


Malek Sibai

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EDUCATION

University of Toronto, *Bachelor of Applied Science in Engineering Science + PEY CO-OP* September 2021 – May 2026

Major in Machine Intelligence Engineering with a Minor in Robotics and a Minor in Business

- **Courses:** Introduction to Machine Learning, Introduction to Artificial Intelligence, Deep Learning and Neural Networks, Advanced Data Structures & Algorithms, Operating Systems, Introduction to Databases, Digital Systems, Matrix and Optimization (Advanced Linear Algebra)
- **Associations:** UOFT Tri-Campus Soccer Division 1, UTFR, UTSM

SKILLS

Languages: Python, MATLAB, C, C++, SQL, Arduino, System Verilog, RISC-V/Assembly

Libraries/Tools: PyTorch, Tensor Flow, JAX, NumPy, Unix, Linux, Git, GitLab, Pandas, Matplotlib, Raspberry Pi

EXPERIENCE

Undergraduate Researcher at University of Toronto – Supervised by Professor Kandasamy Illanko May 2024 – Present

Machine Learning Engineer

Toronto, Ontario

- Developed a data collection and preparation pipeline using **NLP** techniques (tokenization, stemming, lemmatization) and advanced text augmentation (paraphrasing, back-translation), increasing dataset size by **25%** and improving model robustness.
- Fine-tuned LLaMA3 on mental health-specific datasets to create a conversational AI model, achieving a **20%** improvement in accurately understanding and classifying mental health queries. Designed and implemented transformer and seq2seq architectures, boosting language generation performance by **30%**.
- Integrating multimodal data sources (text, audio, video) using **CNNs** and **LSTMs**, in the aim of increasing holistic assessment by **50%**.
- Optimizing hyperparameters and model architecture using techniques like grid search and Bayesian optimization.
- Implementing regularization methods such as dropout and weight decay to prevent overfitting.

University of Toronto Formula Racing Team – Driverless, Perception Team

May 2023 – Present

Machine Learning Engineer

Toronto, Ontario

- Spearheaded the design and enhancement of the auto-labeling pipeline architecture for object identification, leveraging **Python** and **PyTorch** to optimize machine learning model performance.
- Implemented a **CNN** ensemble model algorithm architecture, employing a robust voting mechanism to amalgamate insights from multiple object detection models, which increased the **mAP** of the overall results from **65% to 93%**.
- Played a key role in selecting advanced **CNNs** like Co-DETR and Yolov8, improving real-time processing by **30%** and decision-making speed, thereby enhancing system efficiency and market competitiveness.
- Enhanced **CNN** object detection robustness by implementing advanced **data augmentation** techniques like histogram equalization and horizontal flipping, boosting accuracy by **30%** under diverse conditions.

[Kaïs W Laïla](#) – WeFind Development Team

May 2024 – Present

Engineer Lead

Toronto, Ontario

- Led a team of front-end and back-end engineer, utilizing agile methodologies to ensure timely and high-quality software delivery.
- Developed a matching algorithm with Python and Scikit-learn, achieving an 80% fit rate for matches, enhancing user satisfaction.
- Integrated DeepFace for user verification, reducing fake accounts by 95% and ensuring platform security.
- Improved recommendation accuracy with Collaborative Filtering and matrix factorization, increasing user retention by 40%.

PROJECTS

Super-Resolution GAN Model for Image Deblurring

January 2024 – Present

Machine Learning Engineer

Toronto, Ontario

- Leading the development of an advanced Super-Resolution model with **GANs** and **CNNs** using **Python** and **TensorFlow**, achieving a 4X improvement in image resolution over existing methods employing Residual-in-Residual Dense Blocks and PixelShuffle techniques for superior image clarity and upscaling precision.
- Significantly improved image quality metrics, achieving a **35%** increase in Peak Signal-to-Noise Ratio (**PSNR**) and a **50%** reduction in adversarial losses, setting new benchmarks for image fidelity in super-resolution applications.
- Optimized the adversarial training process, leading to **91%** decrease in **generator** loss and a **98%** decrease in **discriminator** loss, significantly improving the model's ability to produce high-fidelity images.