

YOUNESS EL BRAG

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🇲🇦 Nationality: Moroccan

TECHNICAL STRENGTHS

Languages	Python, Javascript, C++, Shell, HTML/CSS , Latex
Technologies	Docker, Django, ElasticSearch, Github Action, PostgreSQL, NifTK ,Rdkit
Deep Learning frameworks	Pytorch, Tensorflow, DeepSpeed

WORK EXPERIENCE

- **Department of Allied Medical Sciences-Radiologic Technology JUST** 🏛️ jordan, Ar-Ramtha
may 2022 - Present
Software Engineer || AI/ML Researcher - Research Team
 - built an automated tool to enhance contrast Medical image anatomy in brain tissue. implemented bias field correction and skull-stripping techniques. 🔄
 - Managed and processed large dataset images and CSV files. Utilized machine learning algorithms within Pandas and Scikit-learn to extract features from data.
 - Designed an advanced model-based Mixture of Expert (MoE) for accurate medical segmentation. Implemented strategic learning with ensemble techniques to train large vision models for accurate medical segmentation
 - Experienced in Docker-based development environment setup and CI/CD deployment using GitHub Actions for real-world ML applications. 🔄
 - Re-implemented computer vision models for object detection and semantic segmentation, as well as Transformer-based approaches for NLP
 - Developed Attention Filter Gate, a novel mechanism based on Complex-Value Neural Network, Worked Transformers models using Pytorch that learn from diverse domain data representations, including frequencies. 🔄
Languages/Technical usage: Python, PyTorch, OpenCV, Pandas, Scikit-learn, GitHub Actions, nibabel, PyDicom , Plotly , matplotlib
- **The national university of Water and Environmental Engineering** Rivne, Ukraine
Mars 2021 – Fer 2022
Machine learning Engineer Intern || Remote
 - Used NIFTI and PyDicom libraries for data pre-processing. Implemented techniques like normalization and data augmentation to enhance image quality.
 - Developed classification and segmentation models using TensorFlow, including Convolutional Neural Networks (CNNs) and U-Net
 - Developed a Dockerized web app to monitor and deploy machine learning models. Implemented end-to-end MLOps pipeline with Git integration 🔄
 - Explored Generative Modeling GANs to enhance the Data Quality Samples
 - implemented statistical testing, model confidence analysis, and interpolation techniques, reducing team research time by 36% during Publication Stage 📄 🔄
Languages/Technical usage: Python, PyTorch, Tensorflow, Pandas, Scikit-learn, Docker, OpenCV, Postgres, Plotly, matplotlib

PROJECTS

• Nano-AutoGrad Framework:

- A micro-framework for building and training neural networks from scratch, utilizing automatic differentiation and computational graphs.
- Used graph algorithms and Data structure to build the Core Engine of Micro-Framework Topology Sorting and programming paradigms OOP
- Deployed API layers of Micro-Framework in a PyPI repository for easy installation and utilization by other programmers.
- Created a full Documentation of Nano-AutoGrad using ReadDocs and Sphinx
- Wrote a comprehensive technical report on Nano-AutoGrad explaining the foundations of deep learning from a mathematical perspective.
Languages/Technical usage: Python, Numpy, Dynamic Programming

• Pyramid Position Encoding Generator:

- developed a new approach based Fast-Fourier Convolutions weakly supervised Learning speed up training
Languages/Technical usage: Python, Pytorch, Transformer

RESEARCHES AND PUBLICATIONS

- [1] Mahmoud Smaida, Serhii Yaroshchak, Youness El Barg. *DCGAN for Enhancing Eye Diseases Classification*. In *CMIS*, pages 22–33, 2021.
- [2] Mahmoud Smaida, Serhii Yaroshchak, Youness El Barg. *Medical Image Enhancement Based on Convolutional Denoising Autoencoders and GMD Model*. In *CMIS*, pages 22–33, 2021.
- [3] Haytham Al Ewaidat, Youness El Barg, Ahmad Wajeih Yousef E'layan, Ali Almakhadmeh. *Nano-AutoGrad: A Micro-Framework Engine Based on Automatic Differentiation for Building and Training Neural Networks*. DOI: 10.22541/au.168935608.83967551/v1, authorea e-prints, pages authorea-2301, 2023.
- [4] Haytham Al Ewaidat, Youness El Barg. *Identification of lung nodules CT scan using YOLOv5 based on convolution neural network*. In *arXiv e-prints*, pages arXiv-2301, 2022.
- [5] Haytham Al Ewaidat, Youness El Barg, Ahmad Wajeih Yousef E'layan, Ali Almakhadmeh. *Strategy Learning of Scaling Vision-Model 3D Volumetric Data in Biomedical Segmentation Task Brain Tumor: An Ensemble Learning Approach to BraTS 2020 Challenge*. Under Review, arXiv e-prints, pages arXiv-2301, 2023.
- [6] Haytham Al Ewaidat, Youness El Barg, Ahmad Wajeih Yousef E'layan, Ali Almakhadmeh. *Attention Filter Gate U-Net: Learning from Frequency domain for Medical image Segmentation*. Under Progress, arXiv e-prints, pages arXiv-2301, 2023.

EDUCATION

- **Université Abdelmalek Essaâdi Tétouan** Tétouan ,Morocco
Master of Science in Embedded Systems *Aug. 2019 – May. 2022*
- **Université Abdelmalek Essaâdi Tétouan** Tétouan, Morocco
Bachelor of Mathematics and Computer Science *Sep. 2016 – July. 2019*

LANGUAGES

- English (intermediate), French (intermediate), Arabic (Native)

MISCELLANEOUS

- **Culture:** Reading, Guitar , Coding , Music **Sport:** Football, Billiard