**OTHMANE ECHCHABI**

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EDUCATION

**McGill University & Mila — Quebec AI Institute**, Montréal, Canada

*M.Sc. in Computer Science (Thesis, fully funded)* — Expected 05/27

* Research Assistant in Rolnick Lab, focus on Machine Learning, Computer Vision, Climate & Sustainability

**Duke Kunshan University / Duke University**,Kunshan, China / Durham, USA

*B.Sc. in Data Science (Dual Degree)* — 05/25

* Thesis: Monitoring Spartina Alterniflora Using Self-Supervised Learning (funded by DKU Research Grant). [[poster]](https://othmaneechc.github.io/projects/self_poster.pdf)

Study Abroad: Universidad Carlos III de Madrid (01/2022–05/2022)

GRANTS AND AWARDS

McGill CS Graduate Award — $30,500/year (2025)

DKU Student Experiential Learning Fellowship — $1,000 (2024)

DKU Signature Work Research Grant — $1,500 (2023)

DKU iNNOVATION iNCUBATOR — $3,000 (2023)

Dean’s List — 2021

RESEARCH EXPERIENCE

**Research Intern University Mohammed VI Polytechnic, Benguerir, Morocco**

Supervisor: Prof. Ismail Berrada Jun 2025 – Present

* Built a global dataset integrating a decade of crop yield and fertilizer data.
* Created an ML pipeline for field fertilizer recommendations; created a decision tool with an integrated LLM (RAG).

**Researcher** **Assistant** **Duke Kunshan University, Suzhou, China**

Supervisor: Prof. Ka Leung Lam Jun 2024 – Present

* Created a global dataset of piped water and sewage access, leveraging satellite imagery and ViTs (97% accuracy).
* Advanced SDG6 monitoring capacity by providing scalable, ML-driven infrastructure assessments for African nations.

Supervisor: Prof. Charles Chang Jun 2024 – Present

* Designed a Transformer model achieving 94% accuracy in transport mode prediction, 92% in trip purpose inference.
* Deployed CarbonClever, a social platform promoting individual carbon footprint reduction through mobility insights.

**Research Fellow Duke University, Durham, NC**

Supervisors: Prof. Wenhong Li & Prof. Ding Ma Jun 2024 - Aug 2024

* Applied Vision Transformers on Sentinel-2 & Landsat imagery to detect invasive salt marsh species at landscape scale.
* Findings presented at the Duke Climate+ Symposium (2024), supporting coastal wetland conservation policy.

Supervisor: Prof. Emily Bernhardt Jun 2023 - Aug 2023

* Developed a geospatial database of saltwater intrusion & sea level rise in the North American Coastal Plain.
* Applied NLP (BERT) on 1,000+ articles to extract trends; delivered insights via an interactive ArcGIS platform.

PUBLICATIONS AND PREPRINTS

* **O. Echchabi**, A. Lahlou, N. Talty, J. Manto, K. L. Lam. Tracking Progress Towards Sustainable Development Goal 6 Using Satellite Imagery. **RSASE** (under review). [arXiv:2411.19093](https://arxiv.org/abs/2411.19093)
* Y. Zhang, **O. Echchabi,** T. Feng, W. Zhang, H.-K. Liao, Z. Lu, C. Chang. SpeedTransformer: Predicting Human Mobility Patterns Using Dense Smartphone GPS Trajectories and Transformer Models. **IJGIS** (under review).

SELECTED PRESENTATIONS

* Monitoring Spartina alterniflora Using Self-Supervised Learning. **Duke Climate+ Symposium**, 2024. [[poster]](https://othmaneechc.github.io/projects/data+24_poster.pdf)
* Assessing Climate Change Risk of Rural Coastal Plains. **Duke Climate+ Symposium**, 2023. [[poster]](https://othmaneechc.github.io/projects/data+23_poster.pdf)

PROFESSIONAL EXPERIENCE

**Data Analyst Intern**  **Atos Morocco, Rabat, Morocco**

Oct 2022 – Nov 2022

Built dashboards providing real-time HR metrics to support leadership decision-making.

Deployed solution in Morocco branch, later scaled to all African branches.

**Data Analyst Intern XPerlean, Saint-Quentin, France**

Jul 2022 – Aug 2022

Applied Faster R-CNN and YOLO to detect ceramic defects, raising accuracy from 70% → 85%.

Improved quality control, cut costs, and boosted production speed by 10%.

**Data Analyst Intern**  **Al Jazeera Media Institute, Doha, Qatar**

Oct 2021 – Dec 2021

Scraped and processed 200K+ social media records using APIs to analyze user behavior and engagement.

PERSONAL PROJECTS

**Football AI Tracker Oct 2024 - Dec 2024**

*Final Project for STATS402: Interdisciplinary Data Science* Suzhou, China

* Built a computer vision system tracking players, referees, and the ball under suboptimal video conditions.
* Provided a low-cost alternative to high-end tracking systems, democratizing football analytics. [[manuscript]](https://othmaneechc.github.io/website/projects/stats402_football_ai_tracker.pdf)

ACTIVITIES AND VOLUNTEER WORK

Duke Kunshan University

* Resident Assistant (2024–2025)
* Student Athlete — Soccer Team Co-Captain (2023–2025)
* CS Club — Software Team Lead [[website]](https://www.hackdku25.org/) (2023–2025)
* Math & CS Teaching Assistant (2022–2024)

FADI Academy, Morocco — Partner & Math Tutor (2023–Present)

FIFA World Cup, Qatar — Team Leader, Spectator Services Volunteer (2022)

TECHNICAL SKILLS

**Programming/Tools:** Python, Java, JavaScript, Bash, Git, Rasterio, GDAL, Google Earth Engine, QGIS, ArcGIS

**ML/AI:** PyTorch, Scikit-learn, Transformers, Self-Supervised Learning, Computer Vision,

**Other:** HPC workflows, Data Pipelines, NLP (BERT, RAG-LLMs)

LANGUAGES

Arabic (native), French (fluent), English (fluent), Chinese (conversational), Spanish (conversational)