Alexandre ANDRE

aandre8@gatech.edu linkedin.com/in/alexandre-andre-

I am a Computer Science graduate student at Georgia Tech and my main area of interest is neuroAI. My research involves sequence modeling from time series transformers to state space models, and their applications, including neural decoding and music recommendation.

Education

Georgia Institute of Technology **Metz, France – Atlanta, GA, USA**
MSc in Computer Science – GPA 4.0/4.0 *Jan 2024 – May 2025 (expected)*

- **Relevant courses:** Deep Learning, Machine Learning, and Introduction to Research.

University of Technology of Compiègne (UTC) **Compiègne, France**
MEng in Computer Science – GPA 5.0/5.0 *Sep 2019 – Jan 2025 (expected)*

- **Relevant courses:** Graph Learning, Computer Vision, and Statistical Learning.

Politecnico di Milano **Milan, Italy**
Visiting student in the Computer Systems Engineering Department *Feb – Jul 2021*

Research Experience

NerDS Lab **Remote – Atlanta, GA, USA**
Graduate Research Assistant - Supervised by Prof. Eva L. Dyer *Oct 2024 – May 2025*

- **Main mission**: Motor Neural Data Spiking Decoding.
- Led NDT2 re-implementation on Neuro Galaxy, the lab framework for neural data foundation models, replicated key experiments from the original paper, and documented the data processing workflow within NDT2.
- Started a master project: Leveraging State Space Model (SSMs) for Better and More Efficient Neural Decoding.
- Contributed to the development of Neuro Galaxy (commits, tests, documentation).

Heudiasyc Lab – UMR-CNRS 7253 **Compiègne, France**
Graduate Research Assistant - Supervised by Prof. Julien Moreau and Prof. Philippe Xu *Sep – Dec 2023*

- **Main mission**: Localization Prediction in a Weakly Supervised Setting.
- Leveraged DETR to detect key points, ground contact points of poles, in complex urban environments.
- Created a custom dataset with ≈13K manually annotated poles across ≈2.3K images, enhancing model training.
- Collaborated with Ph.D Maxime Noizet on ERASMO, a European research initiative on automated driving.

Industry Experience

Deezer **Paris, France**
Machine Learning Engineer Intern - Supervised by Théo Bontempelli *Jun – Nov 2024*

- **Main mission**: Modeling User Musical Tastes Using Transformers in a Large Scale Environment.
- Leveraged transformers to map users into an embedding space by aggregating embeddings from users' song history.
- Achieved a .045 increase in accuracy@1K (+15% over previous baselines).
- Planned A/B test, if successful, the new aggregation method will be deployed to production, impacting millions of users.

Wise Systems **Montreal, Canada**
Cloud Engineer Intern *Sep 2022 – Feb 2023*

- **Main mission**: CI/CD Improvements of the IaC (Infrastructure as Code) Deployed with Terraform.
- Streamlined infrastructure management by deploying Atlantis, a Terraform pull request automation tool.
- Optimized multiple GitLab CI pipelines, enhancing efficiency and automation across the development workflow.

ML Course Projects

Self-Supervised Pre-Training for Downstream Classification Tasks
Supervised by Ph.D. Salim Khazem and Prof. Cédric Pradalier *Jan – May 2024*

- Fine-tuned mask autoencoders (MAE) to enhance key metric (+.5% acc.) and efficiency (95% acc. in less than 17 min) compared to the previous baseline (complex pipeline with CNN taking hours) on Diatoms (Gatech Europe dataset). Studied the trade-off between self-supervised pretraining and finetuning on the Diatoms to reach fast and optimal performance.

MobileHateCLIPper - Efficient Multi-Modal Hateful Meme Detection with MobileCLIP *May 2024*

- Leveraged MobileCLIP to enhance HateCLIPper. Extended the Hatefull Meme dataset with examples from the Memotion and Propaganda datasets. Led to a more efficient model (×3 faster than HateCLIPper) while maintaining competitive metrics (+1.88/-3.21 AUROC on *dev seen*/*test seen*).

Object Detection *Feb – Jun 2023*

- Created a custom dataset (≈600 images with ≈1K cups). Detected plastic cups with various computer vision techniques such as sliding window combined with image descriptor (e.g., SIFT) and classifier (e.g., boosting, SVM).

Others Course Projects

Multi Agent Simulation – Gossip Simulator *Sep – Dec 2023*

- Built a multi-agent simulator in Go to model gossip propagation among students. Analyzed how parameters such as population size and agent traits affect belief dynamics.

Review of Distributed Coordination Function (DCF) Fairness. *Apr – Jun 2023*

- Reviewed DCF, the distributed algorithm for medium access control in WiFi (IEEE 802.11). Analyzed fairness issues and explored enhancements through hardware flow control (RTS/CTS) and Quality of Service (QoS) such as EDCF.

Stereo Matching *Apr – Jun 2023*

- Developed a depth estimation pipeline using block-based stereo matching. Enhanced efficiency with Numba and accuracy through pre/post-processing (e.g., mode filtering, occlusion detection) and parameter tuning (e.g., similarity measures).

Communication Analysis for the French Presidential Campaign *Sep – Dec 2021*

- Analyzed the 8 candidates of the 2022 French presidential election across social platforms (Twitter, Facebook, Instagram, YouTube, and official websites), using sentiment analysis on textual data and graph analysis for network decoding.

Extracurricular Activities

Tut'UT – Tutoring Club **Compiègne, France**
Tutor *Sep 2023 – Jan 2024*

- Provided pedagogical support in Mathematics, including Statistics, Probability, Analysis, and Algebra.

Junior UTC – Consulting Club **Compiègne, France**
Vice President, Business Development Manager, Quality Auditor *Sep 2021 – Aug 2023*

- Finalist for the ALTEN Best Engineering Project Award, recognized for excellence in engineering.
- Conducted internal audits and drove continuous process improvements to enhance operational efficiency.
- Developed a three-year strategic plan, led a team of 30, and organized board meetings.

Erasmus Student Network (ESN) – Incoming International Student Club **Compiègne, France**
Communication Manager *Sep 2021 – Jan 2022*

- Created social content to promote activities and engagement within the international student community.

Technical Skills and Languages

Programming Languages: Python (Pytorch, Scikit-learn...), LaTex, Go, C++, Terraform, SQL, C, R, MATLAB
Technologies: AWS, Git, GitLab (CI/CD), Docker, GCP
Languages: French (Native speaker), English (Full working proficiency), Italian (Intermediate)