



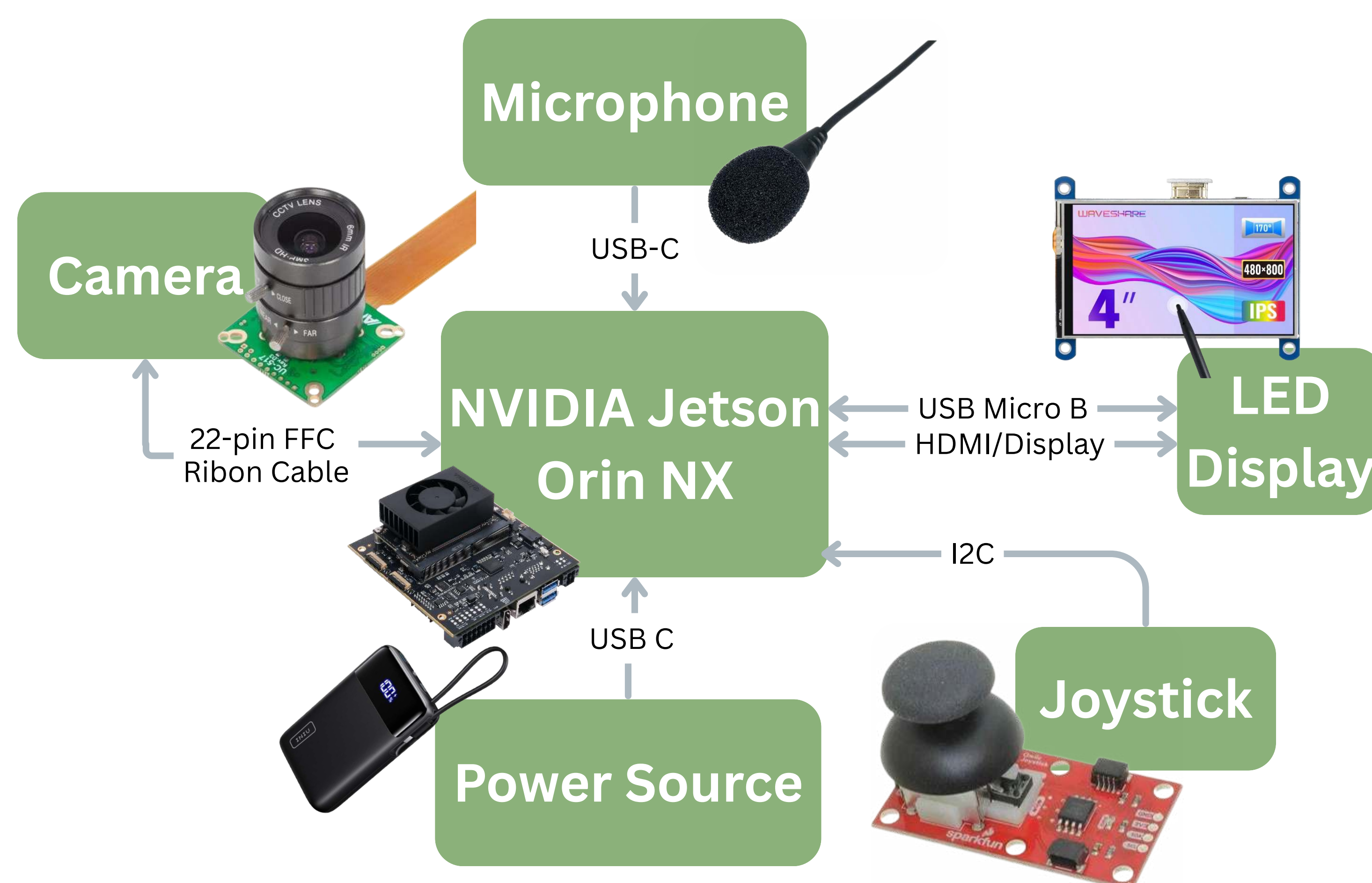
Surface Assistant for Geological Evaluation

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Abstract

Surface Assistant for Geological Exploration (SAGE) captures visual and audio data to generate rock classifications with confidence scores, estimate sample volume and mass, and transcribe speech into searchable field notes.

Block Diagram



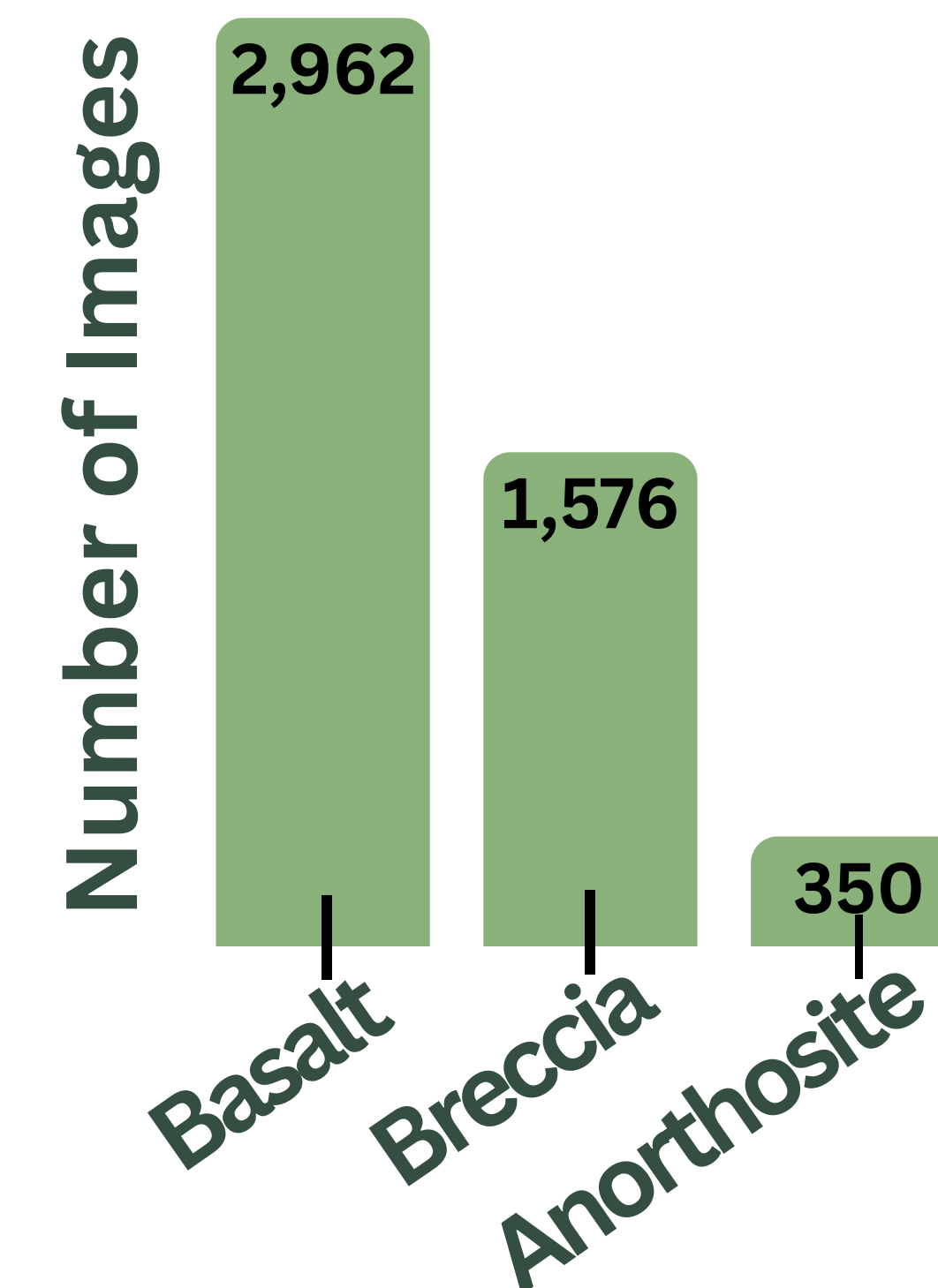
System Overview



ML Rock Classification

Identifies rock families from field images & provides confidence scores + geology features.

Dataset:



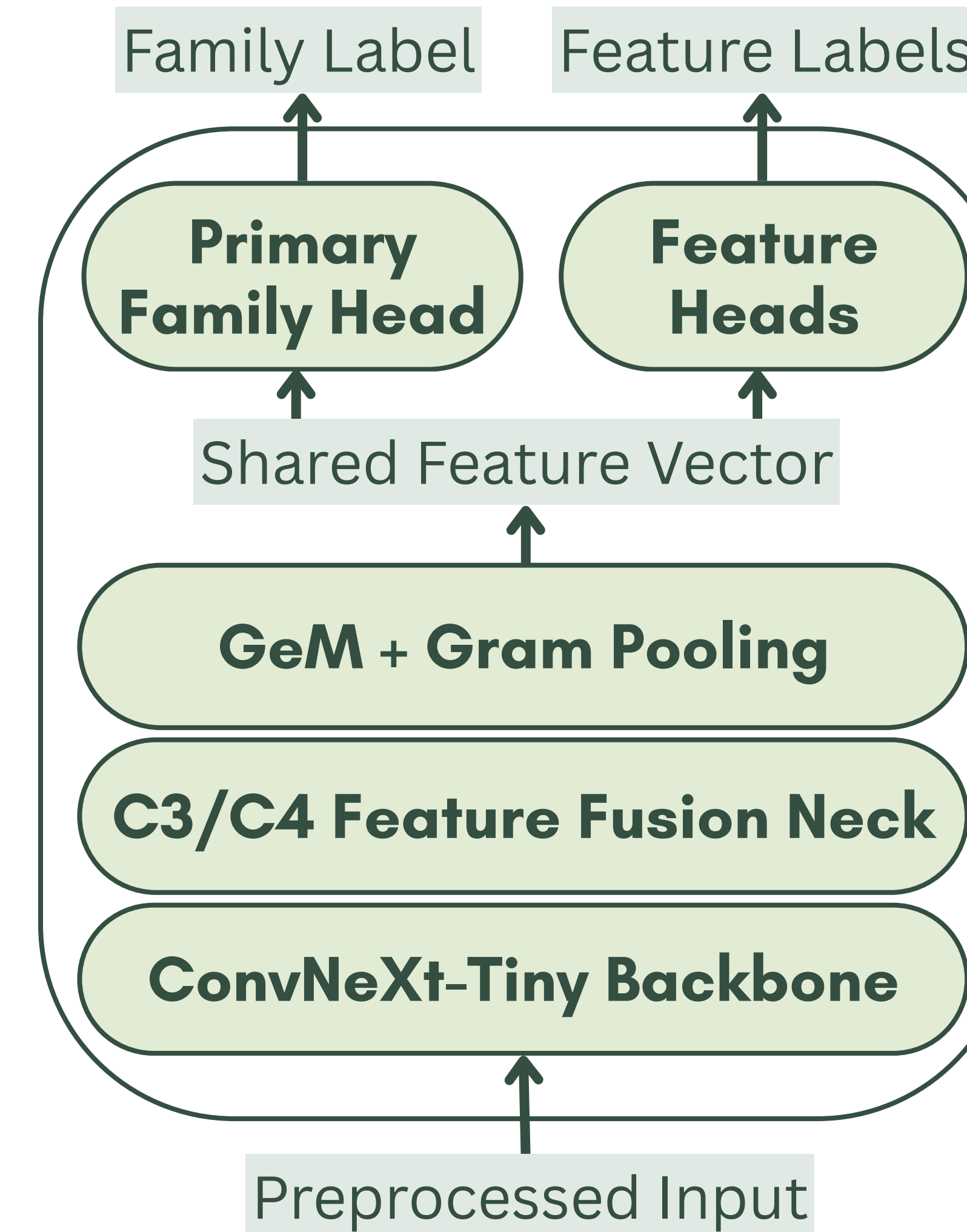
Accuracy:

- 91% (family)
- 86% (feature)

Volume Estimation:

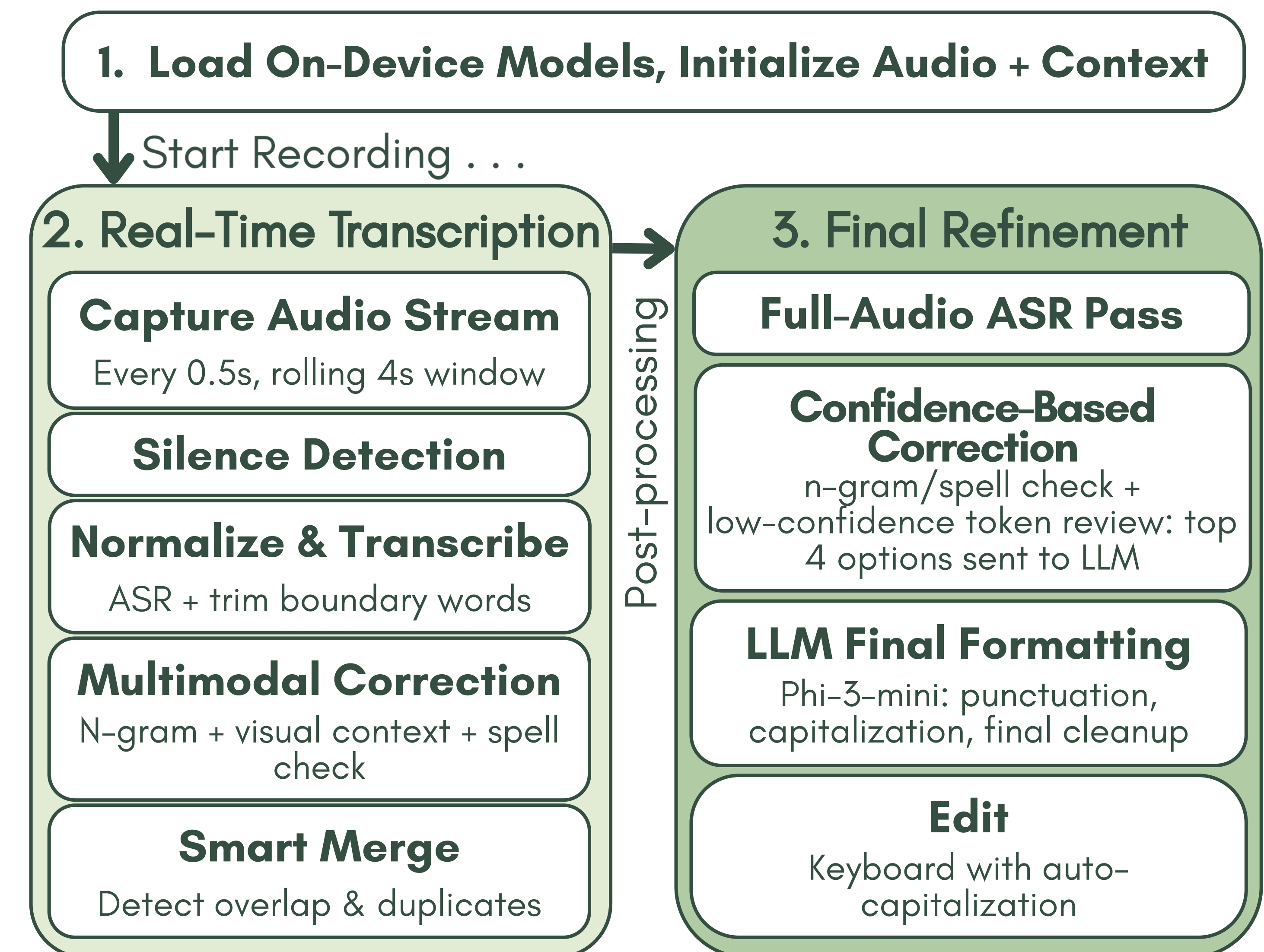
Uses top and side-view images + AprilTag scale to estimate rock volume and mass.

Model Architecture:



Voice Transcription

Transcribes live audio using a model trained on geology podcasts and lectures. It produces clean final transcripts, which are then used to generate AI summaries for each rock.



Ground UI

