

Joseph Domguia

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Summary of Qualifications

- Extensive engineering experience in software development, with a focus on building innovative solutions across various domains.
- Backed by a strong foundation in computer science, mathematics, machine learning and deep learning.
- Proficient in Python, C/C++, and various programming languages, leveraging libraries such as PyTorch, JAX, and scikit-learn.
- Cross-disciplinary insights, blending expertise from machine learning neuroscience to push the boundaries of AI.
- Fusion of cross-disciplinary insights, amalgamating machine learning, neuroscience, and computational reasoning.
- Proficiency in cloud platforms (AWS, GCP), databases (SQL, NoSQL), and cutting-edge technologies (DevOps, Docker, Git).

Work Experience

- | Date | Position, Company, Location |
|------------|---|
| Dec.2023 | Computer Engineer , <i>Turing</i> , USA remote <ul style="list-style-type: none">○ Building tooling for various automations base on agents and chain of Large Language Models automation |
| Dec.2023 | Consultant , <i>Genu</i> , Cameroon remote |
| May.2022 | <ul style="list-style-type: none">○ Built Large Language Models (LLM) base solutions such as Information Retrieval and in-context reasoning○ Extend the client pool to the international market in North America○ Worked on billing and payment software for the most active port of Cameroon |
| Oct.2023 | Research Engineer Intern , <i>MIP:Lab</i> , EPFL, Switzerland |
| July.2023 | <ul style="list-style-type: none">○ Played a key role in the development and refinement on NeuroImaging Graph Signal Processing tools box (NiGSP) |
| July.2023 | Teaching Assistant , <i>African Institute of Mathematical Science</i> , Rwanda |
| April.2023 | <ul style="list-style-type: none">○ Assisted master's students, the best across all of Africa, with their thesis and final machine learning projects○ Recipient of the Tutor Awards 2023 |
| Aug.2022 | Teaching Assistant , <i>Neuromatch Academy</i> , USA remote |
| July.2022 | <ul style="list-style-type: none">○ Led students on machine learning fundamentals and reinforcement learning○ Tutored a wide range of concepts: mathematics, statistics, programming, and neuroscience |
| May.2022 | Business Intelligence Consultant , <i>Aptude</i> , USA remote |
| Feb.2021 | <ul style="list-style-type: none">○ Integrate diverse sources of data and build visualization, for a data warehouse for the Rwandan Government○ Worked with various technologies such as ETL, Elastic Search, Logstash, Kibana, Ruby, CI/CD, Gitlab |
| Nov.2021 | Research Engineer Intern , <i>Ishango.ai / Omniscient Neurotechnology</i> , Rwanda / Australia |
| Sept.2021 | <ul style="list-style-type: none">○ Achieved 83% accuracy in predicting schizophrenia using fMRI brain scans and connectomics○ Further analysis of demographics led to identify contribution of aging in Schizophrenia. |
| March.2021 | Research Engineer , <i>FairCAPTCHA</i> , Cameroon |
| Nov.2021 | <ul style="list-style-type: none">○ Architected the system to optimize captcha effectiveness for transparently learning from diverse, under-represented data, fostering a more respectful and inclusive technology landscape. |
| Feb.2021 | Founder , <i>Genu</i> , Cameroon |
| Feb.2019 | <ul style="list-style-type: none">○ Built custom software for businesses's digitalization, data analysis, and machine learning○ Developed compliance software that processes thousands of transactions daily in the CEMAC economic area |
| Nov.2018 | Lead Engineer , <i>Traveler</i> , Cameroon <ul style="list-style-type: none">○ Led the development of fleet management software which led to a 50x increase company's market. |
| March.2018 | Machine Learning Engineer , <i>Traveler</i> , Cameroon |
| April.2017 | <ul style="list-style-type: none">○ Developed a driver assistance system that significantly improved the safety of highway driving using bus tracking records.○ Used tool such as XGBoost, Tensorflow, Python, R, Matplotlib, Google App Engine, Spark, Mesos, Firebase, GCP |
| March.2013 | Software Engineer , <i>Human Wireless</i> , Cameroon |
| Feb.2014 | <ul style="list-style-type: none">○ Built an innovative ChatBot Assistant in a low connectivity environment.○ Worked on a live and end-to-end encrypted messaging system.○ Used tools such as NodeJS, PHP, Redis, Mongo, MySQL |
| Oct.2019 | Co-Founder , <i>VRJmusic</i> , Cameroon |
| July.2012 | <ul style="list-style-type: none">○ Led the development of the music sharing and streaming platform○ Built the most popular music platform in Central Africa at the time |

Education

- 2019 – 2021 **Master in Machine Intelligence**, *African Institute for Mathematical Science Kigali, Rwanda*
Google & Meta scholarship (70 out of 7,000 applicants) and 2nd of the Cohort
Thought by top AI reserachers from Google, Facebook, Deepmind, NYU and more
Relevant Coursework: Mathematics of Machine Learning, Foundations of Machine Learning, Bayesian Inference in ML, Deep Learning, Natural Language Processing, Machine Learning with Kernel Methods, Probabilistic Graphical Models, Reinforcement Learning, Optimization for Machine Learning, Computer Vision, Speech Recognition, Geometric Deep Learning.
Thesis: Text Visual Question Answering on Text-VQA with Transformers
- 2017 – 2019 **Master in Computer Engineering**, *Polytechnique Yaounde, Cameroon*
Recipient of Government Scholarship (300 out of 30,000 applicants)
Relevant Coursework: Linear Algebra, Functional Analysis, Statistics & Probability, Data Structures & Algorithms, Software Design.
Thesis: Prediction Assistant for Bus Drivers

Workshop

- 2023 **Whispering Across the Continent: Collecting and Analyzing African Culture Using Community Radios**, J. Domguia, A. Nkama, Black in AI, NeurIPS Worskshop and Tiny Paper, ICLR Worskshop, *work on progress*
- 2022 **Text Visual Question Answering on Text-VQA with Transformers**, E. Oduntan, J. Domguia, Deep Learning Indaba
- 2020 **Towards end-to-end training of proposal-based 3D human pose estimation**, D. Ajisafe, J. Domguia, et al., DiffCVGP, NeurIPS Worskshop

Open Source Projects

- 2023 **Contributed to NiGSP**: A python library and toolbox for running Graph Signal Processing on multimodal MRI data (project repo)
- 2022 **Graph Neural Network with Perceiver model**: Used a large context perceiver transformer model to address smoothing issues of graph neural networks observed on very large graphs (ongoing project repo)
- 2020 **DNA Sequence bonding prediction with Kernel**: Implemented a mismatch kernel achieving 72% accuracy, the highest score in the DNA binding site prediction competition (project repo)
- 2020 **Object detection, segmentation, and tracking**: Developed an object tracking method with Detectron based on IoU, achieving 85% tracking accuracy in testing on cars (project repo)

Technical Skills

Machine Learning: PyTorch, TensorFlow, JAX, Numpy, OpenCV, SciKit, Prompt engineering :-)
Coding: Python, Matlab, C++, JavaScript, Java, R, Rust, Ruby
DevOps: Linux, Cloud, Docker, Git, AWS, GCP
Databases: SQL, Elastic Search, MongoDB

Soft Skills

Insatiable Curiosity, Empathic, Entrepreneurship, Problem solver & Good debugger

Leadership/Volunteer

Engage in ML community such as Cohere For AI, Carper, Eleuther and Masakhane
Team Leader of Cameroon at the International Mathematics Olympiad (IMO) and co-founder of the academic olympiads program of Cameroon
Co-Founder of VRJmusic: First music-sharing platform in Central Africa in the 2010s

Languages

English: Fluent
French: Native