

# Corrosion detection

## Deep Learning project

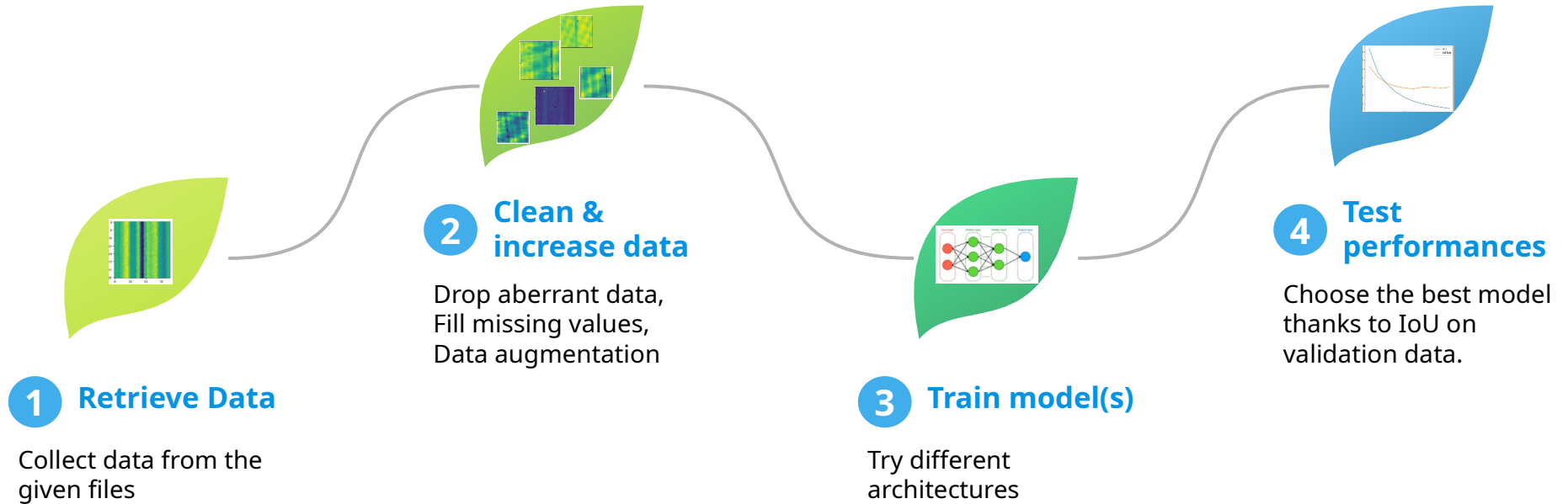
Thomas Labreur

Teacher : Emmanuelle Claeys

Nov 2024

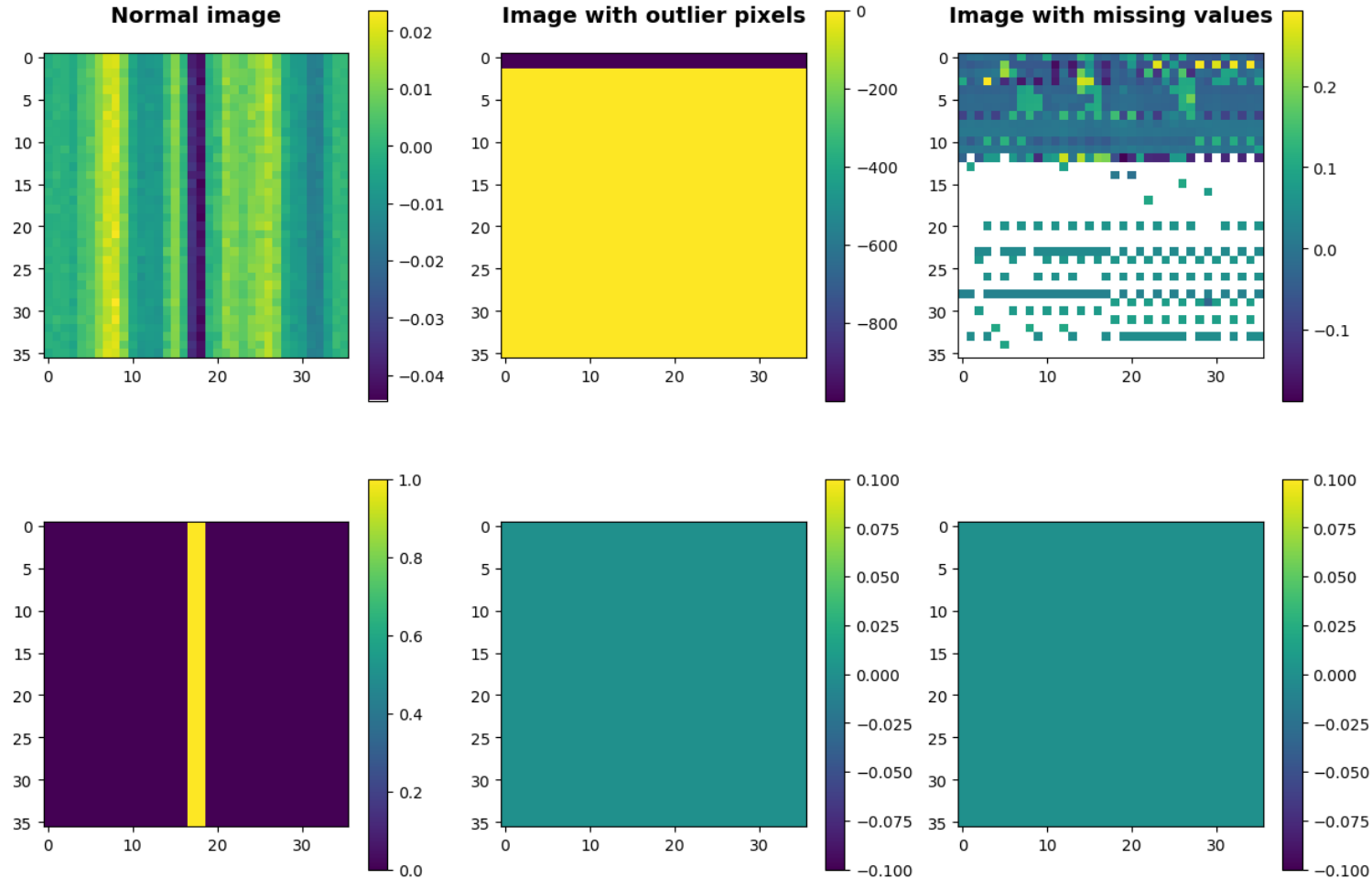


# Step by step



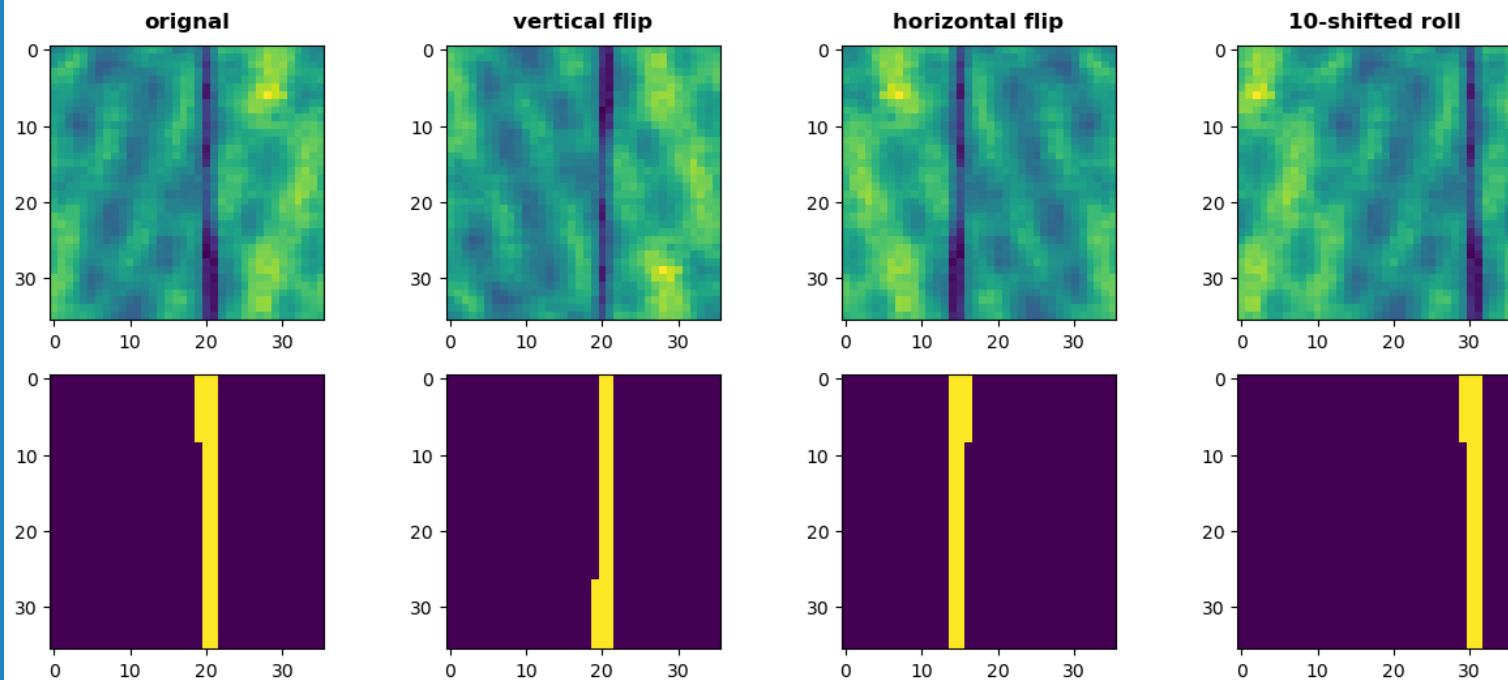
# Retrieve data

Initial image



# Data augmentation

An example of data augmentation

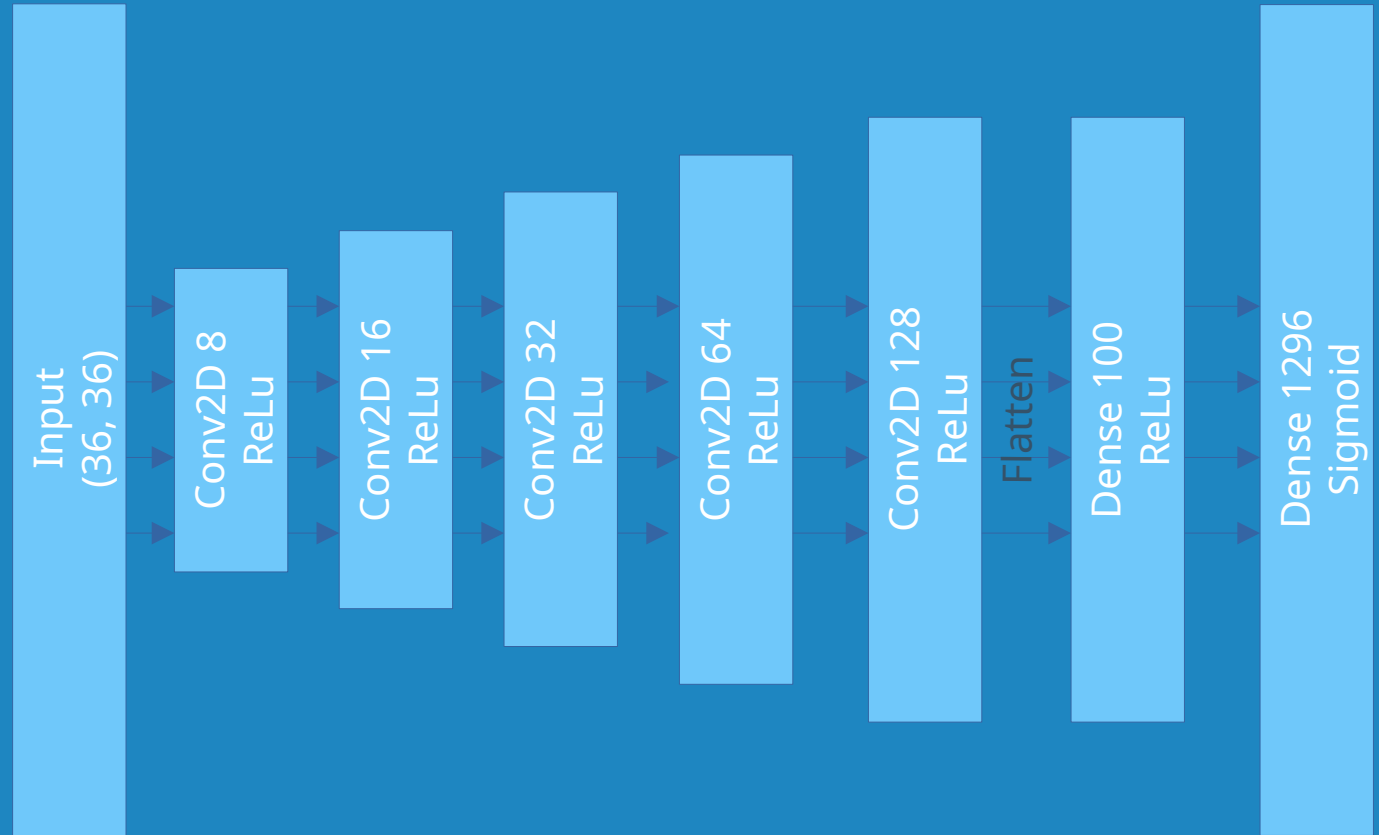


Size x 38

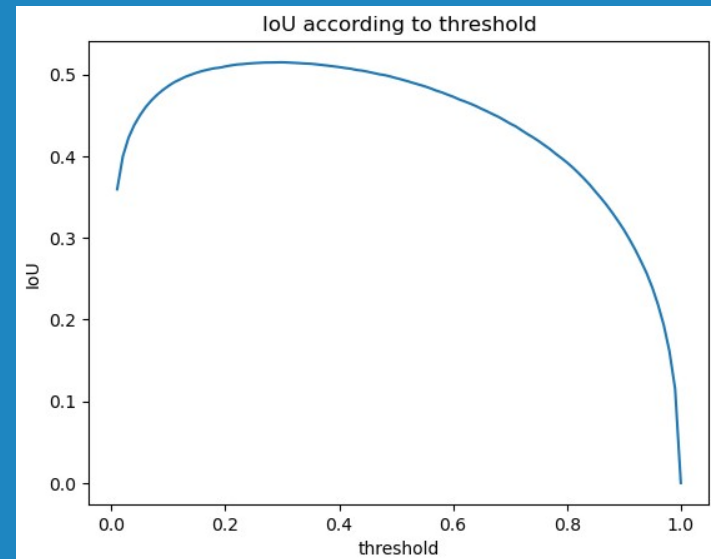
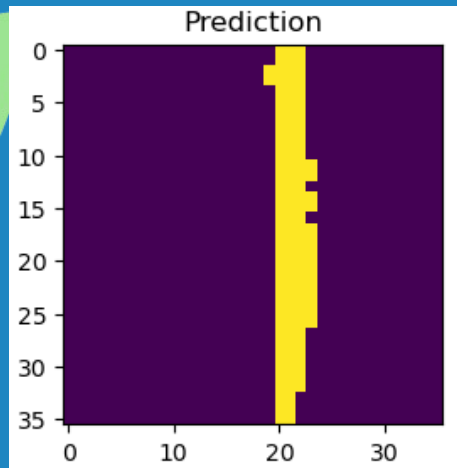
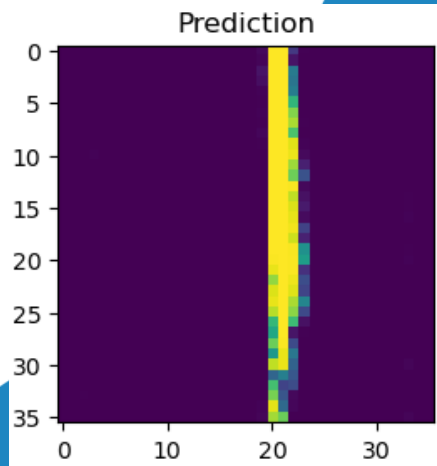


# Benchmark model

- **Loss** : Binary crossentropy
- **Optimizer** : Adam
- **Learning rate** : 0,001
- **Epochs** : 30
- **Batch size** : 128



# Threshold choice

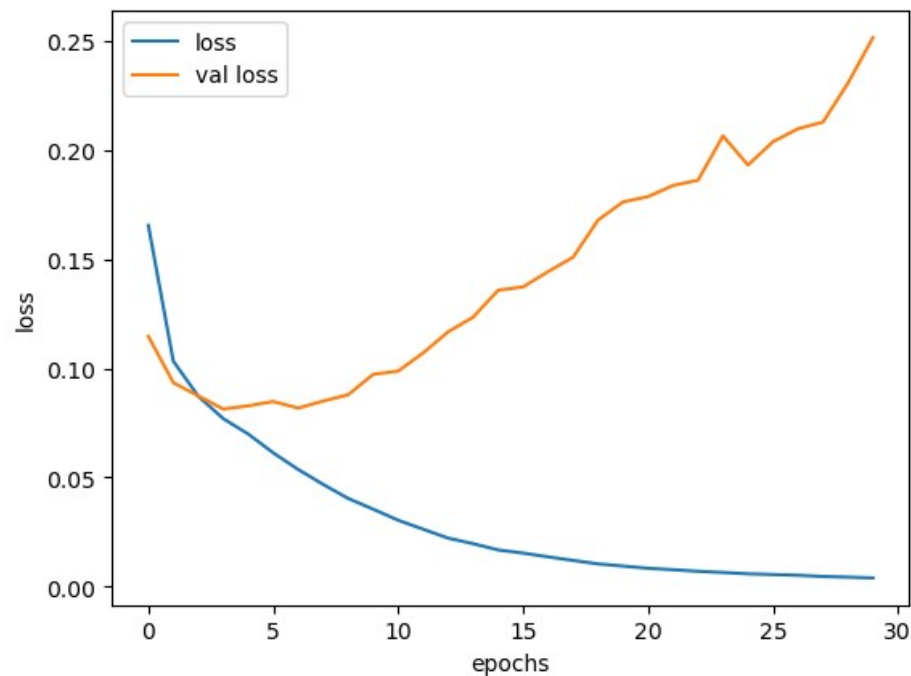
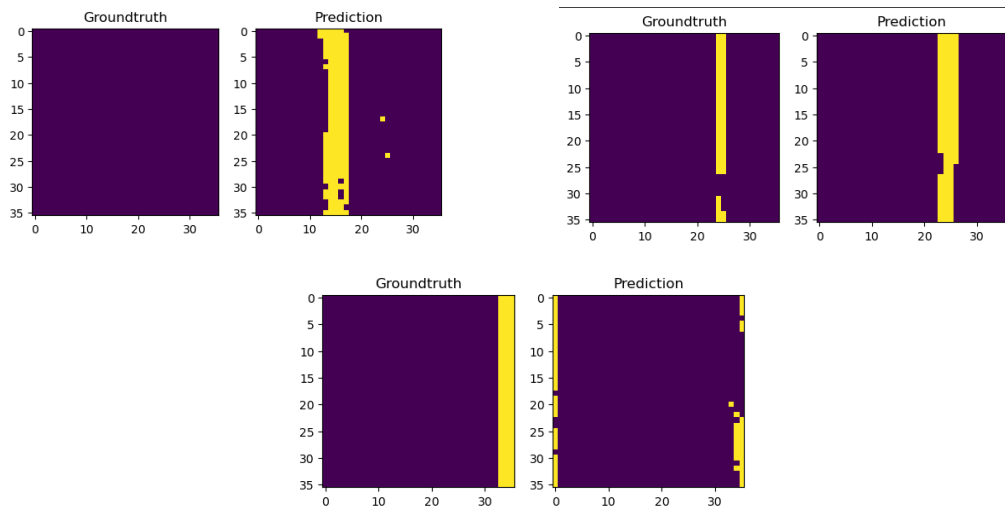


# Model 1

## Without data augmentation

**Threshold = 0,3**  
**IoU = 0,55**

### Examples of predictions

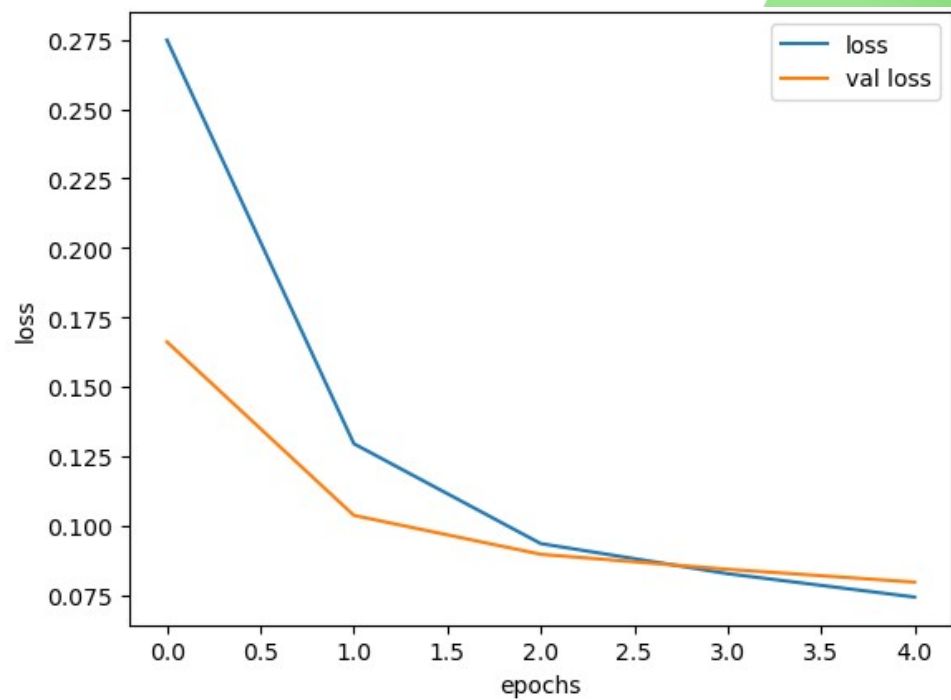
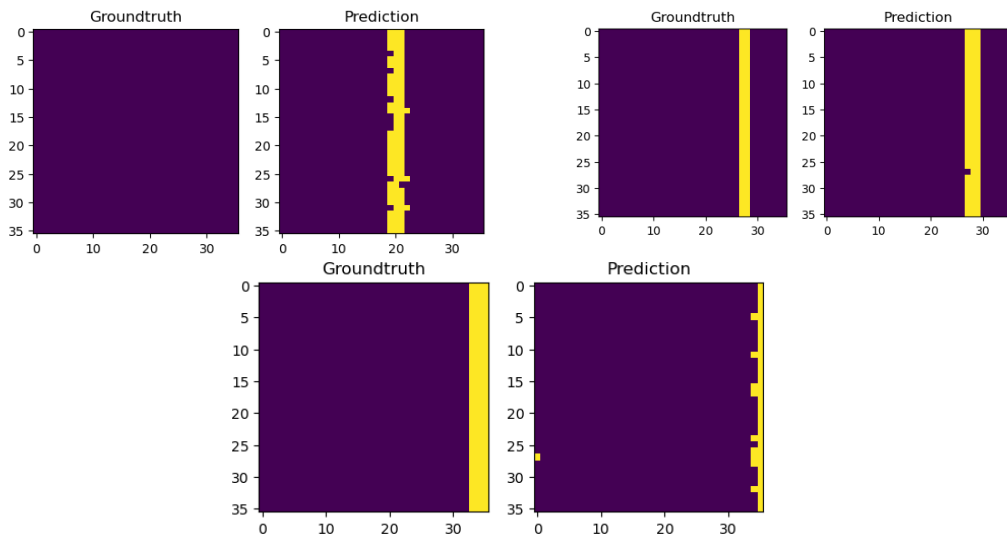


# Model 1.5

## Without data augmentation

**Threshold = 0,3**  
**IoU = 0,52**

**Examples of predictions**





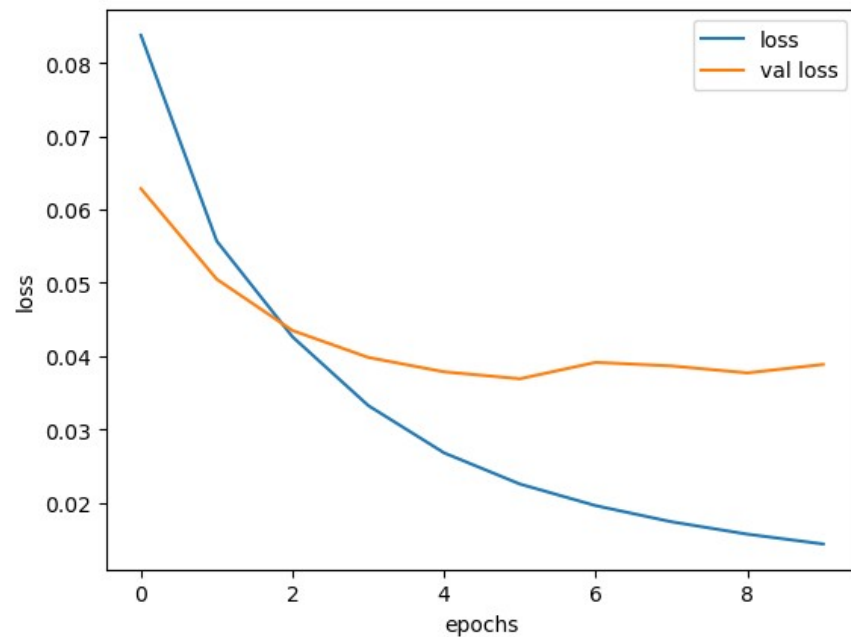
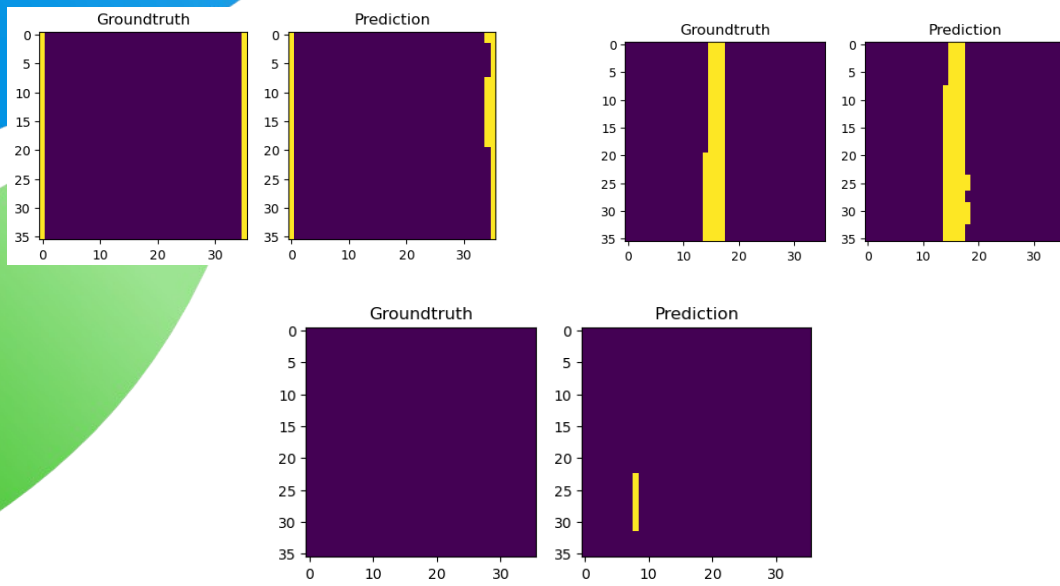
# Model 2

## With data augmentation

**Threshold = 0,43**

**IoU = 0,66**

### Examples of predictions



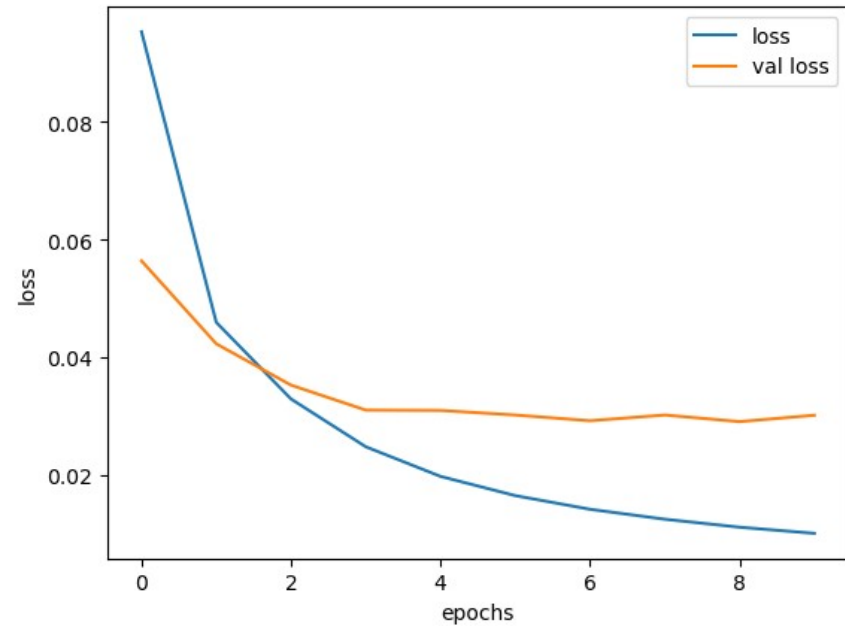
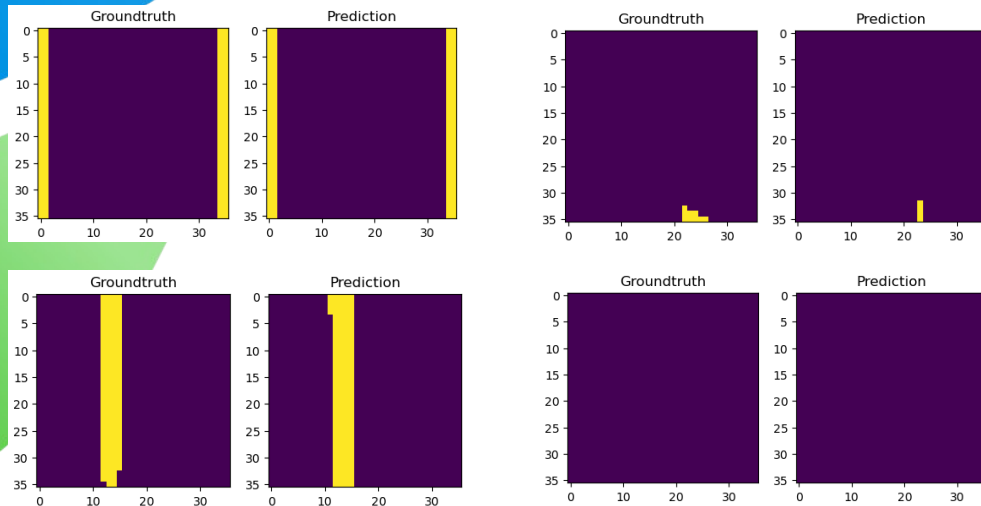
# Model 3

With batch normalization,  
lr scheduling & gradient clipping

**Threshold = 0,31**

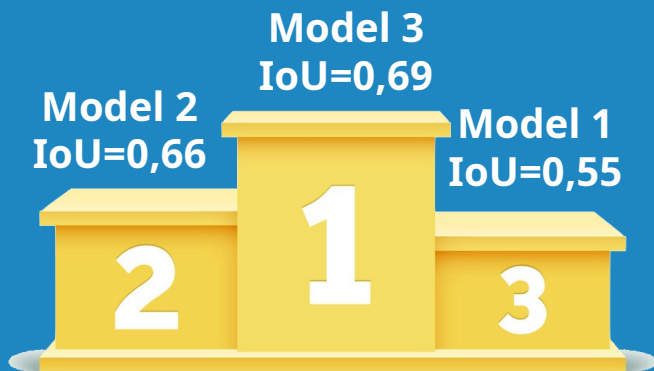
**IoU = 0,69**

**Examples of predictions**

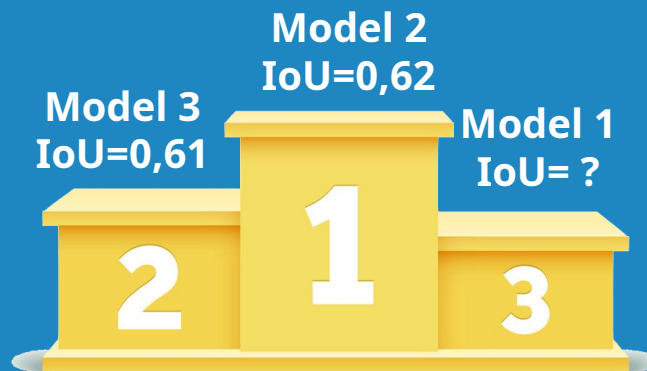


# Ranking

On the validation  
dataset



On the website  
test dataset



# Ranking

## 21/11/24 - 11:07

Rang	Date	Participant(s)	Score public
1	6 mars 2024 16:32	imane	0,8666
2	20 novembre 2024 13:43	nicolamine	0,6850
3	21 mars 2024 10:10	KORNY	0,6791
4	15 mars 2024 08:55	Hip & lagasc	0,6770
5	20 novembre 2024 20:30	JohnDoe	0,6743
6	12 mai 2024 09:08	perkan	0,6741
7	20 novembre 2024 15:16	nicolasamine2	0,6650
8	14 mars 2024 22:55	balthazarneveu	0,6639
9	20 novembre 2024 09:12	NicolasXamine	0,6590
10	20 novembre 2024 13:07	NicoXamine	0,6565
11	16 mars 2024 13:45	ellingtonkirby31	0,6466
12	19 novembre 2024 16:11	Test22	0,6243
13	13 novembre 2024 08:37	ThomasLab	0,6211
14	5 mars 2024 15:38	aissa & T.Louis	0,6100
15	20 novembre 2024 01:34	NicolasXamineLastAccount	0,5975
16	20 novembre 2024 00:23	NicolasXamineDernierCompte	0,5974
17	19 novembre 2024 22:02	Karl2	0,5898
18	19 novembre 2024 21:33	Deen	0,5838
19	18 mars 2024 20:33	lea_khalil & BasileTerv	0,5635
20	19 novembre 2024 12:16	Mara	0,5480

Rang	Date	Participant(s)	Score public
1	13 novembre 2024 08:37	ThomasLab	0,6211
2	-	benchmark	0,4798
3	20 novembre 2024 16:05	lisaa31 & Alexia79	0,3949
4	19 novembre 2024 18:05	TESTttttttttttttt	0,3239
5	19 novembre 2024 22:51	PaulSID & Charly05	0,3239
6	17 novembre 2024 12:55	GRQ3562A & Fourati	0,3239
7	18 novembre 2024 15:30	Yaelle.Debant	0,0433

# Thank you!

