Mohamed Ali SRIR

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PROFESSIONAL EXPERIENCE

Interdigital   Saclay, France
Research Intern, Interdigital (Rennes, FR)   *March 2023 – Today*

Internship focused on exploring and extending NeRF technology to reconstruct and render novel views for avatar representation.

- Train a NeRF model in canonical space (static scene reconstruction) and investigate optimization to improve data compression and dimension of the neural network.
- Infer temporal information from the canonical NeRF model to allow control and manipulation of the learned figure. It is intended to present a survey on NeRF conditioning to allow dynamic scene representation.

Tools : Python, pytorch3D, Blender

INRIA   Saclay, France
Research Intern, Working in a co-project between Simbiotx (Saclay, FR) and Heartflow (Mountain View, CA)   *July 2023 – March 2023*

Engaged in a fulfilling internship focused on refining numerical methods for vessel tree extension and perfusion simulation within the intricate domain of biophysics research.

- Developed Graph Neural Network (GNN) models for predicting outcomes on 3D meshes.
- Tackled optimization challenges with a mix of analytical and symbolic approaches to generate physics-compliant binary trees.
- Contributed to the creation of visualization tools, aiding in testing alternatives and gaining insights into problem-solving.
- Assisted in developing tools and APIs to seamlessly integrate existing research into the commercial pipeline.
- Implemented Multi-GPU Training in Pure PyTorch

Tools : Python, pytorch, numpy, sympy, Docker, AWS, bash, C, git, tensorboard, paraview, pandas
Publication : Convex Optimization for Binary Tree-Based Transport Networks - (accepted DGMM 2024) - Second Author

ACADEMICS

Télécom Paris   Palaiseau, France
Top Tech French School - Grandes écoles   *Sept 2021 – Today*

- Image Processing : Track developing mathematical image techniques, computer vision and 3D reconstruction.
- Signal Processing and Artificial Intelligence : This program develops a broad and operational vision of statistical learning and signal processing.

Preparatory Classes Moulay Youssef   Rabat, Morocco
2 intensive years of mathematics, physics and computer science to prepare for entry into the best French schools   *Sept 2019 – June 2021*

PROJECTS

Inpainting Project   *Python, imageIO, numpy, tkinter*   Source Code

- Implementation of a patch inpainting method inspired by a research paper
- Creation of a GUI to test the method

Equalizer from Scratch   *Python, scipy*   Source Code

- Implementation of an equalizer from scratch with STFT

Learning-Reinforcement-Learning   *Python, numpy, pytorch*   Source Code

- Understanding the basics of Reinforcement Learning with a simple example (Cartpole)
- Testing different approaches and understanding the constraints of convergence

Technical Skills

Programming Languages
Python, C++, Java, C

Development Tools
Virtual environment (Docker, conda), Database (SQL, AWS, pandas)

AI and Multimodal Data
Python, Gimp, numpy, OpenCV, imageIO, skimage, scikit-learn, PyTorch, TensorFlow, PyG, ParaView

- Proficient in elementary image processing techniques (filtering, denoising, segmentation, clipping, recognition) using classical and machine learning approaches

- In-depth understanding and practical experience with popular model architectures (VAE, Unet, Stable diffusion, Transformer, YOLO ...)

- Generalization to 3D point clouds and meshes using Graph Neural Networks

- Worked with diverse image types, including RGB, CT scans, SAR and Hyperspectral images

- Applied fundamental signal processing methods

- Understanding of Natural Language Processing (NLP) techniques

Social

AMGE-Caravane's President   Sept 2022 – Sept 2023
Paris, France

- Training and orientation of students of public preparatory classes in Morocco via simulated tests on Discord

- Organization of conferences and events around the academic and professional world

- Organization of cultural events

Languages

- French (Native speaker)

- Arabic (Native speaker)

- English (C1)

- German(A2)

References

Irène Vignon-Clementel, PhD   Linkedin - Scholar
Research Director of SimbiotX Team at INRIA   *Irene.Vignon-Clementel@inria.fr*

Prof. Hugues Talbot   Linkedin - Scholar
Professor at CentraleSupelec   *hugues.talbot@inria.fr*

Matthew Sinclair, PhD   Linkedin - Scholar
Senior Manager, Research   *msinclair@heartflow.com*

Sabrina Lynch, PhD   Linkedin - Scholar
Research Scientist   *slynch@heartflow.com*

Hobbies

- Digital Art

- Running

- Cinema and Animation