POVa
Road segmentation

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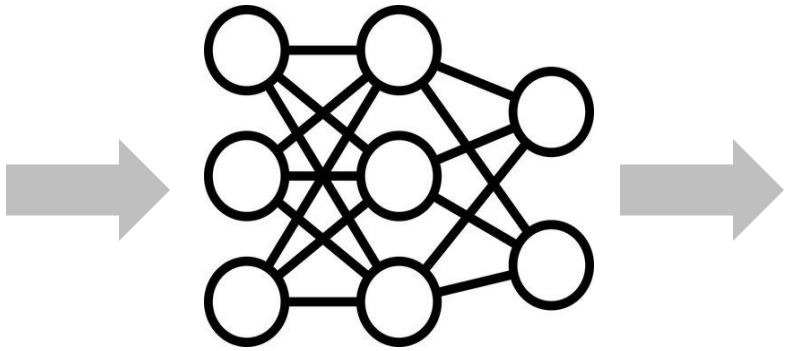
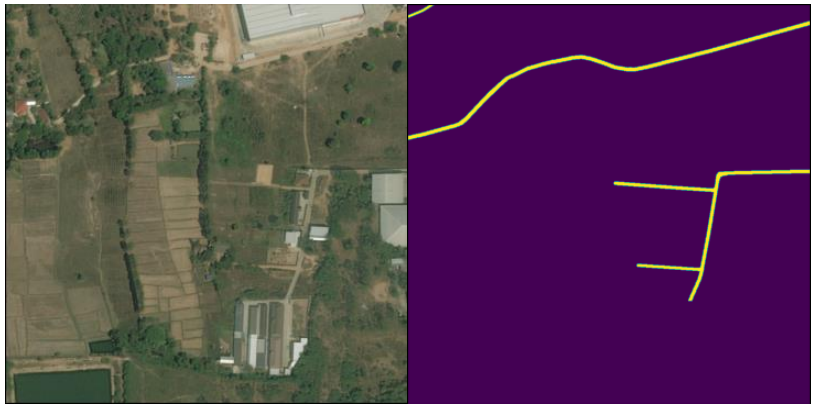


Data

- DeepGlobe Road Extraction Dataset
- 7334 instances

1024

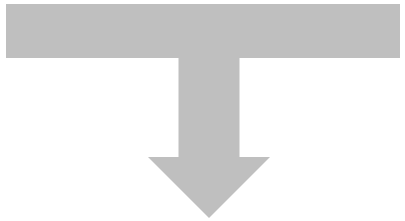
1024



- Massachusetts Roads Dataset
- 1108 instances

1536

1536



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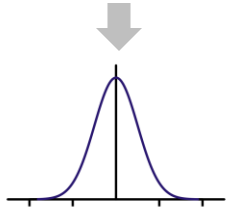
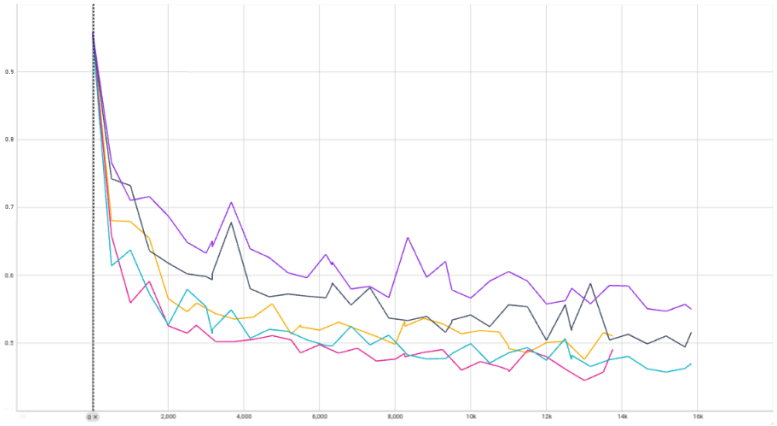
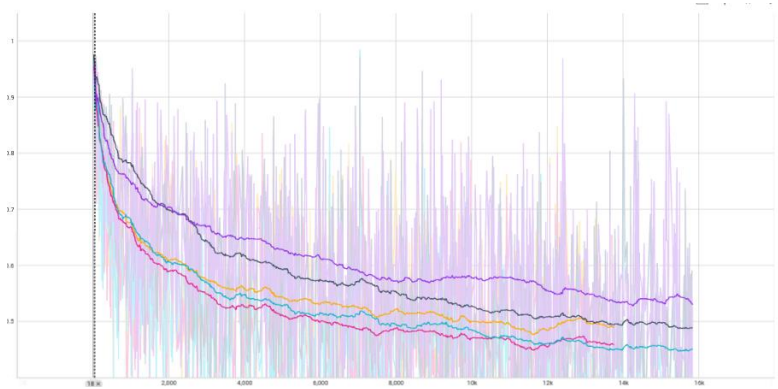


Models

- Encoder: ResNet18
- Backbone: UNet



Training IoU



Validation IoU

Model	Enc. layers	Dataset	Enc. pretrained	Data augmented
1.	3	combined	no	no
2.	5	combined	no	no
3.	5	combined	yes	no
4.	5	DeepGlobe	yes	no
5.	5	DeepGlobe	yes	yes

Experiments

1. **Does number of encoder layers affect model accuracy?**
2. **How does transfer learning contribute to model training?**
3. **Can data augmentation compensate for distinctive features of different dataset?**

Does number of encoder layers affect model accuracy?

- Tested on combined dataset

1. IoU = 0.449
2. IoU = 0.484

Model	Enc. layers	Dataset	Enc. pretrained	Data augmented
1.	3	combined	no	no
2.	5	combined	no	no
3.	5	combined	yes	no
4.	5	DeepGlobe	yes	no
5.	5	DeepGlobe	yes	yes

How does transfer learning contribute to model training?

- Tested on combined dataset

2. IoU = 0.484
3. IoU = 0.526

Model	Enc. layers	Dataset	Enc. pretrained	Data augmented
1.	3	combined	no	no
2.	5	combined	no	no
3.	5	combined	yes	no
4.	5	DeepGlobe	yes	no
5.	5	DeepGlobe	yes	yes

Can data augmentation compensate for distinctive features of different dataset?

- Tested on Massachusetts dataset

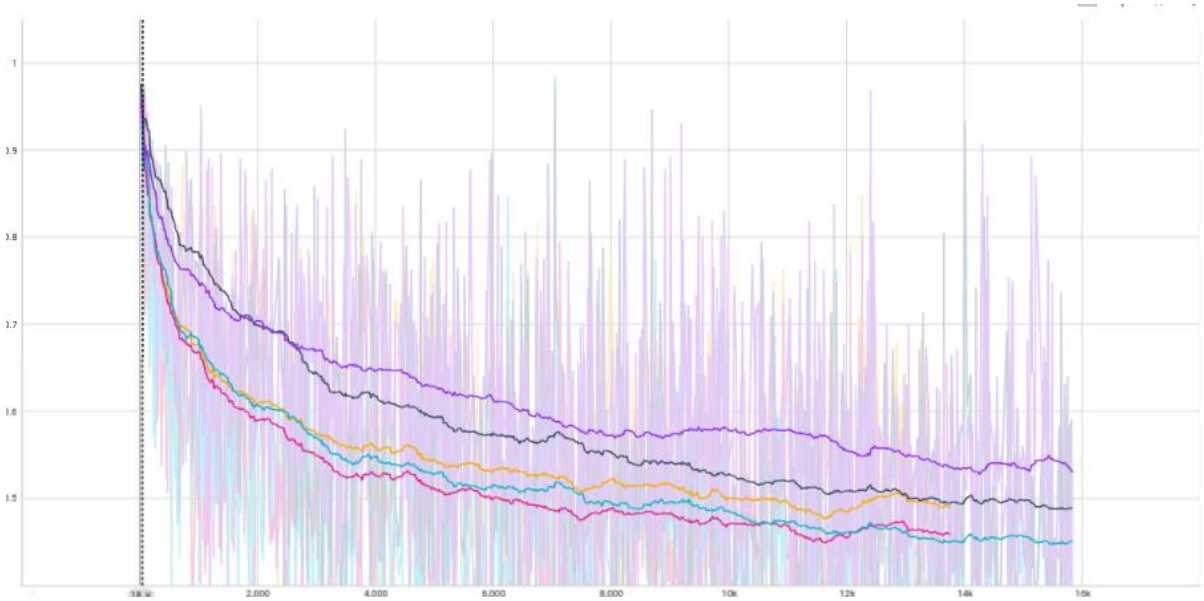
4. IoU = 0.430
5. IoU = 0.439

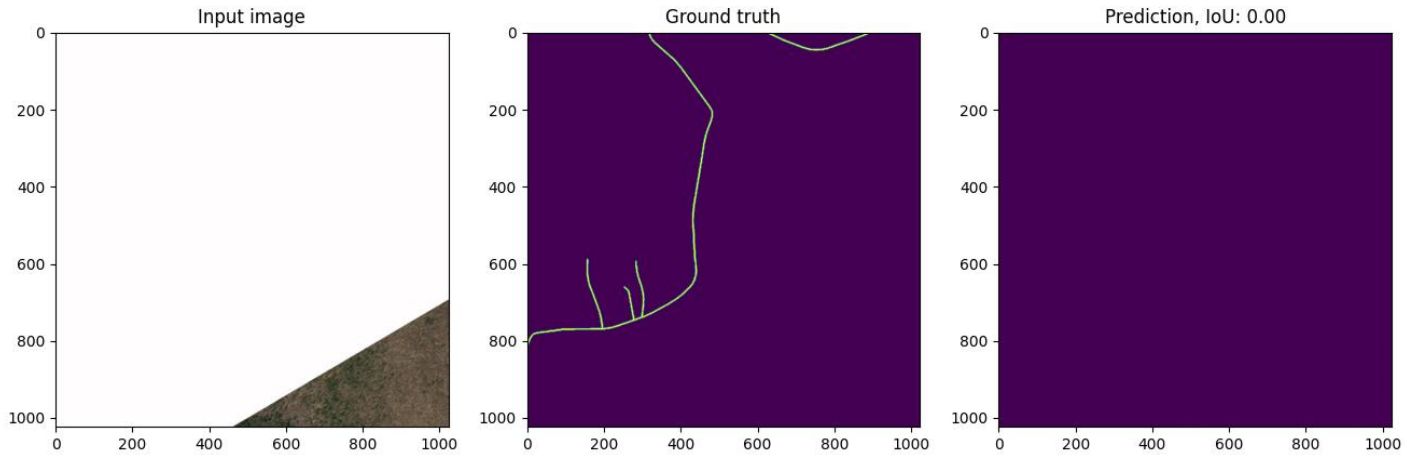
Model	Enc. layers	Dataset	Enc. pretrained	Data augmented
1.	3	combined	no	no
2.	5	combined	no	no
3.	5	combined	yes	no
4.	5	DeepGlobe	yes	no
5.	5	DeepGlobe	yes	yes

Augmentations

- Random flip (horizontal/vertical/both)
- Gaussian Blur
- Hue, saturation, value

Faulty instances





Quality assessment