Ali El Baha

🌐 Portfolio **(click here)** | 🔗 Profile **(click here)**

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I am a 2nd year engineering student at CentraleSupelec, with a deep interest in research.
My passion for data extends to statistical analysis, image processing and Deep Learning.
I am currently seeking a 6-month internship opportunity.

EDUCATION

Centrale Paris (CentraleSupelec)   Paris, France
Applied Mathematics and Energy Systems   *2024*
- Optimization of Embedded Energy Systems, Stochastic Optimization, Eco-optimisation, Statistics, Deep Learning, Image Processing.

Centrale Casablanca   Casablanca, Morocco
Engineering Degree   *2022 - 2024*
- Applied Mathematics, Numerical Methods, Statistics, Optimization, Machine Learning, Quantum Physics, Statistical Physics, Energy Systems.

Lycée Ibn Abdoun   Khouribga, Morocco
Preparatory Classes MP   *2020 - 2022*
- Two-year post-baccalaureate program in advanced mathematics and physics leading to entrance exams for *Grandes Écoles*.

EXPERIENCE *[Analytical and synthesis skills - Autonomy - Communication]*

Deep Learning research | *Laboratoire de Mécanique Paris-Saclay (LMPS)*   Feb. 2024 – Present
- Study of recurrent neural network (RNN) architectures, with particular emphasis on Long Short Term Memory (LSTM) networks, in the context of processing time series data.
- Evaluation of generalized adversarial representation networks (RepGAN) in order to test their data generation and signal reconstruction capabilities.
- Implementation of a new approach integrating the LSTM model with the RepGAN model, with the aim of predicting the seismic response of historic monuments
- Comparative performance analysis between the RepGAN model incorporating an LSTM and one incorporating a Transformer.

NLP engineer intern | *NORMA*   Oct. 2023 – Jan. 2024
- Development of "Juridico", a legal assistant that meets a major market need for automated analysis and contract management.
- Design of a scalable AI solution using the "Falcon" language model and RAG technology with the LangChain framework, tailored to the needs of business leaders and legal professionals.
- Fine-tuning of *Falcon* LLM to enhance the model's ability to interpret legal documents with precision.

Software engineer Intern | *OCP Group*   July 2023 – Sept. 2023
- Development of an interface, programmed in Python, over a complex VBA-based Excel spreadsheet, to facilitate essential data collection and entry tasks.

VOLUNTEERING ACTIVITIES *[Pedagogy - Rigor]*

Centrale Tech Association
- Preparation of theoretical courses on AI for first-year students.
- Organization of workshops on solving real industrial problems using AI techniques.

TECHNICAL SKILLS

Languages: French (bilingual), Arabic (native), English (Toeic: 920/990), Japanese (beginner).

Tools: Python, MATLAB, R, SQL, Tensorflow, PyTorch, Scikit-learn, Pandas, seaborn, NumPy, OpenCV, Flask, Power BI, Streamlit, MS Office Suite, Git, VS Code.

PROJECTS *[Teamwork - Project Management]*

Smart glasses for the visually impaired | *Python, Tensorflow, Computer Vision, LLMs, TTS & STT*   Dec. 2023
* ∗ Implementation of DETR-ResNet-50 for precise object detection in near real-time scenarios.
* ∗ Integration of the Global-Local Path Networks (GLPN) model, trained on NYUv2, for accurate monocular depth estimation.
* ∗ Use of the LLM for real-time environment description and user guidance towards their desired destination.

PV system performance forecasting and anomaly detection | *Python, Tensorflow, Jupyter Notebook*   Oct. 2023
* ∗ Used a deep learning approach for forecasting PV system power output, using data from a 9 MWp grid-connected plant.
* ∗ Built and trained separate LSTM models for forecasting power output and for anomaly detection using autoencoder architecture.
* ∗ Achieved high accuracy in power output forecasting ($R^2 = 0.98$) and effective signal reconstruction ($MSE = 0.02$)

Multilingual feedback automation system | *Python, VS Code, Flask, LLMs*   Sept 2022 – June 2023
* ∗ Design and development of a user feedback management interface, focused on automation.
* ∗ Support for text and audio formats in three languages: English, French, and Arabic.
* ∗ Use of language models (LLMs) to process and classify feedbacks in order to generate relevant data.

CERTIFICATES

Project Management certification | *Google Project Management*

Scrum Certification | *Scrum Master*

Modeling Software Systems using UML | *The Hong Kong University of Science and Technology*

Client Needs and Software Requirements | *University of Alberta*