



SHORT-TERMINTERNSHIP



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This page content gives an idea only, which topics have to write.

1: EXECUTIVE SUMMARY

The internship report shall have a brief executive summary. It shall include five or more Learning Objectives and Outcomes achieved, a brief description of the sector of business and intern organization and summary of all the activities done by the intern during the period.

2: OVERVIEW OF THE ORGANIZATION

Suggestive contents

- A Introduction of the Organization
- B Vision, Mission, and Values of the Organization
- C Policy of the Organization, in relation to the intern role
- D Organizational Structure
- E Roles and responsibilities of the employees in which the intern is placed.
- F Performance of the Organization in terms of turnover, profits, market reach and market value.
- G Future Plans of the Organization.

3: INTERNSHIP PART

Description of the Activities/Responsibilities in the Intern Organization during Internship, which shall include - details of working conditions, weekly work schedule, equipment used, and tasks performed. This part could end by reflecting on what kind of skills the intern acquired.

CHAPTER-1: EXECUTIVE SUMMARY

This project aims to develop a deep learning based solution for the early detection and prediction of Alzheimer's disease using medical imaging.

Projective objects:-

- * To collect and preprocess a dataset of brain MRI images for training the deep learning model.
- * To design and implement a Convolutional neural Network (CNN) based on the Xception architecture tailored for Alzheimer's disease Prediction.
- * To integrate the trained model into a user-friendly flask web application that allows users to upload MRI images and receive predictions on the likelihood of Alzheimer's disease.
- * To evaluate the model's performance using metrics such as accuracy, precision, recall and F1-score.

Key Achievements:-

Successful collection and preprocessing of a significant dataset of MRI images, ensuring high-quality inputs for model training.

Implementation of the Xception model, which demonstrated promising results in classifying images with high accuracy, making it a suitable choice for medical image analysis.

CHAPTER-2: OVERVIEW OF THE ORGANISATION

Mission and Vision:

- * Mission: To advance healthcare through innovative technology solutions that enhance diagnostic accuracy, improve patient outcomes, and contribute to the overall well-being of society.
- * Vision: To be at the forefront of healthcare innovation, driving the integration of AI and machine learning into clinical practice, and setting new standards for quality and efficiency in patient care.

Core Values:

- * Innovation: The organization thrives on creativity and the pursuit of new ideas, continuously exploring the potential of emerging technology to revolutionize healthcare.
- * Integrity: Upholding the highest standards of ethics and transparency in all endeavors, ensuring trust and reliability in every solution developed.
- * Collaboration: Emphasizing teamwork and partnerships, both within the organization and with external stakeholders, to foster a collaborative environment that drives success.

CHAPTER-3 :- INTERNSHIP PART

Project Focus:-

The primary focus of my internship was the development of a deep learning model for the early prediction of Alzheimer's disease using MRI scans. This project involved several key phases:

* Data Collection and preprocessing:

I worked on curating and preprocessing a large dataset of brain MRI images, ensuring that the data was suitable for training the model. This included tasks such as data augmentation, normalization, and handling missing values.

* Model Development:-

Utilizing the Xception deep learning architecture, I developed a convolutional neural network (CNN) to classify MRI images into different stages of Alzheimer's disease. I experimented with various hyperparameters and configurations to optimize the model's performance.

* Model Evaluation: The model was rigorously tested using cross-validation and other evaluation metrics to ensure its accuracy and reliability in predicting the disease at an early stage.

CHAPTER 6: OUTCOMES DESCRIPTION

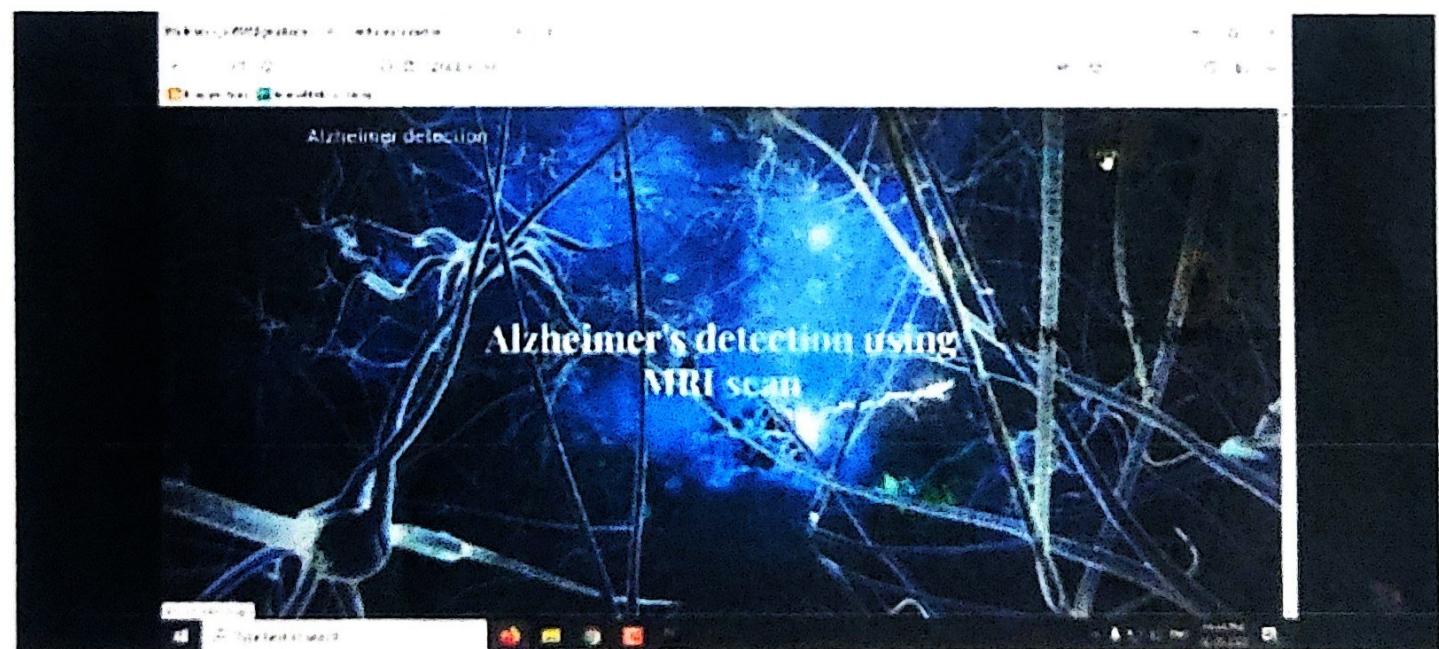
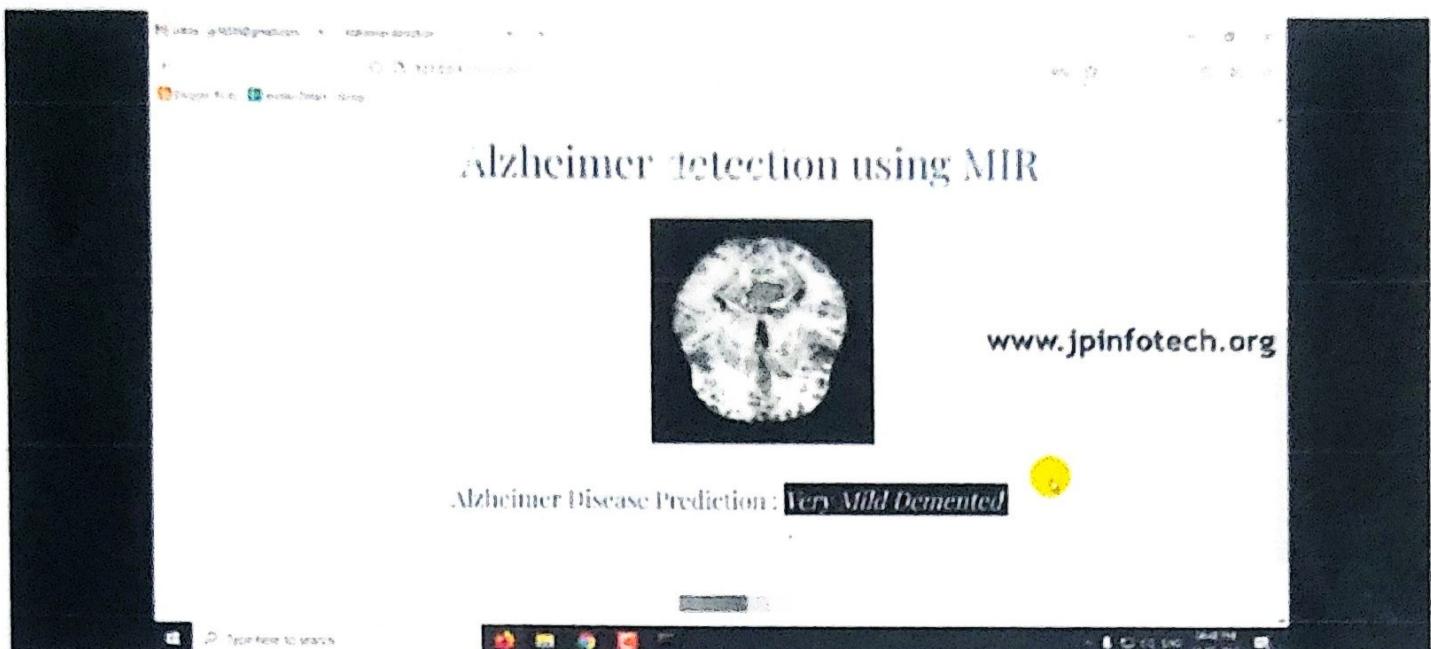
Describe the work environment you have experienced (in terms of people interactions, facilities available and maintenance, clarity of job roles, protocols, procedures, processes, discipline, time management, harmonious relationships, socialization, mutual support and teamwork, motivation, space and ventilation, etc.)

Model performance:- The reception based Convolutional neural network achieved strong Performance metrics, with high accuracy, precision, and recall in distinguishing between different stages of Alzheimer's disease. The model was Extensively tested and Validated on various datasets, Ensuring its Robustness and generalizability.

Work Environment:-

* Collaborative culture:- The organization instead a strong sense of collaboration. Team members were always willing to share their knowledge, offer feedback, and work together to solve complex problems. Regular meetings, brainstorming sessions, and code reviews were a routine part of the work process, Ensuring that Everyone was aligned and contributing to the Project success.

* Supportive mentorship:- I received excellent mentorship from Experienced professionals throughout the internship.



ACTIVITY LOG FOR THE FIRST WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day - 1 3/7/24	Orientation Session on project objectives, goals, team roles and deliverables.	Understood project and the scope of work.	
Day - 2 4/7/24	Introduction to deep learning concepts	Gained foundation -al knowledge in deep learning	
Day - 3 5/7/24	Overview of the exception model.	Learned about the architecture and use of exception in medical imaging	
Day - 4 6/7/24	Introduction to Flask framework	Understood how Flask can be used for integrating deep learning models.	
Day - 5 7/7/24	Data collection and preprocessing for Alzheimer's datasets	Acquired relevant datasets and performed initial data cleaning.	
Day - 6 8/7/24	Work flow planning for model integration with flask.	Create a preliminary work flow for the Project implementation.	

WEEKLY REPORT

WEEK - 1 (From Dt. 3/7/24 to Dt. 8/7/24....)

Objective of the Activity Done: Introduction to deep learning Xception model.

Detailed Report: Orientation Session Covering the project

Objectives, deliverables, and team structure,
Completed introductory modules on the Xception model, including its architecture,
Key features, and application in medical imaging Connected to various datasets
relevant to Alzheimer's disease, performed
to basic data cleaning and preprocessing tasks. Created an initial workflow for
integrating the Xception model with a flask web application allowing for the uploading
of medical images and generation of predict-
-fiers learning outcomes;

Understanding of deep learning Concepts
and the Significance of the Xception
model in medical imaging.

Introduction to flask framework and
how it can be integrated with deep
learning models.

ACTIVITY LOG FOR THE SECOND WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In-charge Signature
Day - 1 8/7/24	Create train and test data paths	Organized dataset into training and testing paths.	
Day - 2 9/7/24	Image preprocessing for the dataset.	Applied techniques like resizing, normalization, and argumentation.	
Day - 3 10/7/24	Import necessary libraries and tools for model building	Familiarized with Python libraries such as tensorflow.Keras, etc.	
Day - 4 11/7/24	Configure the Image Data generator class for better data argumentation.	Set up Image Data generator for better model training results.	
Day - 5 12/7/24	Addressed data imbalance issues in the dataset.	Implemented techniques like overampling and class weighting.	
Day - 6 13/7/24	Split the dataset into training and testing sets.	Divided the dataset for model evaluation purposes.	

WEEKLY REPORT
WEEK-2 (From Dt...8/7/24...to Dt...13/7/24...)

Objective of the Activity Done: Data collection, Preprocessing and Initialization

Detailed Report:

Gathered additional datasets, focusing on MRI and PET scan images of Alzheimer's patients performed extensive data preprocessing including image resizing, normalization and augmentation to improve model robustness.

Set up the inception model, initialized with Imagenet weights, and fine-tuned it using the collected datasets.

Implemented a basic flask application, connecting the user interface to the inception model for prediction.

Learning Outcome;

Gained hands-on experience in data collection and preprocessing techniques specific to medical imaging.

Developed an understanding of how to fine-tune pre-trained models for specific applications.

ACTIVITY LOG FOR THE THIRD WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In-charge Signature
Day - 1 15/7/24	Begin model build. Integrated Xception -Bing with a pre-trained CNN model as a feature extractor as a feature extractor.	Integrated Xception model as a feature extractor for the project.	
Day - 2 16/7/24	Created Sequential layers on top of the pre-trained model.	Added custom layers to enhance the Xception models capabilities.	
Day - 3 17/7/24	Configured the learning process.	Set up model for training with appropriate configurations.	
Day - 4 18/7/24	Trained the model using the training dataset.	Observed models performed during training and adjusted parameters.	
Day - 5 19/7/24	Monitored model performance and made necessary adjustments.	Improved model accuracy and reduced overfitting.	
Day - 6 20/7/24	Saved the trained model for future use.	Successfully saved the trained model to disk.	

WEEKLY REPORT
WEEK-3 (From Dt. 17/7/24.....to Dt....20/7/24.....)

Objective of the Activity Done:

Detailed Report:

Trained the inception model on the preprocessed datasets, experimenting with different hyper parameters (learning rate, batch size etc).

Evaluated model performance using metrics, such as accuracy, precision, recall and F1-score. Identified and addressed issues related to overfitting and underfitting by implementing techniques like dropout and data augmentation.

Explored advanced optimization techniques like learning rate schedules and adaptive optimizers learning outcome.

Understanding of the model training process and how to monitor and evaluate performance learned strategies to optimize the model and prevent overfitting / underfitting.

ACTIVITY LOG FOR THE FOURTH WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In - Charge Signature
Day - 1 22/7/24	Start building the Flask application.	Set up the basic structure for the flask app.	
Day - 2 23/7/24	Create HTML file for the flask applications user interface (UI)	Developed a user friendly interface for image upload and prediction.	
Day - 3 24/7/24	Integrate the trained model with the Flask application.	Successfully connected the model to the flask app for prediction.	
Day - 4 25/7/24	Implement backend logic to handle images to manage image upload and processing.	Wrote flask routes to handle image uploads and prediction.	
Day - 5 26/7/24	Tested the flask application with various images.	Ensured the app correctly processes images and returns accurate predictions.	
Day - 6 27/7/24	Refined UI/UX based on testing feedback.	Improved the user interface and experience for ease of use.	

WEEKLY REPORT
WEEK-4 (From Dt. 22/2/24 To Dt. 27/2/24)

Objective of the Activity Done:

Detailed Report:

Objectives of the Activity Done:
Integration of Flask Application with Trained model.

Detailed Report:-

Fully Integrated the trained Xception model with the flask web application.
Developed a user-friendly interface allowing users to upload medical images for Alzheimer's disease prediction.

Ensured the application could handle real-time processing and display predictions efficiently.

Tested the application with various images to validate its functionality and reliability.

Learning outcome:

Gained practical experience in web application development and integration with deep learning models. Learned how to manage and process real-time data in a Flask application.

ACTIVITY LOG FOR THE FIFTH WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person in Charge Signature
Day - 1 29/7/24	Final testing and debugging of the Flask application.	Identified and fixed bugs; Improved application stability.	
Day - 2 30/7/24	Conducted user acceptance testing with Sample Images	Validated application accuracy and user friendliness with end users.	
Day - 3 31/7/24	Gathered feedback from users and stakeholders.	Collected insights for final performance and future improvements.	
Day - 4 1/8/24	Made final refinements based on feedback.	Enhanced the application's performance and stability.	
Day - 5 2/8/24	Prepared project documentation and user guide.	Created comprehensive documentation for future reference and handover.	
Day - 6 3/8/24	Conducted a final Project review meeting with the team.	Discussed project outcome, lessons learned and next steps.	

WEEKLY REPORT
WEEK-5 (From Dt. 29/2/24... To Dt..... 3/3/24.....)

Objective of the Activity Done:

Advanced Testing and Model Improvement
Detailed Report:

Conducted Extensive testing of the flask application , focusing on edge cases and Unusual inputs.

Refined the model and application based on user feedback and testing results

Implemented additional model improvements, such as transfer learning from other related datasets.

Enhanced the applications performance by optimizing the model and server settings.

Learning Outcomes:

Learned the importance of thorough testing and validation in deploying machine learning models.

Acquired skills in improving and refining models post-integration.

ACTIVITY LOG FOR THE SIXTH WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In - Charge Signature
Day - 1 5/8/24	Launched the flask application to the public in intended users.	Successfully deployed the application for real-world use.	
Day - 2 6/8/24	Monitored application performance and user interaction post-launch.	Gained insights into real-world performance and user engagement.	
Day - 3 7/8/24	Provided user support and addressed any initial issues.	Resolved user-reported issues to ensure smooth operation.	
Day - 4 8/8/24	Continued performance monitoring and optimization.	Improved application efficiency and reduced response time.	
Day - 5 9/8/24	Collected detailed usage data and user feedback.	Analyzed user data to identify areas for future improvement.	
Day - 6 10/8/24	Began planning for potential application updates or new features.	Identified key areas for future development based on user feedback.	

WEEKLY REPORT
WEEK-6 (From Dt.....5/8/24.....to Dt.....10/8/24.....)

Objective of the Activity Done:

Deployment and Scalability of the flask application

Detailed Report:

Deployed the flask application on a cloud platform, ensuring it is accessible to external users.

Configured the application for scalability, allowing it to handle multiple simultaneous requests.

Implemented security features, such as HTTPS, authentication and data protection mechanisms.

Tested the deployment under various conditions to ensure robustness and stability.

Learning Outcomes:-

Gained insights into deploying and scaling web applications in real-world environments.

Learned how to implement security best practices in web applications.

ACTIVITY LOG FOR THE SEVENTH WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In- Charge Signature
Day - 1 12/8/24	Started exploring advanced features for the flask application.	Identified and prototyped potential new features for the application.	
Day - 2 13/8/24	Researched AI model improvement for better predictions.	Discovered new techniques that could enhance prediction accuracy.	
Day - 3 14/8/24	Discussed with the team about integrating additional functionalities.	Brainstormed and short-listed feasible new features to be developed.	
Day - 4 15/8/24	Started implementing a new feature based on user feedback.	Began development of the most requested feature.	
Day - 5 16/8/24	Conducted internal testing for the new feature.	Ensured the feature worked as intended without introducing new issues.	
Day - 6 17/8/24	Refined the feature based on testing results and team feedback.	Improved the feature's functionality and user experience.	

WEEKLY REPORT

WEEK-7 (From Dt.....12/2/24..... to Dt.....17/2/24.....)

Objective of the Activity Done:

User feedback collection and Application Iteration
Detailed Report:

Collected user feedback from stakeholders and early adopters regarding the application's performance and usability.

Analyzed feedback to identify areas of improvement in both the model and the user interface.

Iterated on the application, making necessary adjustments to enhance user experience and model accuracy.

Updated documentation to reflect changes and improvements made to the application learning outcome:

Understanding the importance of user feedback in refining and improving applications. Gained experience in iterative development and continuous improvement.

ACTIVITY LOG FOR THE EIGHTH WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In-charge Signature
Day - 1 19/8/24	Deployed the new feature of Ethan's cement to the application.	Successfully integrated the new feature into the live application.	
Day - 2 20/8/24	Monitored the application performance with the new feature.	Evaluated the impact on the new feature on overall application performance.	
Day - 3 21/8/24	Collected user feedback specifically for the new feature.	Gained insights into user satisfaction and feature effectiveness.	
Day - 4 22/8/24	Began planning for future iterations based on user feedback and performance data.	Developed a road map for ongoing improvements and updates.	
Day - 5 23/8/24	Worked on documentation update to reflect the new changes.	Updated user manuals and technical documentation to include the new feature.	
Day - 6 25/8/24	Conducted a final review meeting with the team to wrap up the project.	Assessed overall project success and discussed lessons learned.	

WEEKLY REPORT
WEEK-8 (From Dt.....19/8/24..... to Dt.....25/8/24.....)

Objective of the Activity Done:

Final testing, Documentation and project Handover.

Detailed Report:

Performed final testing of the flask application, ensuring all features and functionalities are working as expected.

Completed comprehensive documentation, including user manuals, technical documentation and code comments.

Prepared a final project report summarizing the work done, challenges faced and outcomes achieved.

Conducted a project handover meeting, presenting the application to stakeholders and discussing future steps.

Learning outcomes:-

Gained experience in finalizing projects, ensuring everything is in place for a successful handover.

Learned the importance of thorough documentation for future maintenance and development.

Describe the technological developments you have observed and relevant to the subject area of training (focus on digital technologies relevant to your job role)

* Deep learning frameworks:

Tensorflow and Keras were the primary frameworks used for building and training the deep learning model. Tensorflow, developed by Google, is a powerful open-source platform for Machine learning and deep learning tasks. Keras, which is integrated into Tensorflow, provides a user-friendly interface for building and experimenting with essential for developing the inception model used in the project, enabling efficient model training and fine-tuning.

* Convolutional Neural Networks (CNNs): The core technology behind the Alzheimer's disease prediction model was Convolutional Neural Networks (CNNs). CNNs are a type of deep learning model specifically designed for processing structured grid data like images. They are particularly effective in medical imaging tasks due to their ability to automatically learn hierarchical.

Describe how you could improve your communication skills (in terms of improvement in oral communication, written communication, conversational abilities, confidence levels while communicating, anxiety management, understanding others, getting understood by others, extempore speech, ability to articulate the key points, closing the conversation, maintaining niceties and protocols, greeting, thanking and appreciating others, etc.,)

* Active listening

Current practice: I actively listen to team members during meetings and discussions, but there is always room for improvement.

Improvement strategy: I plan to enhance my active listening skills by focusing more on understanding the perspectives and concerns of others before responding. This includes asking clarifying questions and summarizing what was said to ensure mutual understanding. By doing so, I can better contribute to discussions and address any misunderstanding early.

* Simplifying Complex Information Current practice:

I am comfortable discussing technical concepts with peers but sometimes struggle to convey complex ideas to non-technical stakeholders.

Describe how could you enhance your abilities in group discussions, participation in teams, contribution as a team member, leading a team/activity.

To Enhance your abilities In group discussions, Participation in teams, Contribution as a team member, and leading a team or activity, Consider focusing on the following strategies:

1) Active listening

* What it involves:

Paying close attention to what others are saying without interrupting. This ensures you fully understand the perspectives and ideas of others before responding.

* How it Enhances Ability:

Active listening fosters better understanding and helps you contribute more meaningfully to group discussions. It also shows respect for others' contributions, creating,

Describe the managerial skills you have acquired (in terms of planning, leadership, team work, behaviour, workmanship, productive use of time, weekly improvement in competencies, goal setting, decision making, performance analysis, etc)

* Project Management

Skill Development: I gained practical experience in managing a complex project from start to finish. This included defining project goals, creating a timeline, allocating resources, and monitoring progress to ensure that milestones were met. I also learned to anticipate potential risks and develop contingency plans to mitigate them.

Application: For instance, in my project on Alzheimer's disease prediction, I managed the entire lifecycle of the project, from data collection and model development to deployment. This required careful planning and the ability to adapt to challenges as they arose, ensuring that the project was completed on time and met all objectives.

Leadership: I had the opportunity to take on leadership roles during the project, which helped me develop my ability to guide and motivate others.

Describe the real time technical skills you have acquired (in terms of the job-related skills and hands on experience)

* Deep learning Model Development.

Skill Development: I gained extensive experience in developing deep learning models using the Xception architecture, which is a type of Convolutional Neural Network (CNN).

This involved understanding the architecture in depth, implementing the model using TensorFlow and Keras, and fine-tuning the model for optimal performance.

Real-Time Application: I applied this skill by developing a model capable of predicting Alzheimer's disease from MRI images. The model was trained and validated on large data sets, achieving high accuracy in distinguishing between different stages of the disease. These preprocessing techniques were critical in ensuring that the input data fed into the Xception model was consistent and suitable for training, which directly impacts the model's performance.