

Deep Restore

Architecture Comparision Server

September 18, 2018

Description

- ▶ Densenet, Early, Late and Bottleneck use patches of size 128x128 + mirror padding (padding size depending on architecture)
- ▶ All testes architectures use the information of previous, current and next frame
- ▶ 1000 iterations
- ▶ augmented training set
- ▶ last activation function: sigmoid
- ▶ train and test data visualized for early stopping
- ▶ accuracy and loss for each architecture and early stopping
- ▶ dropout with 0.85 keep probability
- ▶ L2 regularization of weights (weight decay)
- ▶ batch normalization
- ▶ input normalization
- ▶ learning rate 0.001, weight decay 0.001, batch momentum 0.9

Early Combine

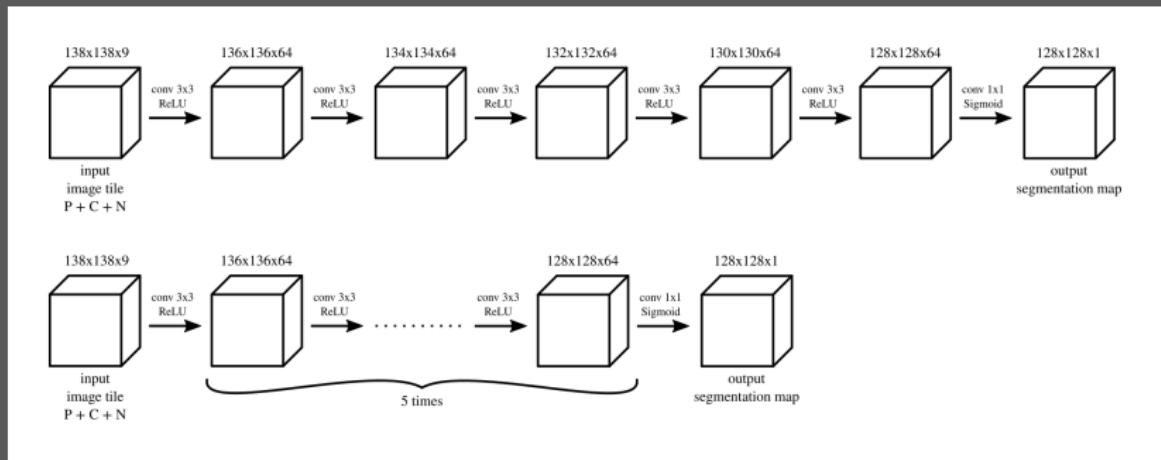


Figure: Early

Late Combine

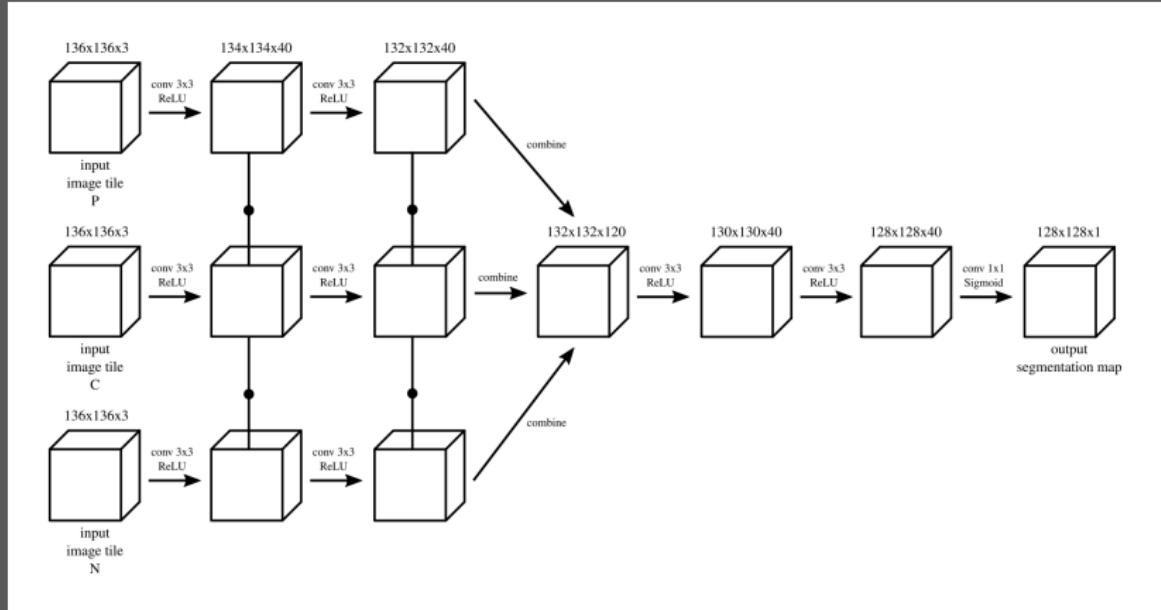


Figure: Late

Densenet

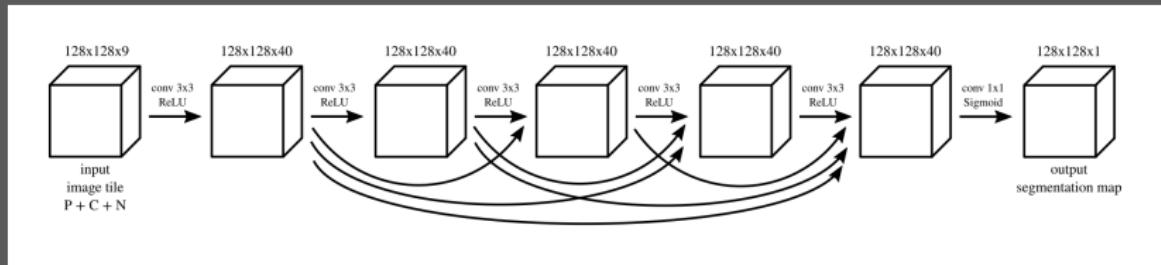


Figure: densenet

Bottleneck

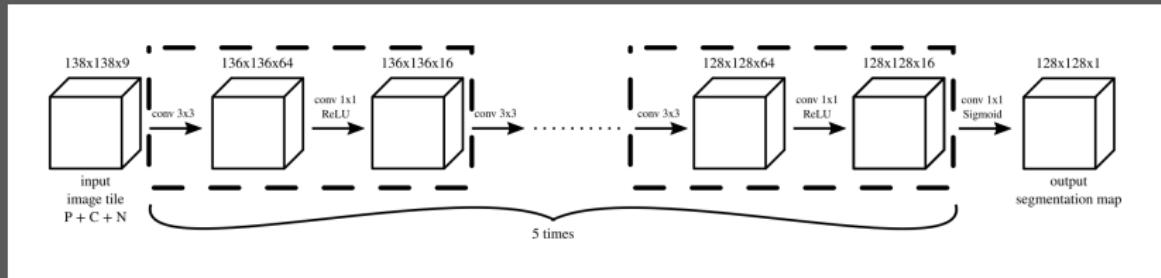


Figure: Bottleneck

Densenet combined

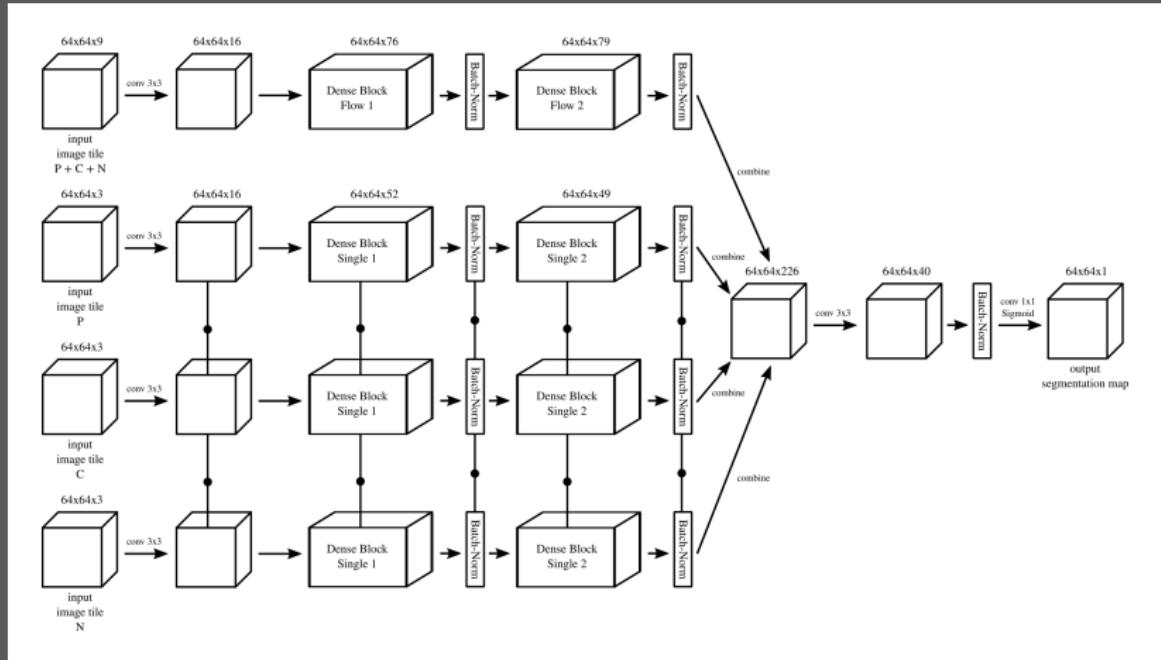


Figure: Densenet combined

Train - Ex1



(a) Input

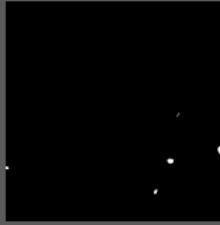
(b) GT



(a) early

(b) late

(c) densenet



(d)

(e) densenet

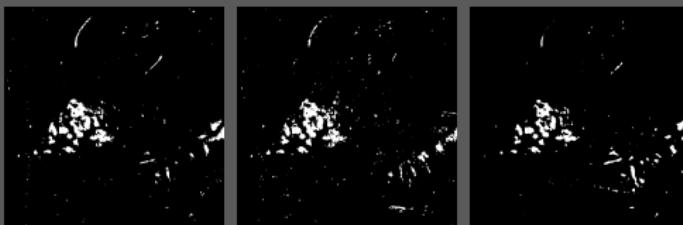
(f) densenet

Train - Ex2



(a) Input

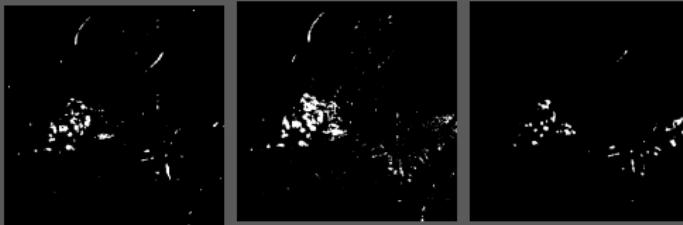
(b) GT



(a) early

(b) late

(c) densenet



(d)

(e) densenet

(f) densenet

Train - Ex3



(a) Input

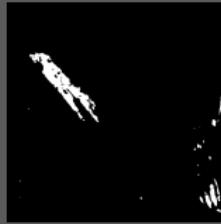
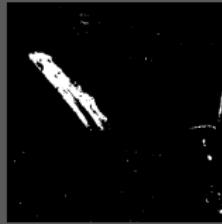
(b) GT



(a) early

(b) late

(c) densenet

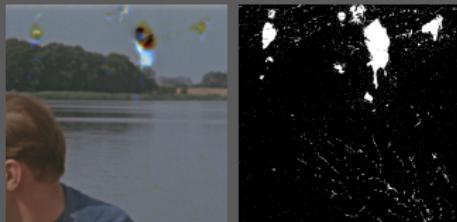


(d)

(e) densenet

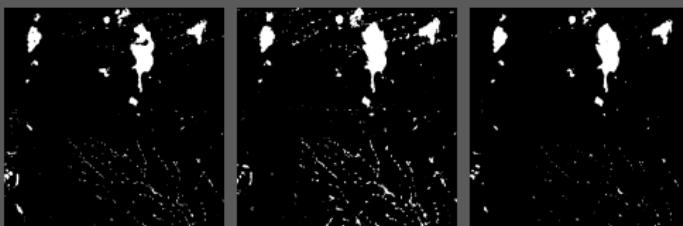
(f) densenet

Train - Ex4



(a) Input

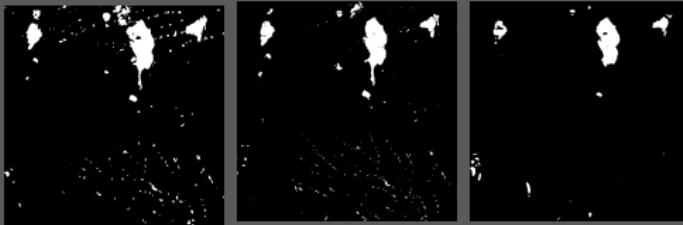
(b) GT



(a) early

(b) late

(c) densenet



(d)

(e) densenet

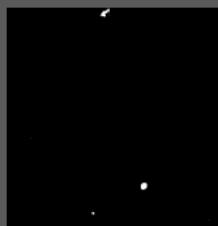
(f) densenet

Train - Ex5



(a) Input

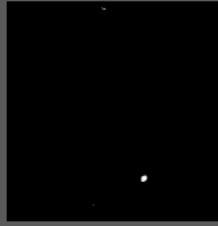
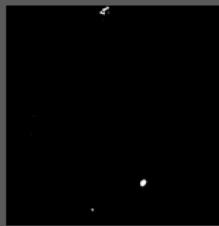
(b) GT



(a) early

(b) late

(c) densenet



(d)

(e) densenet

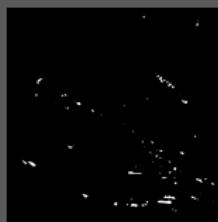
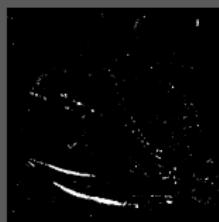
(f) densenet

Train - Ex6



(a) Input

(b) GT



(a) early

(b) late

(c) densenet



(d)

(e) densenet

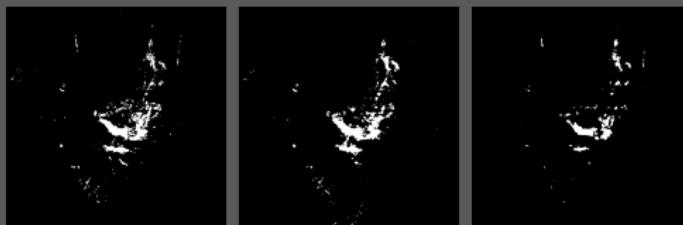
(f) densenet

Train - Ex7



(a) Input

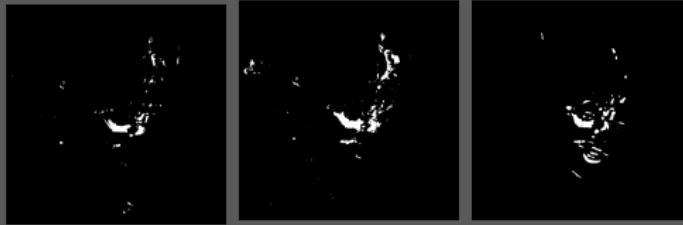
(b) GT



(a) early

(b) late

(c) densenet

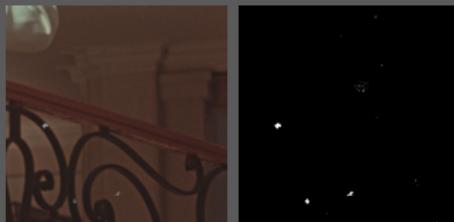


(d)

(e) densenet

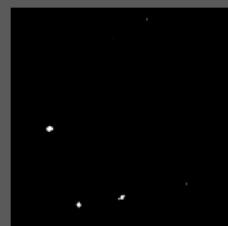
(f) densenet

Train - Ex8



(a) Input

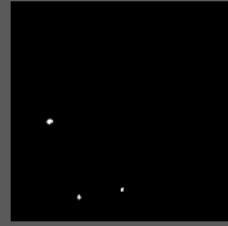
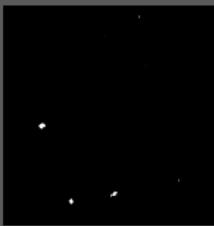
(b) GT



(a) early

(b) late

(c) densenet

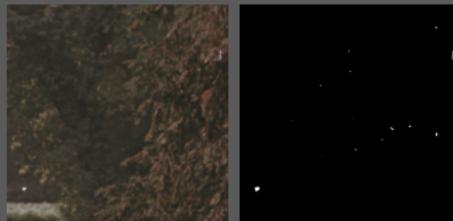


(d)

(e) densenet

(f) densenet

Train - Ex9



(a) Input

(b) GT



(a) early



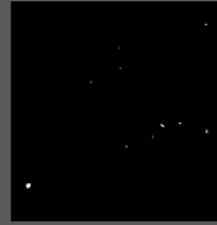
(b) late



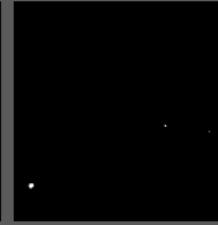
(c) densenet



(d)



(e) densenet



(f) densenet

Train - Ex10



(a) Input

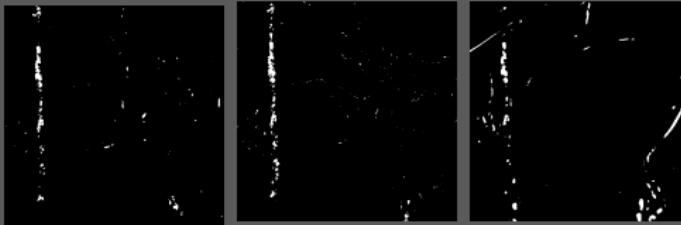
(b) GT



(a) early

(b) late

(c) densenet

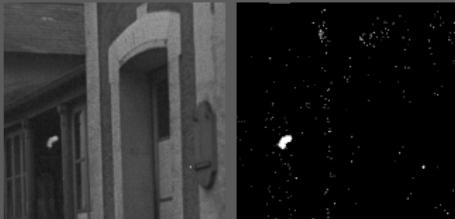


(d)

(e) densenet

(f) densenet

Ex1



(a) Input

(b) GT



(a) early



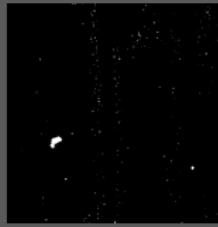
(b) late



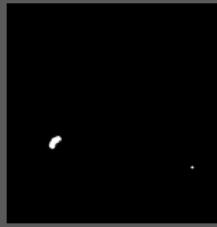
(c) densenet



(d)



(e) densenet



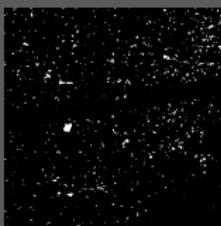
(f) densenet

Ex2



(a) Input

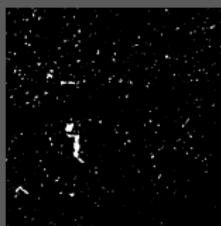
(b) GT



(a) early



(b) late



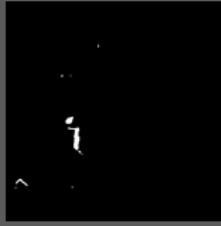
(c) densenet



(d)

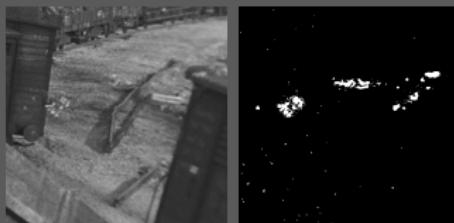


(e) densenet



(f) densenet

Ex3



(a) Input

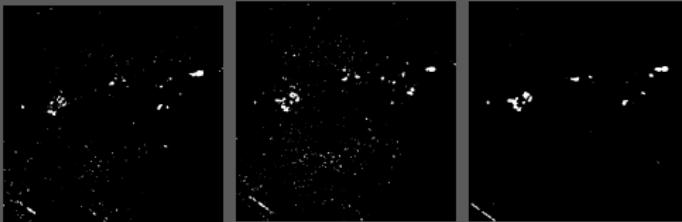
(b) GT



(a) early

(b) late

(c) densenet

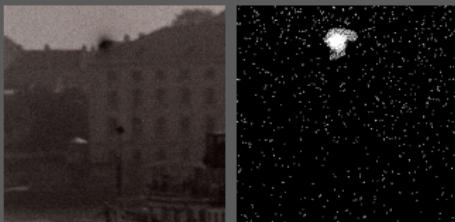


(d)

(e) densenet

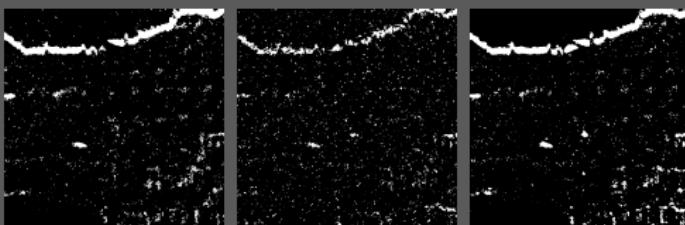
(f) densenet

Ex4



(a) Input

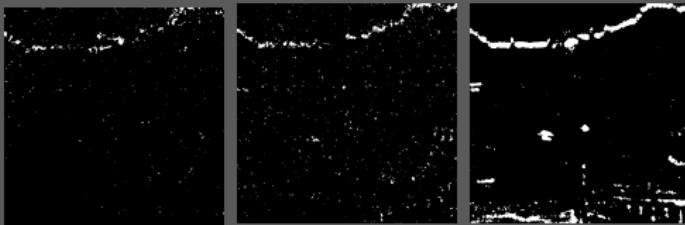
(b) GT



(a) early

(b) late

(c) densenet



(d)

(e) densenet

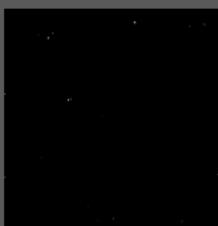
(f) densenet

Ex5



(a) Input

(b) GT



(a) early



(b) late



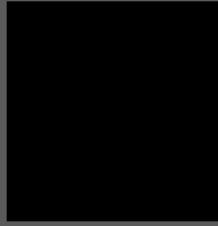
(c) densenet



(d)

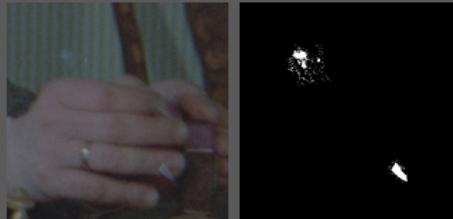


(e) densenet



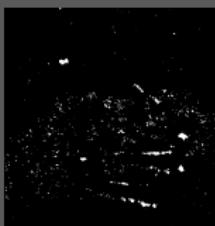
(f) densenet

Ex6



(a) Input

(b) GT



(a) early



(b) late



(c) densenet



(d)



(e) densenet



(f) densenet

Ex7



(a) Input

(b) GT



(a) early

(b) late

(c) densenet

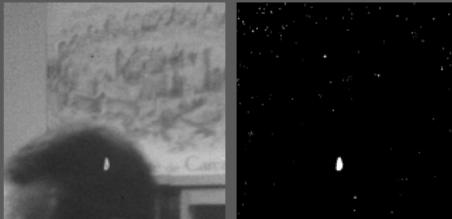


(d)

(e) densenet

(f) densenet

Ex8



(a) Input

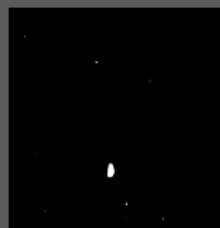
(b) GT



(a) early



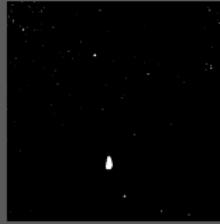
(b) late



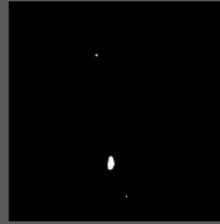
(c) densenet



(d)

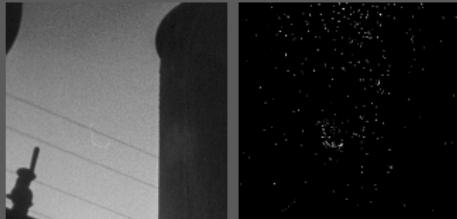


(e) densenet



(f) densenet

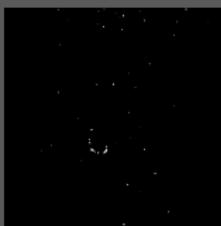
Ex9



(a) Input



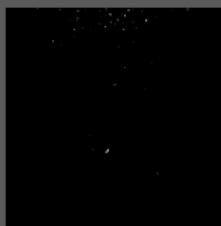
(b) GT



(a) early



(b) late



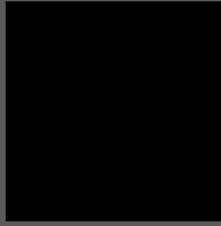
(c) densenet



(d)



(e) densenet



(f) densenet

Ex10



(a) Input

(b) GT



(a) early

(b) late

(c) densenet

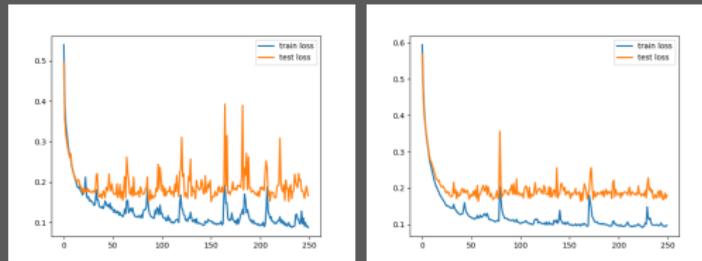


(d)

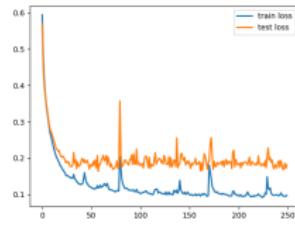
(e) densenet

(f) densenet

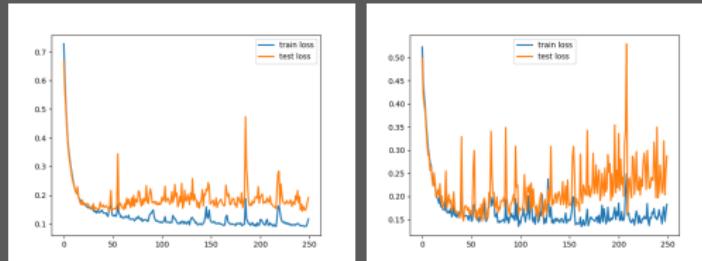
Trainingsloss



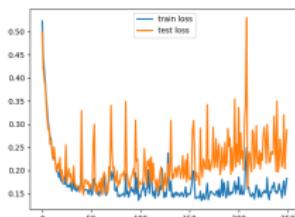
(a) early



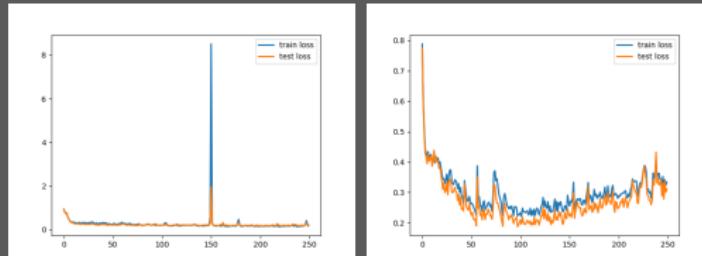
(b) late



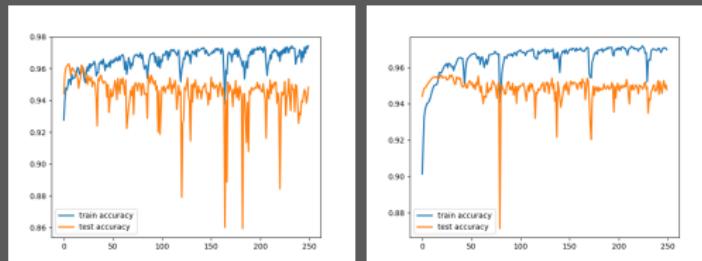
(c) densenet



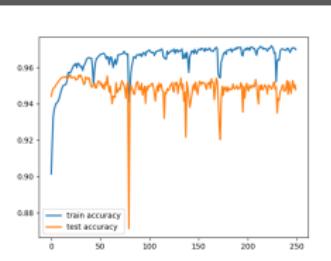
(d) bottleneck



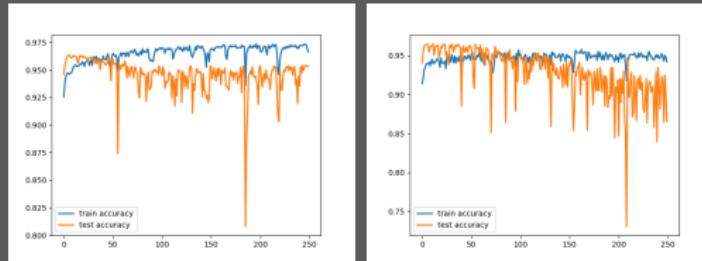
Accuracy



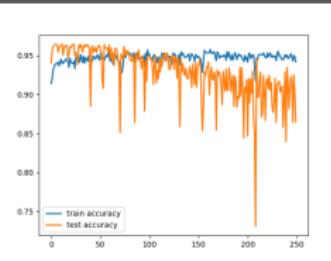
(a) early



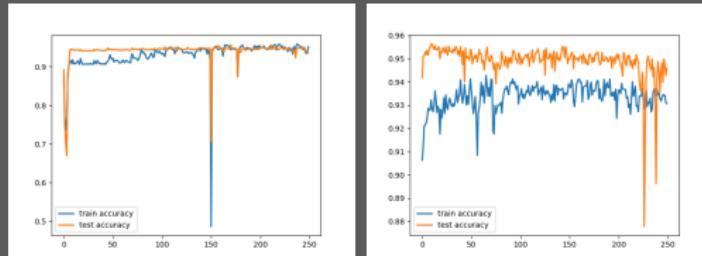
(b) late



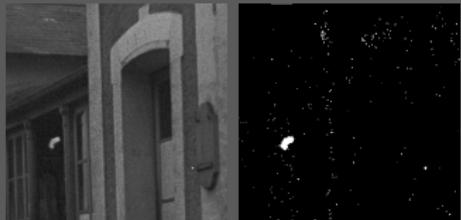
(c) densenet



(d) bottleneck



Ex1



(a) Input

(b) GT



(a) early



(b) late



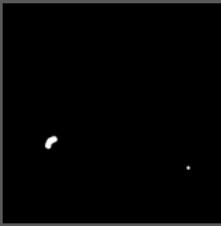
(c) densenet



(d)



(e) densenet



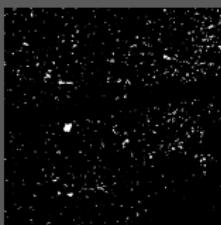
(f) densenet

Ex2



(a) Input

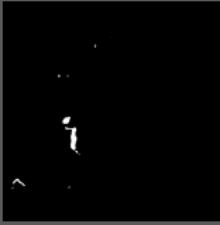
(b) GT



(a) early

(b) late

(c) densenet

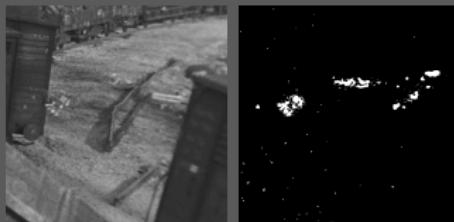


(d)

(e) densenet

(f) densenet

Ex3



(a) Input

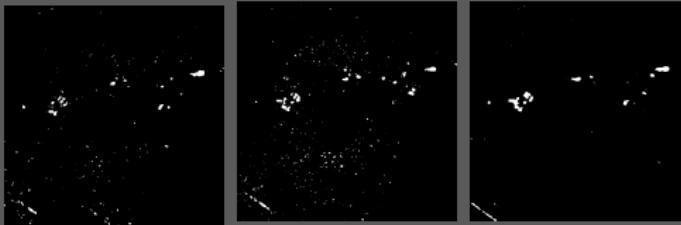
(b) GT



(a) early

(b) late

(c) densenet



(d)

(e) densenet

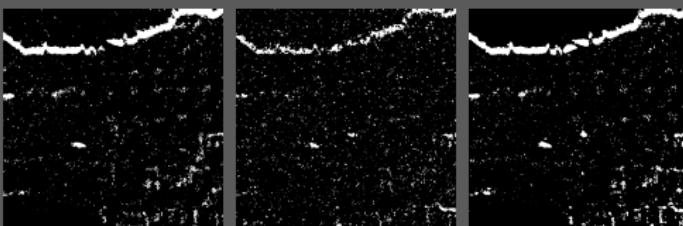
(f) densenet

Ex4



(a) Input

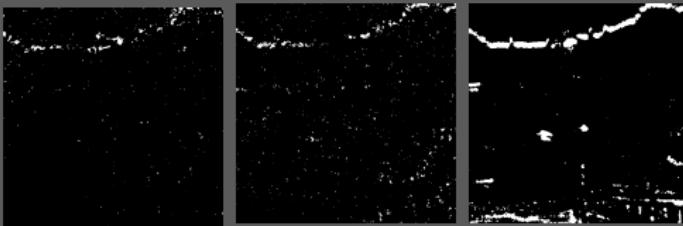
(b) GT



(a) early

(b) late

(c) densenet



(d)

(e) densenet

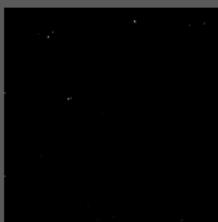
(f) densenet

Ex5



(a) Input

(b) GT



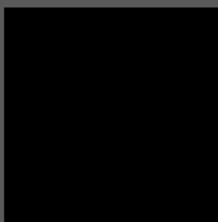
(a) early



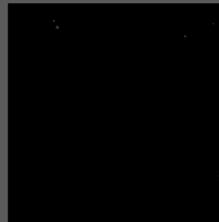
(b) late



(c) densenet



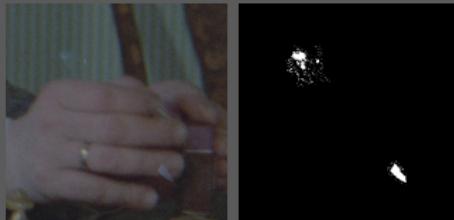
(d)



(e) densenet



(f) densenet



(a) Input

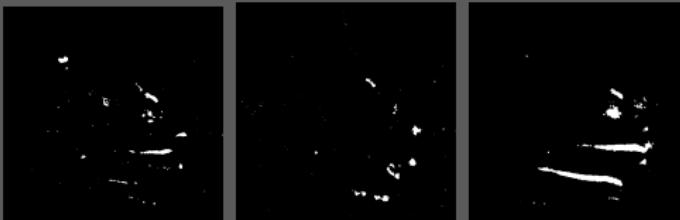
(b) GT



(a) early

(b) late

(c) densenet



(e) densenet

(f) den

Ex7



(a) Input

(b) GT



(a) early



(b) late



(c) densenet



(d)



(e) densenet



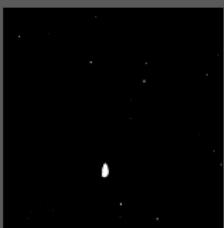
(f) densenet

Ex8



(a) Input

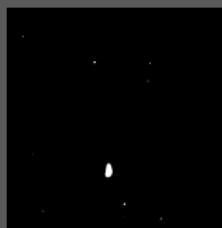
(b) GT



(a) early



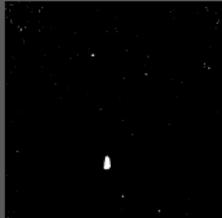
(b) late



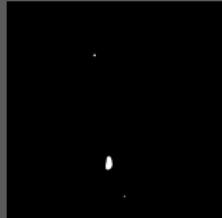
(c) densenet



(d)

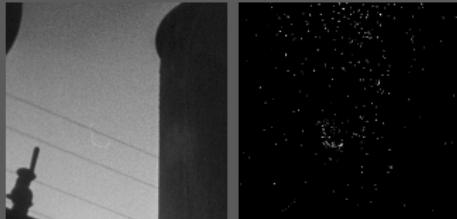


(e) densenet



(f) densenet

Ex9



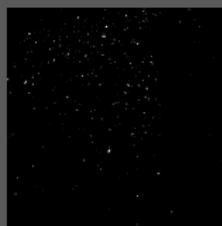
(a) Input



(b) GT



(a) early



(b) late



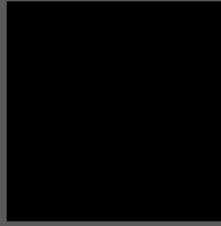
(c) densenet



(d)



(e) densenet



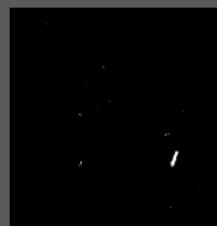
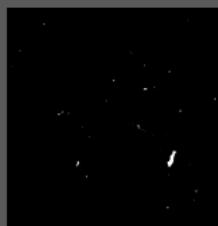
(f) densenet

Ex10



(a) Input

(b) GT



(a) early

(b) late

(c) densenet



(d)

(e) densenet

(f) densenet

Ex11

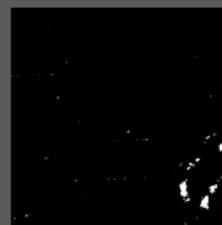


(a) Input

(b) GT



(a) early



(b) late



(c) densenet



(d)

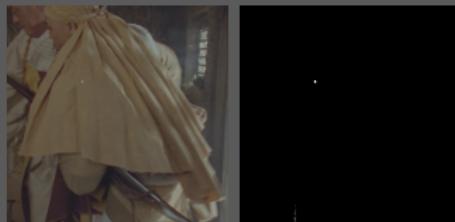


(e) densenet



(f) densenet

Ex12

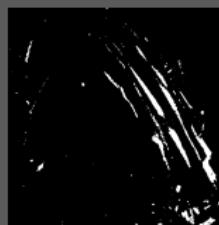


(a) Input

(b) GT



(a) early



(b) late



(c) densenet



(d)



(e) densenet



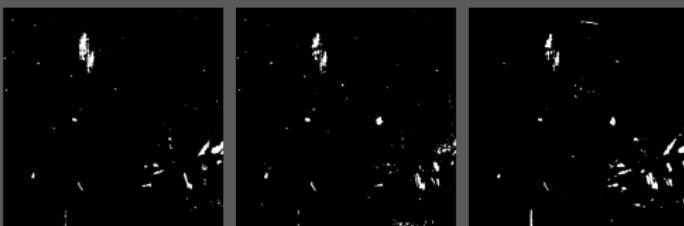
(f) densenet

Ex13



(a) Input

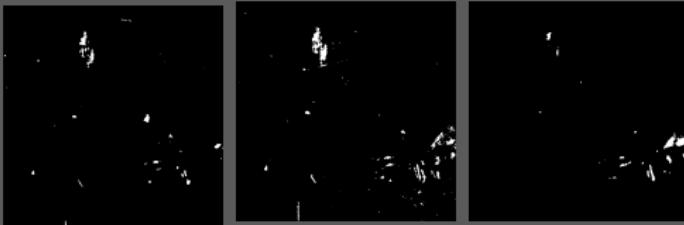
(b) GT



(a) early

(b) late

(c) densenet

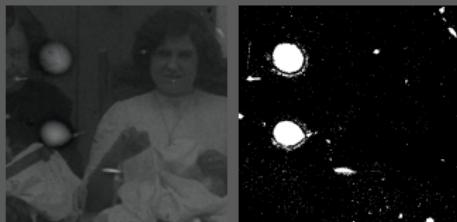


(d)

(e) densenet

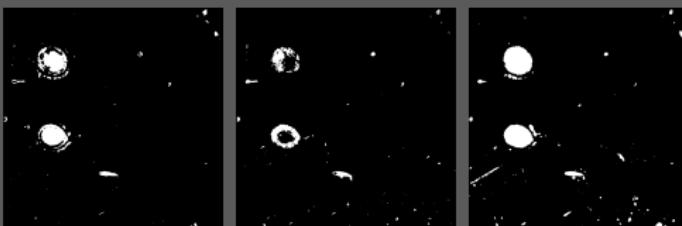
(f) densenet

Ex14



(a) Input

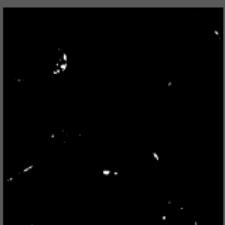
(b) GT



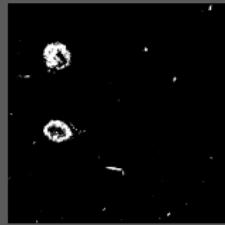
(a) early

(b) late

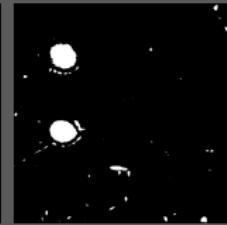
(c) densenet



(d)



(e) densenet



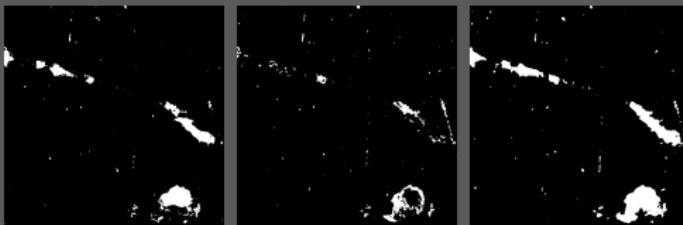
(f) densenet

Ex15



(a) Input

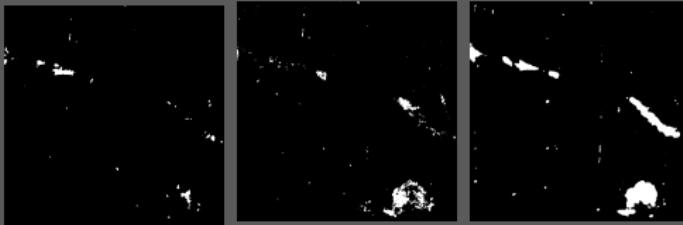
(b) GT



(a) early

(b) late

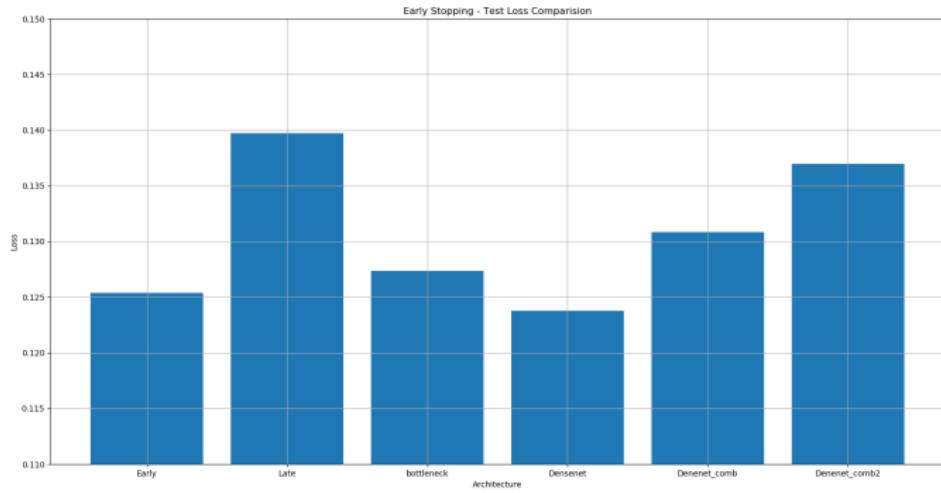
(c) densenet

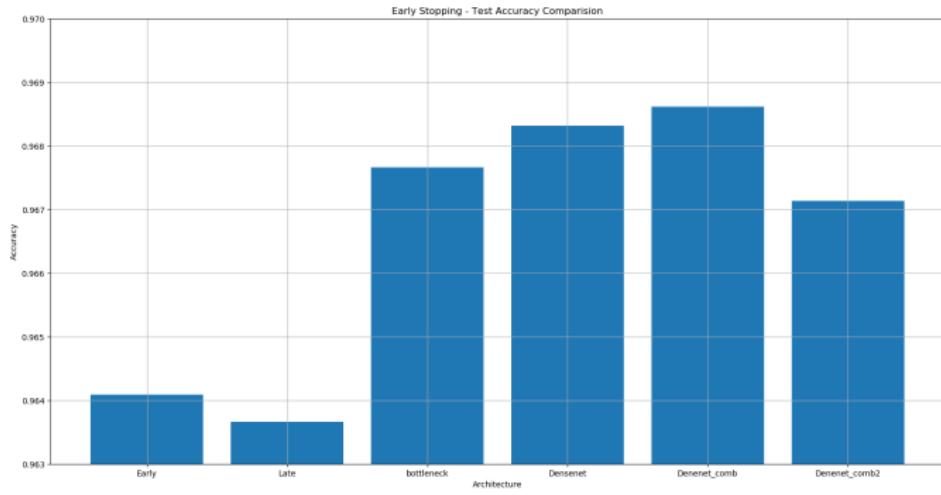


(d)

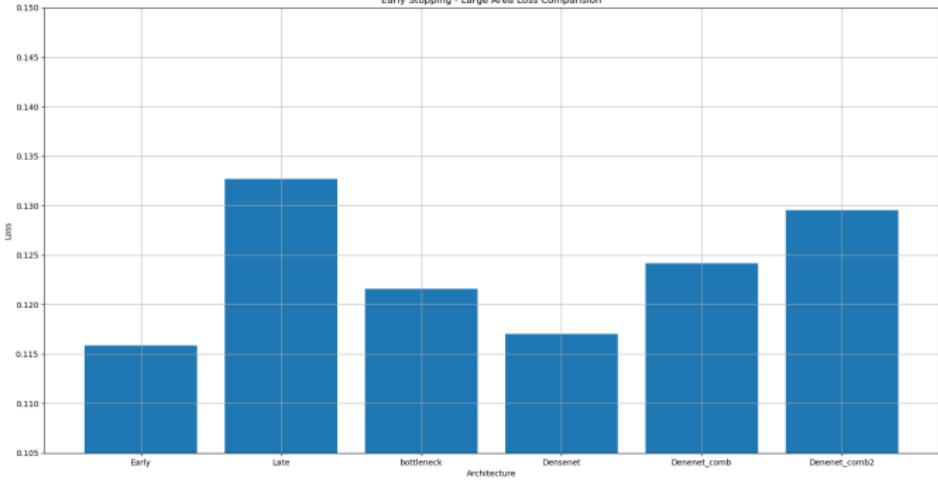
(e) densenet

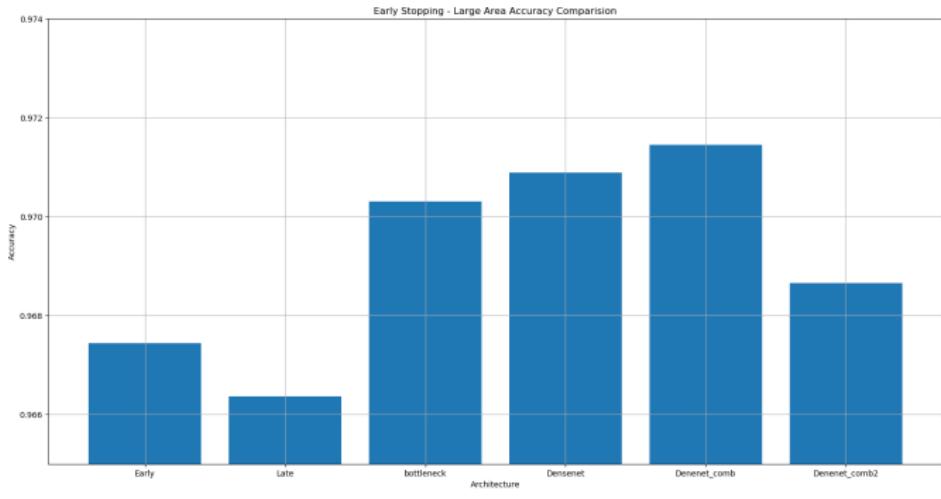
(f) densenet



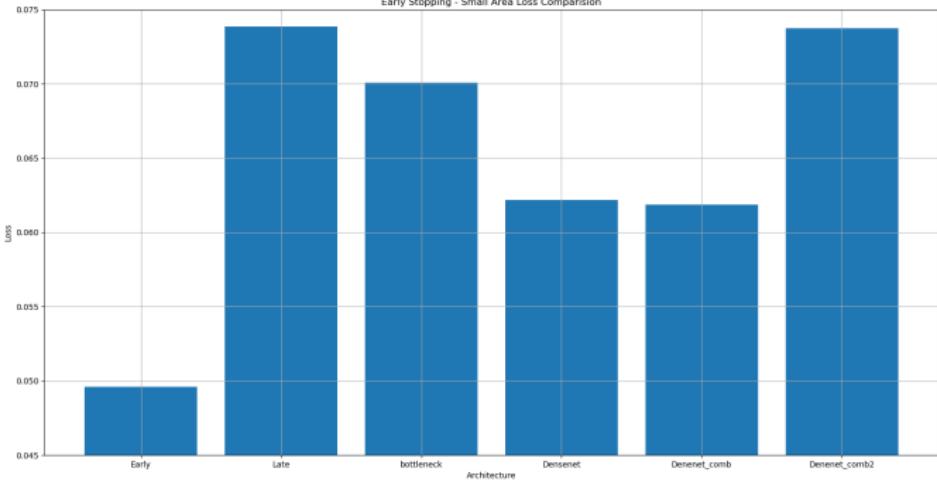


Early Stopping - Large Area Loss Comparison

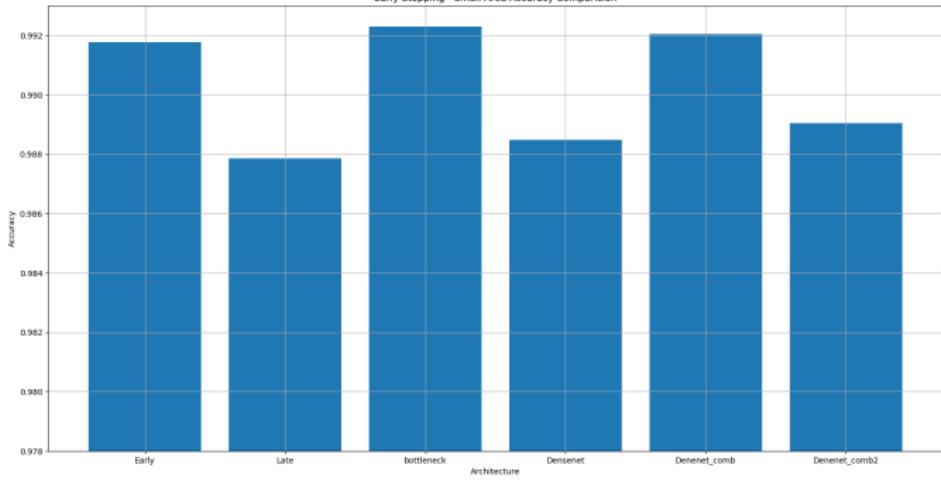




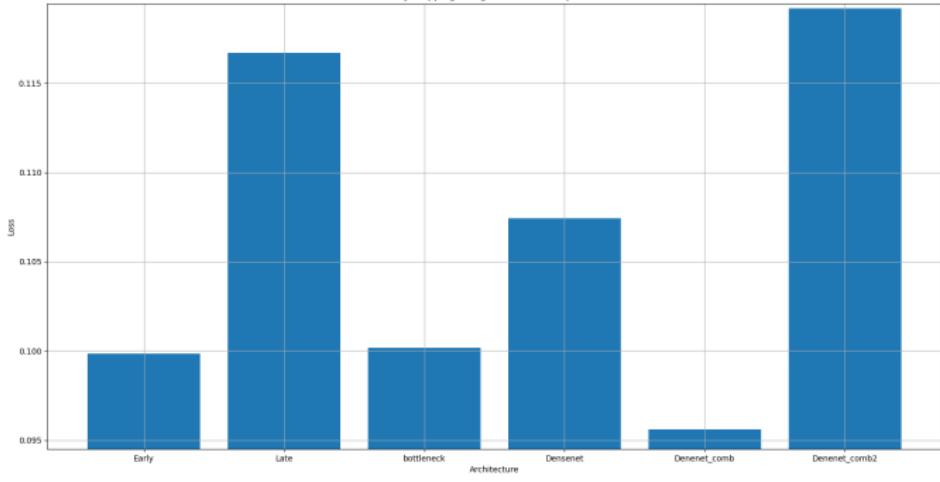
Early Stopping - Small Area Loss Comparison



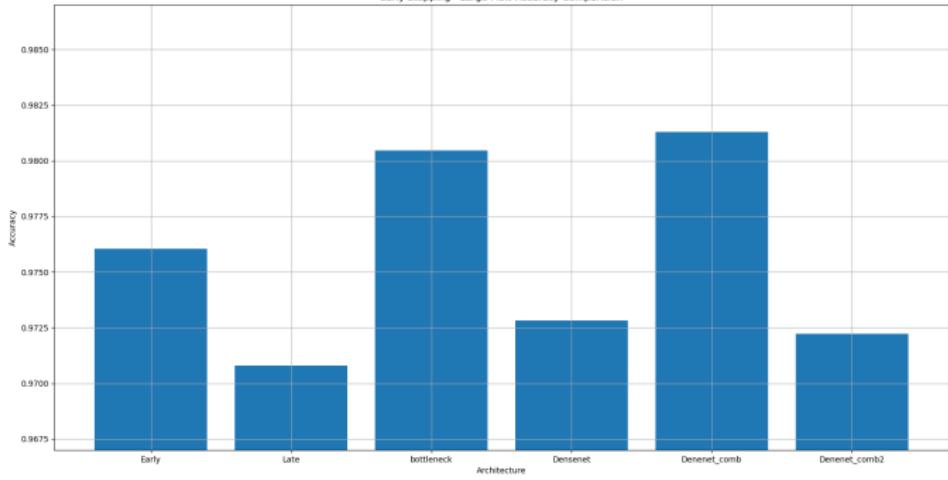
Early Stopping - Small Area Accuracy Comparision



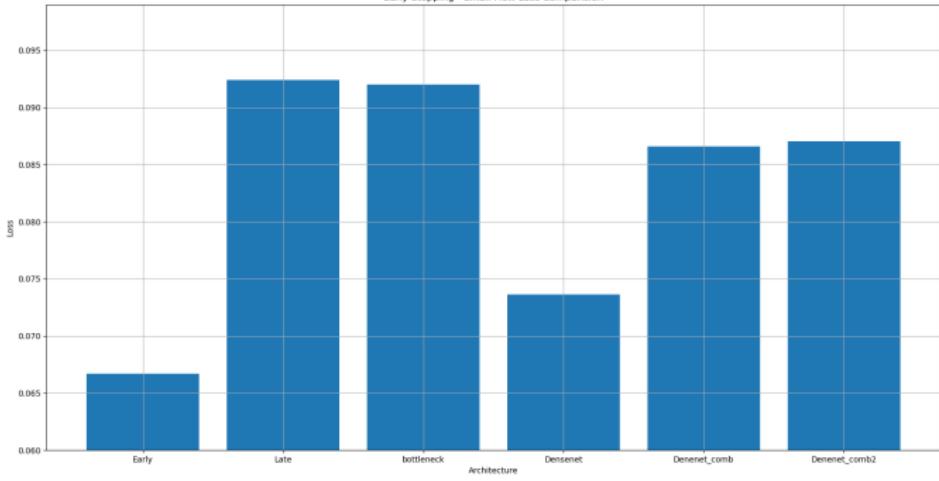
Early Stopping - Large Flow Loss Comparison

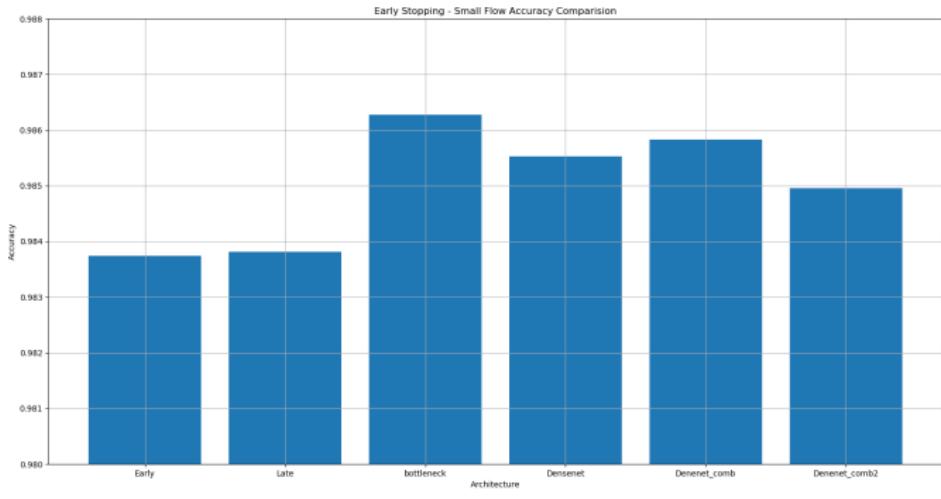


Early Stopping - Large Flow Accuracy Comparison

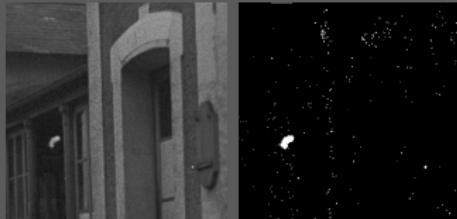


Early Stopping - Small Flow Loss Comparison





Ex1



(a) Input

(b) GT



(a) early

(b) late

(c) densenet

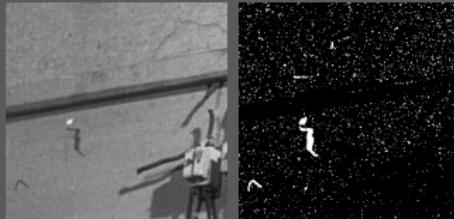


(d)

(e) densenet

(f) densenet

Ex2



(a) Input

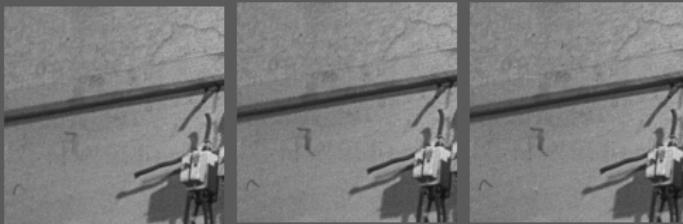
(b) GT



(a) early

(b) late

(c) densenet

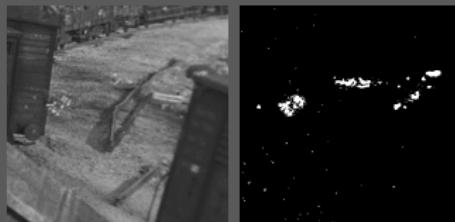


(d)

(e) densenet

(f) densenet

Ex3



(a) Input

(b) GT



(a) early

(b) late

(c) densenet



(d)

(e) densenet

(f) densenet

Ex4



(a) Input

(b) GT



(a) early

(b) late

(c) densenet



(d)

(e) densenet

(f) densenet

Ex5



(a) Input

(b) GT



(a) early

(b) late

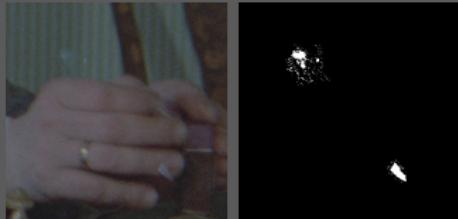
(c) densenet



(d)

(e) densenet

(f) densenet



(a) Input

(b) GT



(a) early

(b) late

(c) densenet



(e) densenet

(f) den

Ex7



(a) Input

(b) GT



(a) early

(b) late

(c) densenet

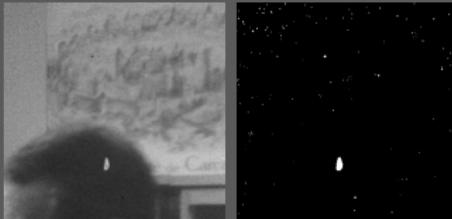


(d)

(e) densenet

(f) densenet

Ex8



(a) Input

(b) GT



(a) early

(b) late

(c) densenet

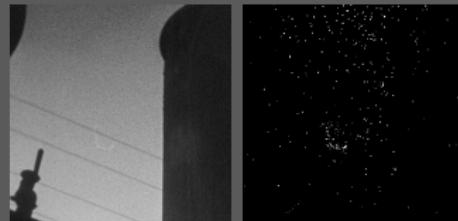


(d)

(e) densenet

(f) densenet

Ex9



(a) Input

(b) GT



(a) early

(b) late

(c) densenet



(d)

(e) densenet

(f) densenet

Ex10



(a) Input

(b) GT



(a) early



(b) late



(c) densenet



(d)



(e) densenet



(f) densenet

Ex11



(a) Input

(b) GT



(a) early



(b) late



(c) densenet



(d)



(e) densenet



(f) densenet

Ex12



(a) Input

(b) GT



(a) early



(b) late



(c) densenet



(d)



(e) densenet



(f) densenet

Ex13



(a) Input

(b) GT



(a) early

(b) late

(c) densenet

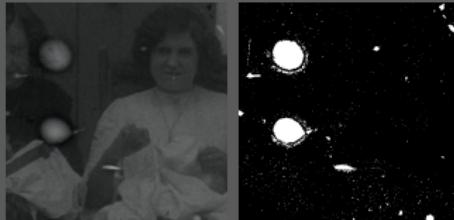


(d)

(e) densenet

(f) densenet

Ex14



(a) Input

(b) GT



(a) early

(b) late

(c) densenet



(d)

(e) densenet

(f) densenet

Ex15

