Nurul Bin Ibrahim

St. John's, NL, Canada +1 (709) 697-6559 bibrahim@mun.ca Portfolio
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Summary

Multi-disciplinary **Software Developer** and **Physicist** specializing in **Machine Learning**, **Data Analysis**, and **Cloud Development.** Founder of an **AI Startup** and developer of several scientific and consumer-based solutions in ML, Data analysis, and Cloud sec.

Projects

UNIK - AI Academic Advisor
Built a web-app with production-grade AI systems that provide on-demand academic guidance solutions to educational institutes. Backed up by the MCE and is currently deployed for MUN students.
https://www.unikai.ca/

The Nurul Network
Developed an automated deep-learning solution that deciphers the behavior of turbulent systems with its predictive and analytic capability. This provided critical insights into solving turbulence and the path to new solutions. Part of my Honors thesis.
Github Repo

AI mini-projects
DocChatAI, FAQGenius, RAG Implementation, Transformers, CUDA Neural Networks, AIris, ImageClassification, and more on GitHub.
Github Repo

Fish Detection Software
Collaborated with scientists and iMERIT to develop a fish detection solution for acoustic profilers, creating a new and effective tool for marine scientists, and providing innovative ways to make use of existing data.
https://imerit.ocean.dal.ca/

Experience

Cloud Simulation Developer — **Sept. 2023 – Present**
Memorial University of Newfoundland — NL, Canada

- Leading the development of a fluid simulation software on *HPC* clusters (*DRAC, GCP*) with *OpenFOAM*, improving the accuracy and efficiency in analyzing turbulence.
- Developing *CUDA*-based GPU programs and automating cloud-based workflows with *Kubernetes* and *Docker*, boosting performance and deployment efficiency.
- Conducting thorough data analysis and creating interactive visualization using *Python* and *R*. Implementing performance benchmarking and optimizations with *Nvidia Nsight* to refine analysis quality.

Machine Learning Researcher — **Apr. 2023 - Oct. 2023**
Memorial University of Newfoundland — NL, Canada

- Developed and implemented deep-learning models *(RNN, CNN, LSTM, PINN, GAN)* utilizing *CUDA* and Cloud services to successfully decipher and explain the complex behavior of turbulent jets.
- Mastered data modeling and statistical analysis to optimize and fine-tune the models, achieving superior insights in turbulent systems; utilized data visualization tools to understand hidden physics.
- Integrated ML models with computational fluid dynamics (CFD) methods to deliver key insights through presentations and scientific papers, introducing new tools to the community.

Acoustic Data Analyst — **Apr. 2022 - Oct. 2022**
Memorial University of Newfoundland — NL, Canada

- Collaborated with Ocean Scientists to develop a fish detection solution for acoustic profilers (MATLAB, Python), providing crucial oceanic and marine life insights.
- Managed pre-processing, analysis, and visualization of acoustic datasets(*Pandas, Numpy, Matplotlib, Seaborn*), enhancing data clarity and representability.
- Ensured 100% data accuracy through rigorous quality assurance; optimized research equipment for peak operational efficiency.

Education

Memorial University of Newfoundland — **April 2024**
B.Sc. in Physics (Honors) — GPA = 3.6 /4.0

- Secretary and Ex-Vice President of the Physics and Physical Oceanography Society (PAPOS).
- Funded by the Dr. Hugh J. Anderson Senior Scholarship 2023-2024.

Skills

- **Languages:** Python, C/C++, MATLAB, JavaScript, HTML/CSS, SQL, Bash, R
- **Frameworks & Libraries:** TensorFlow, PyTorch, Pandas, NumPy, SciPy, Matplotlib, Flask, React.js/Node.js, scikit-learn
- **Tools & Tech:** Git/GitHub, Linux, Docker, CUDA, OpenAI API, LangChain, HuggingFace, MLFlow, MongoDB, MySQL, SLURM, Kubernetes, MPI/OpenMP, OpenFOAM, GCP, DRAC, GitLab CI, VSCode, JupyterLab

Conferences

Key Presenter -

CUPC'2023 hosted by **CAP** in Waterloo (Presented project on Learning of Turbulence)

AUPAC'2023 hosted by **Science Atlantic** in Halifax (Presented project on Acoustic Fish Detection Solutions)

AWC'2022 hosted by **CAA** in St. John's (Presented research on Acoustic Fish Detection Solutions)