object Detector, based on Faster R-CNN
  - **Pose Estimation**: Used VGG16 as a feature extractor to implement a PoseCNN based End-to-End Object Pose Estimator
- **Dassault UAV Challenge — The Autonomous Drone Project** — Paris, France
  Nazih Mechbals Lab — *Dec 2020 – Jul 2022*
  - **Objectives**: Programmed, Designed and Tested a fully automated drone from scratch using Computer Vision to avoid obstacles and deliver packages using Ground Pattern recognition with YOLOv3 in TensorFlow and ROS
  - **Results**: Led the team of 3 who Received sponsorship from Dassault Aviation and got Selected to the finals of this National Robotics competition (Dassault UAV Challenge) between the best French Engineering Grandes Ecoles and arrived 3rd/12

Skills

- **Tools**: Python (8 years), C++ (2 years) — PyTorch, TensorFlow, OpenCV, Open3D, Keras, DeepSpeed — Blender, Unreal Engine, Maya, Nuke — CUDA, AWS, ONNX — ROS — Unix Scripting, OS X — GitHub/GitLab, Docker, Javascript, HTML