**OTHMANE ECHCHABI**

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EDUCATION

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

M.Sc. Candidate & Research Assistant, Computer Science Aug 2025 - May 2027

**Duke Kunshan University** Jiangsu, China

**Duke University** Durham, North Carolina

Bachelor of Science in Data Science (Dual Degree) Aug 2020 - May 2025

**Universidad Carlos III** Madrid, Spain

Semester Abroad Jan 2022 – May 2022

Relevant Coursework: Statistical Machine Learning, Computer Vision, Deep Learning, Speech Recognition

GRANTS AND AWARDS

DKU Student Experiential Learning Fellowship, 2024

DKU Signature Work Research Grant, 2023 | Awarded $1,500 for research on wetland degradation.

DKU iNNOVATION iNCUBATOR, 2023 | Awarded $3,000 for developing a dialectal Arabic NLP model.

Dean’s List, 2021

RESEARCH EXPERIENCE

**Tracking Progress Towards SDG6 Jun 2024 – Present**

Supervised by Prof. Ka Leung Lam, Duke Kunshan University Suzhou, China

* Assessed piped water and sewage access in Africa using satellite imagery and vision transformers with 97% accuracy; Developed a global dataset for piped water and sewage access.

**Echchabi, O.**, Lahlou, A., Talty, N., Manto, J., Lam, K. L. "Tracking Progress Towards Sustainable Development Goal 6 Using Satellite Imagery." *Water Research*. **(Under review)**. *arXiv preprint* [arXiv:2411.19093](https://arxiv.org/abs/2411.19093v2).

**Carbon Footprint Reduction and Trip Mode and Purpose Prediction Jun 2024 – Present**

Supervised by Prof. Charles Chang, Duke Kunshan University Suzhou, China

* Developed a transformer model for sequence data to predict individual modalities; achieved 94% accuracy in mode identification on the GeoLife dataset with our pre-trained transformer-based model; achieved 92% accuracy in purpose prediction using Point-of-Interest (POI).
* Designed and implemented CarbonClever, a social media application for individual carbon footprint reduction.

Zhang, Y., **Echchabi, O.**, Feng, T., Zhang, W., Liao, H.-K., Lu, Z., Chang, C. "Individual Modality Prediction Using Sporadic Social Media Geolocations and Pre-trained Transformer Models*." International Journal of Geographical Information Science.* **(Under review)**.

**Monitoring Spartina Alterniflora Using Self-Supervised Learning Jun 2024 – Aug 2024**

Supervised by Prof. Wenhong Li and Prof. Ding Ma, Duke University Durham, NC

* Identified evasive coastal wetland species using satellite imagery and ViTs for wetland monitoring.

“Monitoring *Spartina alterniflora* Using Self-Supervised Learning.” Climate+ Symposium, Rhodes Information Initiative at Duke, Durham, NC, 2024. [[project page]](https://bigdata.duke.edu/projects/monitoring-spartina-alterniflora-using-self-supervised-learning/) [[poster]](https://othmaneechc.github.io/website/projects/data+24_poster.pdf)

**Assessing Climate Change Risk of Rural Coastal Plains Jun 2023 – Aug 2023**

Supervised by Prof. Emily Bernhardt, Duke University Durham, NC

* Developed a comprehensive geospatial database for saltwater intrusion and sea level rise research within the North American Coastal Plain using ArcGIS. [[Interactive map]](https://tinyurl.com/swislr)
* Applied NLP models such as BERT to analyze and map insights from over 1,000 scholarly articles.

“Assessing Climate Change Risk of Rural Coastal Plain Communities.” Climate+ Symposium, Rhodes Information Initiative at Duke, Durham, NC, 2023. [[project page]](https://bigdata.duke.edu/projects/assessing-climate-change-risk-of-rural-coastal-plain-communities/) [[poster]](https://othmaneechc.github.io/website/projects/data+23_poster.pdf)

PROFESSIONAL EXPERIENCE

***AI Intern*, University Mohammed VI Polytechnic Benguerir, Morocco | June 2025 – Dec 2025**

* Engineered a geospatial ML pipeline that fuses yield records to deliver field‑level fertilizer recommendations.
* Co‑developed an agriculture‑domain LLM with Retrieval‑Augmented Generation for informed responses.

***Data Analyst Intern*, Atos Morocco Rabat, Morocco | Oct 2022 – Nov 2022**

* Created dashboards to provide real-time insights into HR metrics, facilitating leadership decision-making.
* Rolled out the solution in the Morocco branch, later expanding to all company branches in Africa.

***Data Analyst Intern*, XPerlean**  **Saint-Quentin, France | Jul 2022 – Aug 2022**

* Collaborated with Morocco's leading ceramics manufacturer, using Faster R-CNN and YOLO models to detect defects in ceramics, increasing defect detection accuracy from 70% to 85%.
* Improved quality control and sped up production by 10% and decreased operational costs.

***Data Analyst Intern*, Al Jazeera Media Institute Doha, Qatar | Oct 2021 – Dec 2021**

* Scraped large-scale CSV data files using social media APIs, processing over 200,000 data records, to analyze user behavior and interaction data.

PROJECTS

**Spatiotemporal Patterns of the Yancheng Coastal Wetlands Degradation. Aug 2023 - Present**

*Senior Year Thesis* Suzhou, China

* Conducted a 25-year spatiotemporal analysis of Yancheng coastal wetlands degradation using satellite imagery and NDVI, highlighting ecological shifts and advocating for targeted conservation strategies. [[poster]](https://othmaneechc.github.io/website/projects/self_poster.pdf)

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

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

* Achieved accurate tracking of players, referees, and the ball under suboptimal video conditions, providing a cost-effective 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* Aug 2024 – Present

*Student Athlete – Co-Captain of the soccer team* Aug 2023 – Present

*DKU CS Club Software Team Lead* [[website]](https://www.dkucompsci.org/team) Aug 2023 – Present

*Math and Computer Science TA* Jan 2022 – May 2024

**FADI Academy Aug 2023 – Present**

*Partner and Math Tutor* Remote/Casablanca, Morocco

Co-founded the academy and designed the math curriculum that helped students get near-perfect SAT scores.

**FIFA World Cup 2022 VolunteerNov 2022 – Dec 2022**

*Spectator Services Volunteer – Team Leader* Doha, Qatar

Led team of volunteers and assisted spectators in two venues with a capacity of 45,000 seats each.

TECHNICAL SKILLS

Python, Java, R, JavaScript, TypeScript, SQL, TensorFlow, PyTorch, Django, React.