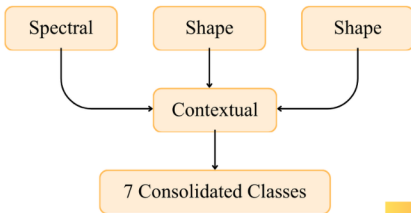
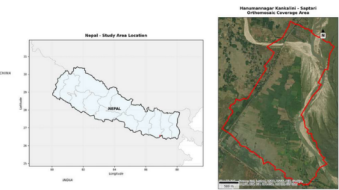


Map Data Classification and labeling

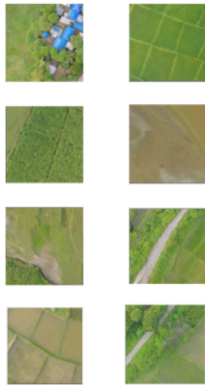


Ambiguity Analysis

- Field with vegetation
- Water with marsh field
- Trees with vegetation
- Road with ground
- Sand with ground

Manual Annotation Process

Construction of MultiModal Drone Database



Input

FOUNDATION MODELS
SAM (ViT-H)
SAM 2.1 (Hiera-Large)
SAM 2.1 (Hiera-Large, Fine-tuned)
SAM 3 (PE-ViT)
SAMRS
RingMo-SAM
GroundingDINO + SAM 3

SEMANTIC SEGMENTATION
UNet (MIT-B4)
SegFormer (MIT-B2)
DeepLabV3+ (ResNet-50)
UNet++ (EfficientNet-B4)
UNet (ResNet-34)

INSTANCE SEGMENTATION
DelineateAnything (YOLO11-based)
YOLO11m-seg
Mask2Former (Instance, Swin-Tiny)

PANOPTIC SEGMENTATION
Mask2Former (Panoptic, Swin-Tiny)



Result

Application Scenarios



Road Extraction



Farm parcel Extraction



House Count



Land Mapping