

# Ralah Aaqil

B.E. Artificial Intelligence and Machine Learning

CMR Institute of Technology, Bangalore

Gender: Male

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Course	University/Board	Institute	Year	CGPA/%
Undergraduate	Visvesvaraya Technological University	CMR Institute of Technology	2025	8.23
Intermediate	ISC	The Frank Anthony Public School	2021	86.5
High School	ICSE	The Frank Anthony Public School	2019	93.4

## RESEARCH EXPERIENCE

### Recommender System using Reinforcement Learning

(Jun'23 - Present)

Guide: Dr. Shyam P Joy, CMR Institute of Technology

- Studied the foundations and applications of **Reinforcement Learning** including the implementation of various libraries such as **gymnasium** and **stable baselines 3**.
- Developing a model that can **recommend a course** for a person with a **disability** based on their disability and academic profile to **improve their job opportunities**.

## KEY TECHNICAL PROJECTS

### Course Recommendation Model for the Disabled using Reinforcement Learning

(Jun'23 - Present)

- Working on structuring an environment and developing a model that **recommends courses for people with disabilities to enhance their job opportunities**.
- Pre-processed a dataset consisting of information on over **10,000** candidates, extracting relevant information for the model.
- Structured an environment with a suitable reward function for the problem based on the standard environment framework established by **OpenAI gym**.
- Studied the working of various RL algorithms including their applications using **Stable Baselines 3**.
- Using **Tensorboard** to analyse the performance metrics and making suitable changes to the hyper-parameters to obtain the desired results.

### Image Classification Model to Detect Diseases on Leaves

(Nov'22 - Jan'23)

- Worked on developing a model that **classifies an image of a leaf** based on its type and health.
- Studied the methods of implementation of **data augmentation, oversampling, undersampling and SMOTE**.
- Studied the processing of image data and conversion of image data to the required data structure and dimensions using **Tensorflow**.
- Used **Tensorflow and Keras** to implement a neural network.
- Used **Matplotlib** to plot and analyse the performance metrics and make necessary changes to the hyper-parameters and display the results.
- Used the **scikit-learn** library to gain more information on the performance metrics to make any further changes to improve the model.

### Flight Database Management System

(Nov'23 - Jan'24)

- Worked on developing a **full stack web application** that enables users to book flight tickets.
- Used **SQL** and the concepts of relational databases to develop an efficiently structured database to handle large amounts of flight and user data.
- Ensured that the **security of user data** was maintained by implementing secure logins for each user and admin.
- Used **HTML, CSS and JavaScript** to provide a visibly appealing and interactive interface for the users and the admins.

## TECHNICAL SKILLS & INTERESTS

**Programming Languages:** Python, SQL, Javascript, HTML, CSS

**Tools & Libraries:** Scikit-Learn, Numpy, Matplotlib, Tensorflow, Pandas, Stable Baselines, OpenAI Gym,  $\text{\LaTeX}$ , GIT

**Interests:** Data Science and Analytics, Reinforcement Learning, Machine Learning

## KEY COURSES UNDERTAKEN

**Computer Science:** Data Science, Machine Learning, Natural Language Processing, Artificial Intelligence, Database Management Systems, Cloud Computing\*, Digital Image Processing\*, Data Structures and Algorithms, Operating Systems, Computer Networks, Computer Organization and Architecture, Software Engineering, Project Management, Automata Theory, Compiler Design, Full Stack Web Development, Microsoft Office Suite

**Mathematics:** Differential Calculus I and II, Linear Algebra, Integral and Vector Calculus, Numerical Methods I and II, Transform Calculus, Fourier Series, Statistics and Probability

*\*To be completed by December 2024*

**POSITIONS OF RESPONSIBILITY**

- **Member of the Peer Learning Team** (Sep'22 - Present)
  - Responsible for aiding a class of **65 students** in navigating the academic curriculum.
  - Providing simplified material for below average students to enable them to understand topics in an easier manner.
- **Project Lead for Semester Project (3rd Semester)** (Nov'22 - Jan'23)
  - Managed a team of **3 individuals** to develop and implement an image classifier.
  - Selected from among **22** projects in the department, to be displayed in the annual project exhibition.
- **Project Lead for Semester Project (5th Semester)** (Nov'23 - Jan'24)
  - Managed a team of **3 individuals** to structure and implement a flight database management system.

**EXTRACURRICULARS**

- Private guitar tutor, teaching a handful of students basic and intermediate acoustic and electric guitar.
- Completed the **Grade 6 Rock & Pop** examination held by Trinity College London with **distinction**.
- **Finalist** at the **National Level** Battle of the Bands, **Yamaha Teens Rock, 2019**.