

JEROME FRANCIS

jerome.francis@umontreal.ca Computer Science / Machine Learning [Portfolio](#) [Github](#) [LinkedIn](#)

EDUCATION

Mila - Quebec AI Institute / Université de Montréal *September 2023 - present*
MSc. in Computer Science, Machine Learning Specialization

T.K.M. College of Engineering, Kollam *August 2016 - 2020*
Bachelor of Technology, B.Tech (Hons.) *9.3/10 GPA (3.78/4)*
Department of Computer Science and Engineering(CSE)

PUBLICATIONS

Abin Shoby, **Jerome Francis**, Jini Raju, Ushadevi Amma C., Ansamma John. [A Novel approach for b value optimization in IVIM imaging using an LSTM based deep learning network on simulated data](#), *International Journal of Medical Engineering and Informatics*, 2023 *(Accepted)*

The project investigated methods to reduce the image acquisition time of IVIM MRI technique. Project Supervisor: Dr. Ansamma John, HoD (CSE), TKMCE

PROFESSIONAL EXPERIENCE

Tata Consultancy Services *May 2022 - June 2023*
Data Scientist

- Involved in **Credit Loss Forecasting** to identify specific **event-related representations** that may have a potential reserve impact using Machine Learning on loan execution analytic and macro-economic data.
- Enhanced the tariff pricing models for Non-Life Insurance policies using Generalized Linear Models and Additive Models (GLMs, H-GLMs, GAMs) and statistics with better credibility estimations to the new premium rates affecting over **10** products.
- Advanced portability and optimization of production-level code of **18** data analytical processes in CECL / CCAR which cater to an internal audience of around **200** people

Tata Consultancy Services *Oct 2020 - May 2022*
Business Analyst, TCS Digital

- Improved data-integration from multiple data sources, reducing data preparation time by **33%**, shifting the focus to essential operational analysis.
- Automated tasks to provide **critical data-driven analysis** of a product processor in the Data Management team, Chief Data Office of a leading BFSI corporation in NAM.
- Optimized the computation of KPI reports, resulting in **7X** reduction in Turn Around Time for completing process and obviating the need for a new hire.

Ignitarium Technology Solutions, Kochi *June - July 2019*
Machine Learning Intern

- Developed deep learning models for better, **on the fly** fault detection on railway tracks in different terrains.
- Introduced a new feature that aided the fault detection in railway tracks and was later added into the **Rail Defect Detection Platform**.
- Optimized the model architecture to a lightweight version for embedding into drones.

PROJECTS

Simultaneous State-Dependent Updating of multi-options in Flexible Option Learning: Introduced multi-option update based on distance-goal based heuristic, as an extension to Flexible option Learning [git/flexible_option_learning](#)

Reinforcement Learning in Minecraft (PyTorch, Reinforcement Learning): Designed an agent in Minecraft to perform certain skills like chopping wood, crafting pickaxes, collect items like stones, food for survival using Policy Gradient technique which got an average score of **19.0** per environment run (*32 environments*).

Video based RailGap measurement (PyTorch, OpenCV, Deep Learning): Designed a feature to measure rail gaps of railway tracks present in video frames using **Semantic segmentation** and **Image Processing**. This measurement is used to detect gaps which exceed a threshold value ([faulty gaps](#)). This project was a part of internship done in July 2019.

ACCOMPLISHMENTS

- **Volunteer** Program Committee member, [SoLaR workshop](#), NeurIPS'23
- **Awarded** "Star Performer" within BFSI-Analytics & Insights in TCS
- **Accepted** into [EEML Summer School 2022, Lithuania](#) [**Virtual**]
- **12th** position in MineRL Diamond Challenge (Intro Track) - [NeurIPS '21 competition](#)
- NeurIPS MineRL 2021 Compute Grant
- **Student Mentor - AI/ML** Taught basics concepts of ML and AI in SIG-TKMCE club
- **Volunteer** Contributed 6 hours to Sign Language Workshop as part of TCS empowers, CSR Volunteering Program

ONLINE COURSES AND CERTIFICATIONS

CS285 - Reinforcement Learning, **UC Berkley**

Reinforcement Learning Specialization, **Amii & UofA, Coursera**

Machine Learning, Sequence and Models, Game Theory, Architecting with Google Compute Engine Specialization, [**Coursera**]

TECHNICAL SKILLS

Languages	Python, C++, C, SQL, \LaTeX
Tools/Libraries	Keras, Tensorflow, Pytorch, OpenCV, Scikit-Learn, Numpy, Pandas
Data Extraction	BeautifulSoup, Selenium
BigData/Task Handling	PySpark, MLflow. Prefect, Docker, Git, JIRA
Simulation	OpenAI Gym, Pybullet. Mujoco
Web	Javascript, HTML, CSS, Flask, d3.js