

Member 1 – Dataset Manager

- Download and organize the dataset from Kaggle.
 - Inspect for corrupted images or mislabeled samples.
 - Count samples per class and prepare initial dataset statistics.
 - Document the dataset source and licensing.
 - Provide cleaned, well-organized folders to the rest of the team.
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Member 2 – Data Preprocessing & Augmentation Lead

- Implement image resizing, normalization, and augmentation pipeline.
 - Test different augmentation strategies (rotation, flipping, brightness, contrast).
 - Maintain a script that outputs augmented image samples for verification.
 - Ensure preprocessing works consistently for train, validation, and test sets.
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Member 3 – Model Architect

- Select initial architectures (e.g., ResNet50, MobileNetV2, EfficientNetB0).
 - Build and fine-tune models with transfer learning.
 - Design a small custom CNN for baseline comparison.
 - Keep all model definitions well-commented and modular.
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Member 4 – Training & Evaluation Specialist

- Train models using Member 3's architectures.
 - Implement callbacks (early stopping, learning rate reduction, checkpoint saving).
 - Track and record training/validation accuracy & loss.
 - Evaluate models using accuracy, precision, recall, F1-score, AUC.
 - Generate confusion matrices and ROC curves.
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Member 5 – Explainability & Visualization Lead

- Implement Grad-CAM or similar methods to highlight model decision regions.
 - Compare heatmaps for correct vs. incorrect predictions.
 - Create visualizations showing:
 - Normal vs. Bacterial vs. Viral X-rays
 - Augmentation examples
 - Performance graphs over epochs
 - Prepare figures for the final presentation/report.
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Member 6 – Documentation & Deployment Specialist

- Maintain a detailed project log (dataset info, preprocessing steps, models, results).
- Prepare final project report and presentation slides.
- Build a simple Streamlit/Flask app for model inference (optional if time allows).
- Ensure all team contributions are properly cited and acknowledged.