

Nizar Ben bouchta

Curriculum Vitae

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Work Experience

- 09/24– Ongoing Paris, France **Research engineer, Université Paris-Cité/ INRIA.**
- Worked on KeOps. An open source library for efficiently computing reductions of large arrays
- Improved the compilation/linking process and expanded it to Apple Silicon chips (M1-M4)
- Implemented several new features within the library: LazyTensor slicing, full system sanity check function, CUDA memory allocation encapsulator, ...
- Coded and benchmarked KeOps implementations for different use cases: Multi-head attention, NUFFT, Sinkhorn algorithm, ...
- 03/23–08/24 Saclay, France **Research / MLOps engineer, CEA LIST.**
- Worked on audio processing in the context of a european project on AI applications in security
- Explored new methods around audio representation learning (implicit neural representations), acoustic event classification, and more importantly optimal transport based multi-source audio domain adaptation
- Deployed quantized and pruned models on embedded Linux system (electronic card for real time audio event detection/classification)
- Benchmarked model inference on embedded system using several frameworks (TensorflowLite, Aidge, Pytorch)
- Presented a demo of the system at the Security Research Event in Brussels (October 2023) as part of the project
- 03/22–08/22 Rennes, France **Research internship, Inria (MimeTIC team).**
- Worked on 3D shape reconstruction with deep learning methods
- Processed 3D data (point clouds, meshes, surfaces, ...) and implemented testing pipelines with relevant metrics
- Proposed a new diffusion model/score matching based 3D reconstruction from sparse point clouds method

Projects

- 11/24–02/25 Paris, France **Demograd autograd engine.**
- Built a minimal automatic differentiation engine and neural network library for educational purposes.
More details at: Demograd
- 10/20–03/21 Brest, France **BraTS UPenn challenge 2021, IMT Atlantique /Inserm joint lab.**
- Proposed and implemented a combination of a normalizing flow based method to perform medical image super resolution and a U-Net based model for segmentation

Education

- 2018–2022 **IMT Atlantique (ex Télécom Bretagne) - Engineering degree.**
Coursework: Machine learning, Bayesian statistics, Signal processing, Empirical finance
- 2019–2020 **Shanghai Jiao Tong University - Exchange semester.**
Coursework: Object oriented programming, Probability theory, Information theory

Skills

- Programming Python, C++, Javascript, JAVA, SQL, Bash
- Frameworks and Libraries Pytorch, CUDA, ONNX, Scikit-learn, Matplotlib, PyVista, Ollama
- MLOps Git, Docker, WandB, MLFlow, Streamlit, Github Actions, Sphinx

Languages

- French/Arabic Bilingual
- English Fluent (IELTS grade: 7, C2 level)
- Spanish Fluent (B2 level)