Frederic J Maliakkal

Computer Science & Engineering

Indian Institute of Technology Bombay

23M0745

M.Tech

Examination	University	Institute	Year	CPI/%
Post Graduation	IIT Bombay	IIT Bombay	2023-25	9.63
Graduation	University of Kerala	CET	2014-18	8.99
Intermediate/+2	Kerala Board	CARMEL	2012-14	98.25

SEMINAR

Effect of Modern Trading Techniques on Securities Market   *M.Tech Seminar*
Prof. Shivaram Kalyanakrishnan   *Dec '23 - present*

- **Objective:** To understand modern technologies used in trading and their effect on the securities market.
- **High-Frequency Trading(HFT):** The working of HFT, their edge in the market, the effect of HFT on common traders and regulations concerning HFT.
- **AI in finance:** The use-cases of different AI techniques like machine learning or Reinforcement learning in financial markets, how effective is ML in forecasting.
- **Crowdsourcing:** How valuable is the information harnessed from social media and other crowdsourcing platforms that have the properties of Wisdom of the crowd?

WORK EXPERIENCE

Matlab and Automation | *Engineer*   *Sep '18 - May '19*
Tata Elxsi

- Part of a team analysing the data obtained after testing and building a test rig for the ECU of petrol-run Jaguar Land Rover.
- Developed an automated tool for analysing the test results obtained by testing an ECU in a simulated environment. The tool saved manual labour and human error in analysing the result.

Freelance developer | *Full-time*   *Jan '21 - Jun '22*
Fazart

- Developed multiple hybrid mobile applications. The major tech stacks used were Flutter & Firebase.
- Experience in developing multiple domain apps like e-commerce, portfolio, and handyman.

COURSE PROJECTS

Stock Analyst: Website for Sector wise stock suggestion   *Autumn 2023*
CS699: Software Lab   *Prof. Bhaskaran Raman*

- **Technologies**: FastApi, Postgresql
- Developed a portal for assisting users in choosing and comparing stocks among the top companies available in a particular sector/industry. The site provides various visual charts for comparison of different companies available and suggests a particular distribution of assets in the chosen sector.

Sleep Detection   *Autumn 2023*
CS725: Foundations of Machine Learning   *Prof. Sunita Sarawagi*

- Objective: Find the longest sleep cycle of the given data from 2 input variables.
- Tried different approaches to find the optimal model to use including Bagging, Stacking, Boosting, and RNN.
- Achieved peak performance with the RNN, attaining the highest score among all models.

Sparse Retrieval on a Corpus.   *Autumn 2023*
CS635: Web Search and Mining   *Prof. Soumen Chakrabarti*

- Objective: Use word piece tokenizer and proximity rewards for sparse retrieval.
- The dataset used was the CISI dataset.

- Wordpiece tokenization increased the MAP and NDCG scores. Incorporating proximity rewards further increased the scores.

Knowledge Graph Question Answering *Autumn 2023*
CS635: Web Search and Mining *Prof. Soumen Chakrabarti*

- Created a knowledge graph on the IMDB1000 dataset using NetworkX.
- Created embedding for the knowledge graph using ComplEx.
- Used haystack to create a question-answering interface with the graph embedding and the query embedding.

PERSONAL PROJECTS

Automated Trade Execution Script
Trading

- Used Aliceblue APIs to generate and execute trade orders. Used AWS for hosting the script.
- Hosted the script in the cloud and placed orders in the live market following a specific strategy without any human interaction.
- The strategy implemented was a short straddle.

TECHNICAL SKILLS

Programming and Scripting Languages	C, C++, Java, Python, JavaScript, HTML, CSS, Matlab, Dart
Tools and frameworks	Linux, Git, LaTeX

POSITIONS OF RESPONSIBILITY

Department Placement Coordinator, CET *Sep'17 - Feb '18*

- Worked with the placement cell in managing placement-related activities.
- Coordinated and conducted placement talks and interviews.

Team Captain, Kerala University *Sep '17 - March '18*

- Lead a team of **6 players** for Inter-University competition in 2017-2018.
- Was the university champion and selected as the team captain.

Teaching Assistant, IIT Bombay *Jul '23 - present*

- **CS101: Computer Programming and Utilization** under Prof. Suyash P Awate
  Head TA for a group of 8 TAs. Mentored 12 students in their coursework, assisted in the lab and took quizzes.

ACHIEVEMENTS AND EXTRACURRICULARS

- Secured **All India Rank 16** in GATE-23 CS among 75679 candidates.
- **University chess champion** in the academic year 2017-2018.
- University team member in the academic years 2015-16, 2017-18. The team finished **9th** in the Inter-university competition for the academic year 2015-16.
- Represented the college team for Table Tennis. The team finished **3rd** in the Inter-Collegiate championship (2017-18).
- **Interest and Hobbies:** Chess, Trading, Outdoor sports.

RELEVANT COURSES

- Program Analysis
- Web Search and Mining
- Process Engineering
- Information Retrieval
- Software Lab
- Foundations of Machine Learning
- Deep Learning for Natural Language Processing