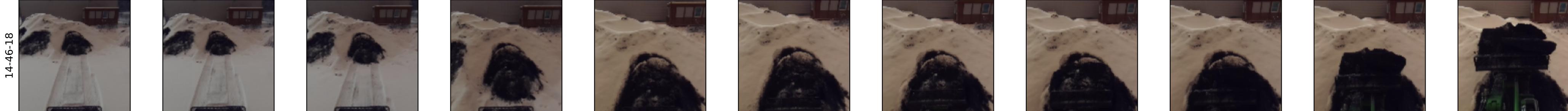


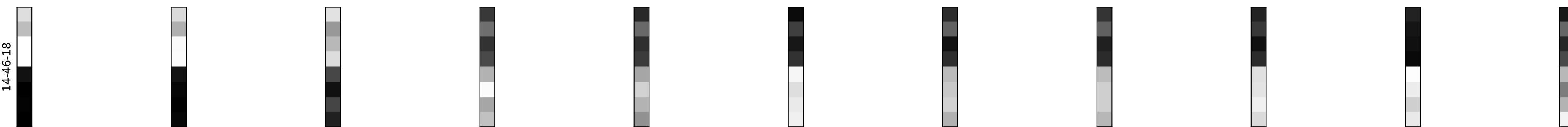
Learning Reward from Demonstrations

Training Data		Sensor Values	Clustering & Classification	Reward
80 % of positive demos: mix of winter and autumn	Boom angle, Bucket angle, Distance to the pile, Segment, Reward	Difference R_max and Distance to the next cluster center	K-means clustering and KNN Classifier	20 % of positive demos: mix of winter and autumn

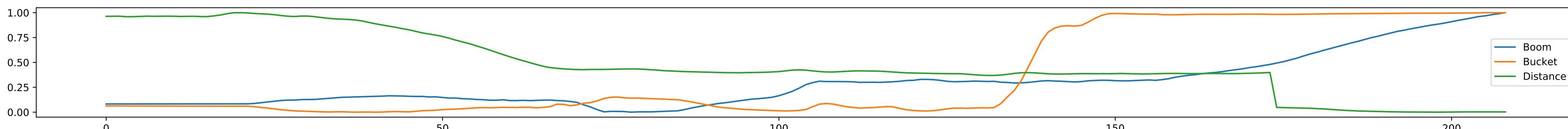
winter - 14-46-18



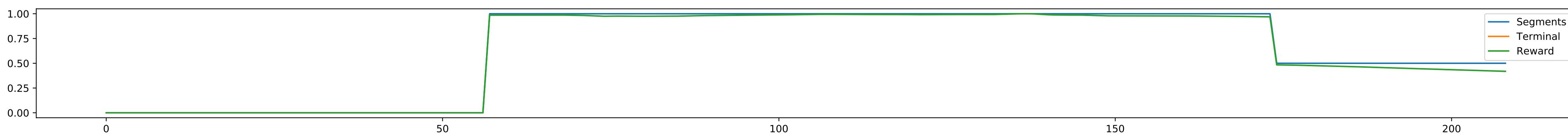
14-46-18



14-46-18

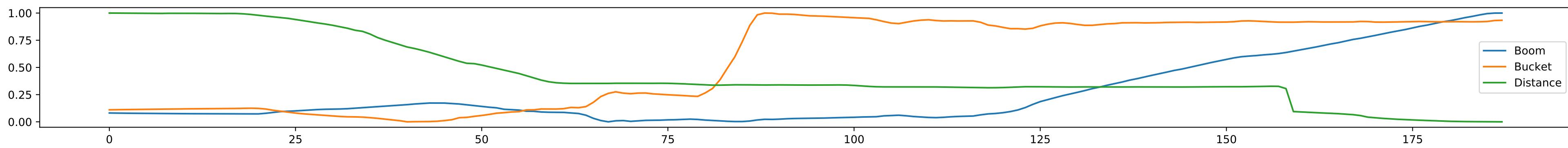


Boom
Bucket
Distance

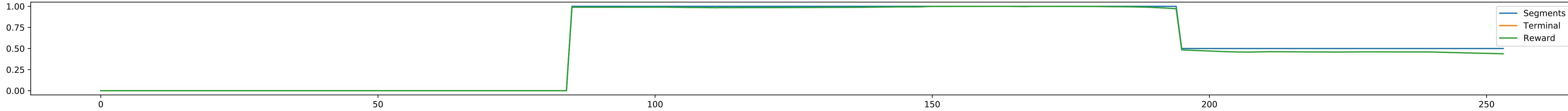
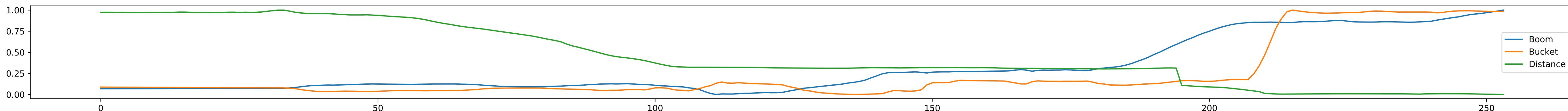
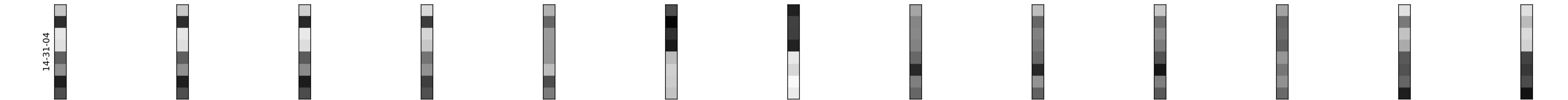
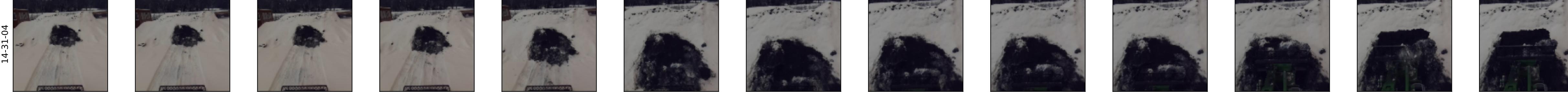


Segments
Terminal
Reward

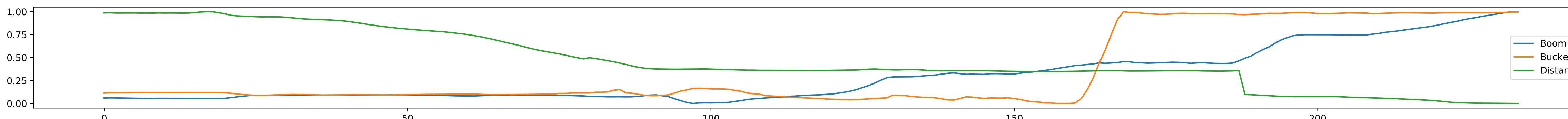
winter - 14-40-52



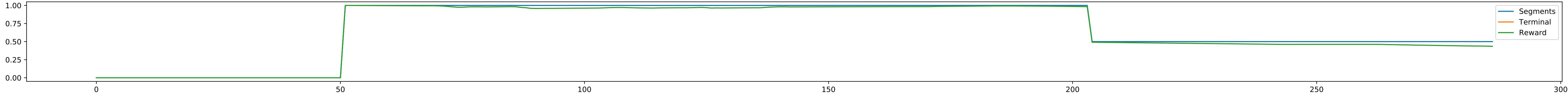
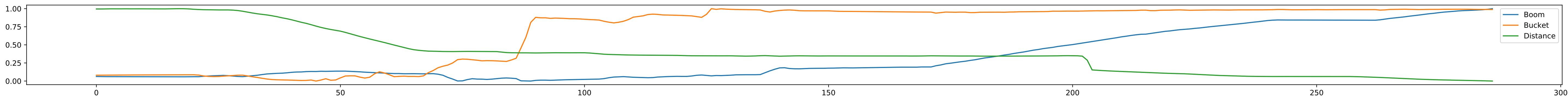
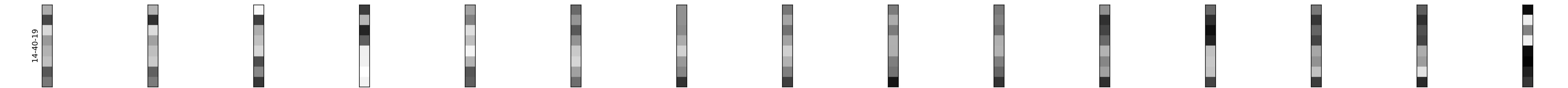
winter - 14-31-04



winter - 14-28-58



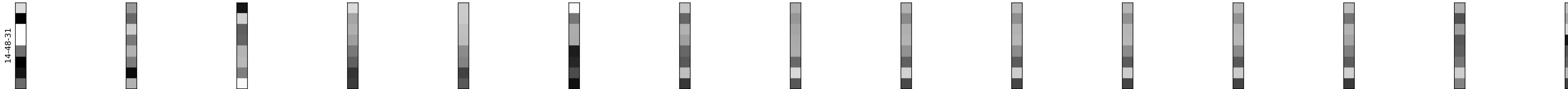
winter - 14-40-19



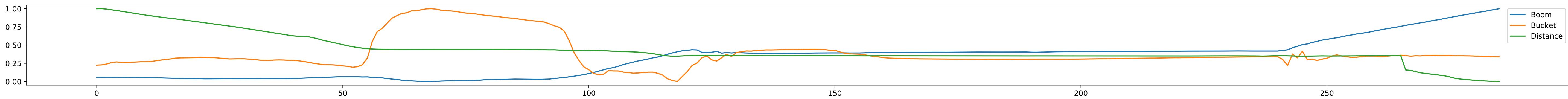
winter - 14-48-31



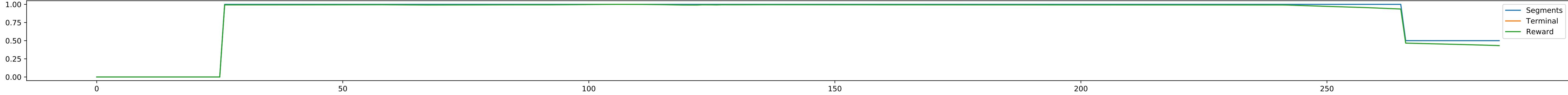
14-48-31



14-48-31



Boom
Bucket
Distance

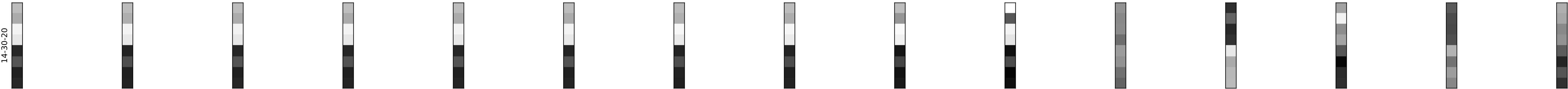


Segments
Terminal
Reward

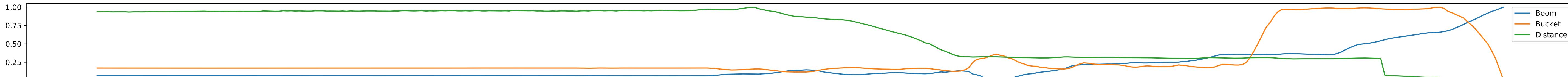
winter - 14-30-20



14-30-20



14-30-20



Boom
Bucket
Distance

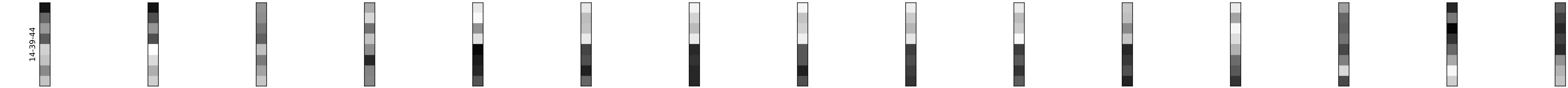


Segments
Terminal
Reward

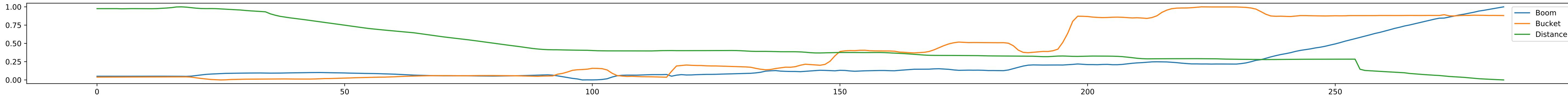
winter - 14-39-44



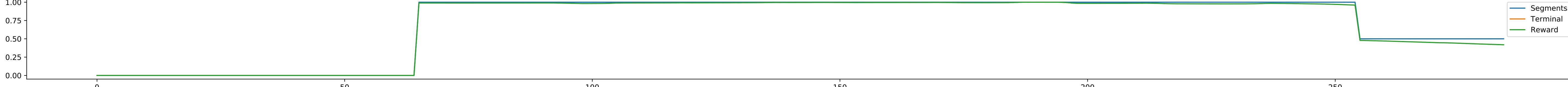
14-39-44



14-39-44

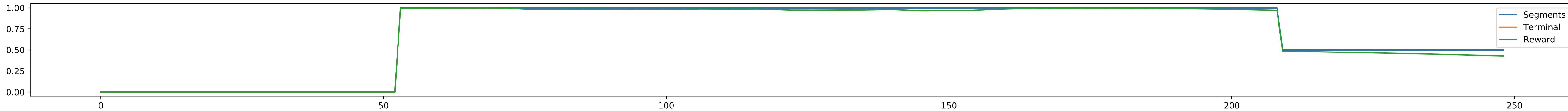
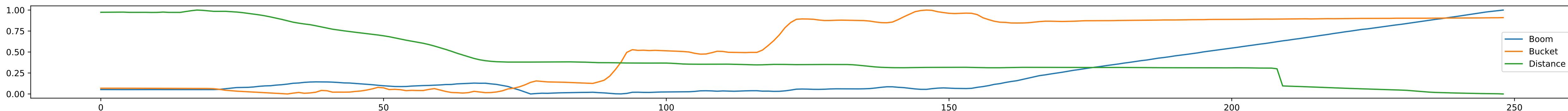
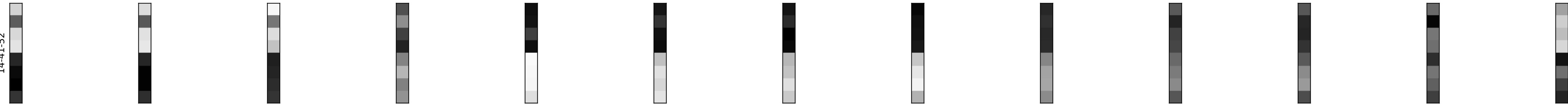


Boom
Bucket
Distance



Segments
Terminal
Reward

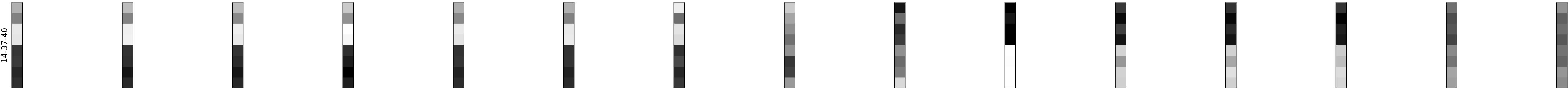
winter - 14-41-52



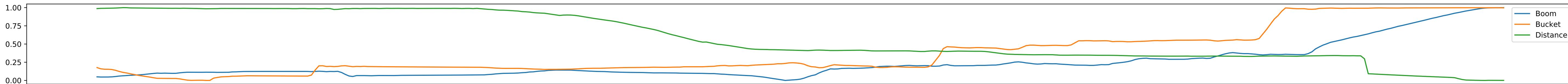
winter - 14-37-40



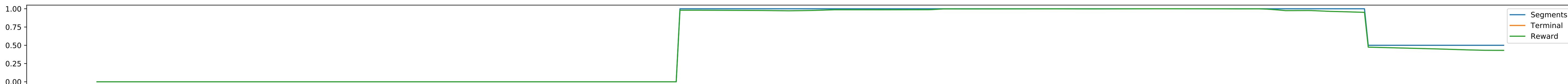
14-37-40



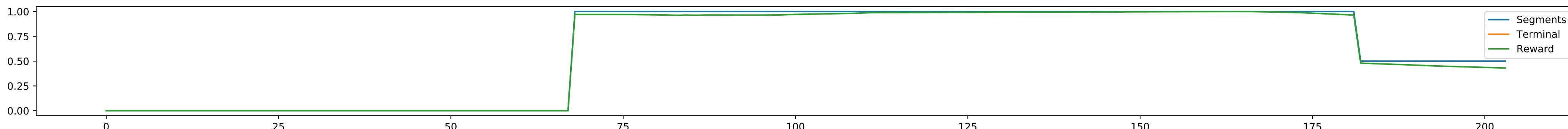
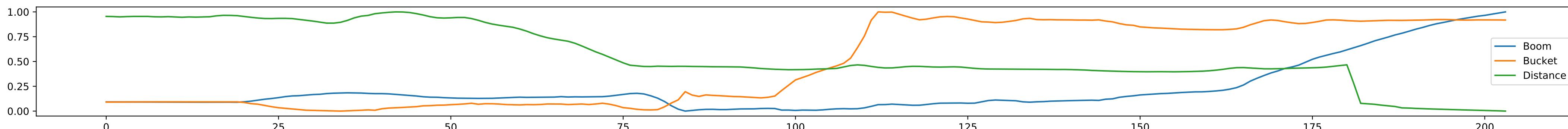
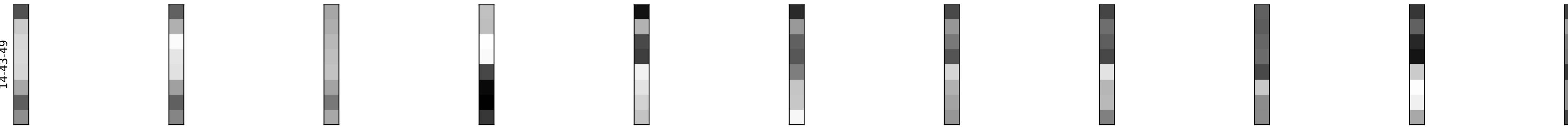
14-37-40



14-37-40



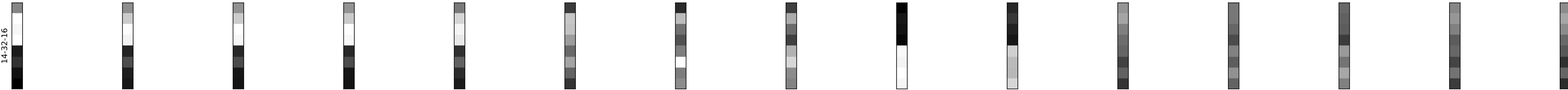
winter - 14-43-49



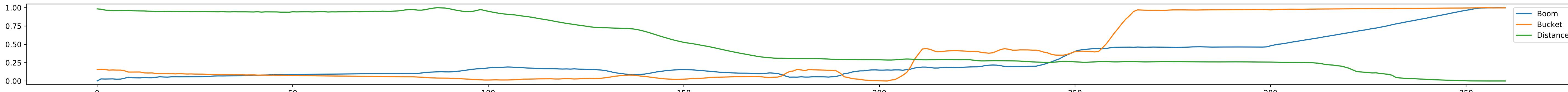
winter - 14-32-16



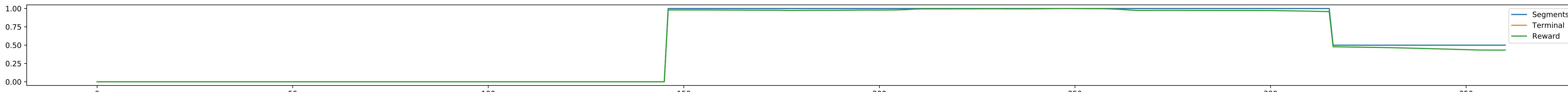
14-32-16



14-32-16

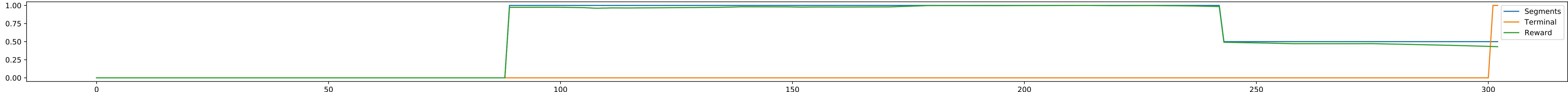
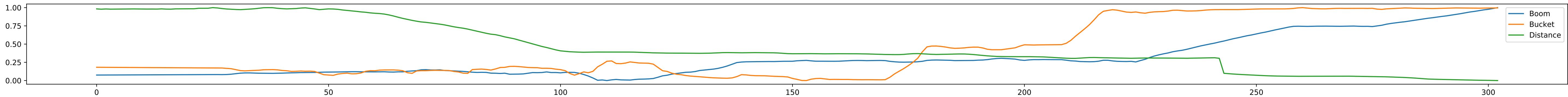
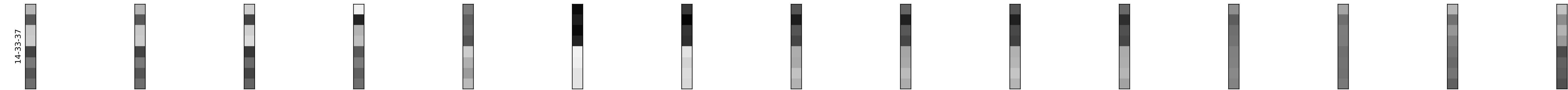
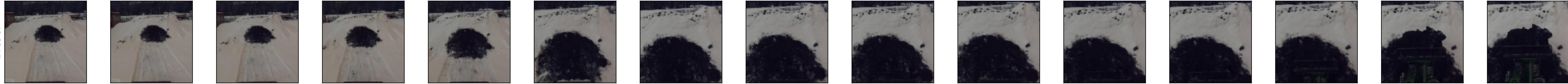


Boom
Bucket
Distance

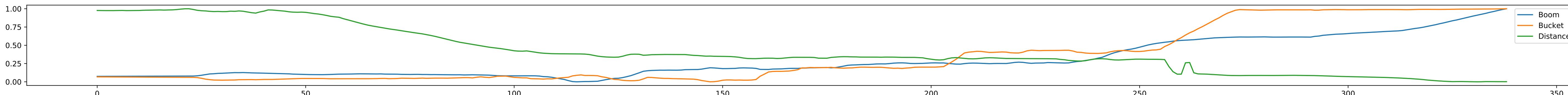
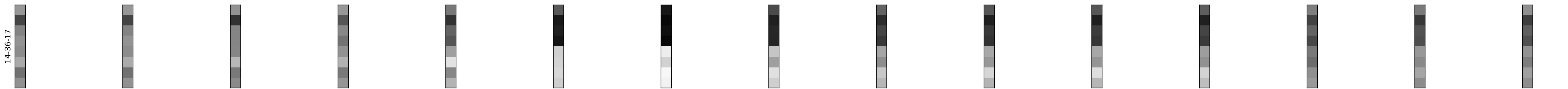


Segments
Terminal
Reward

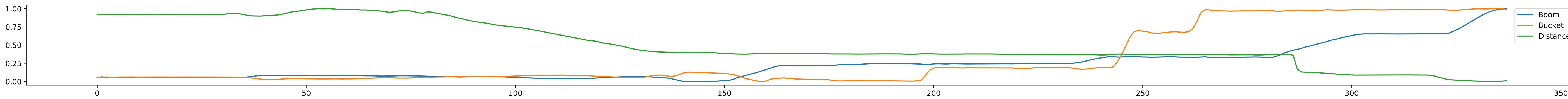
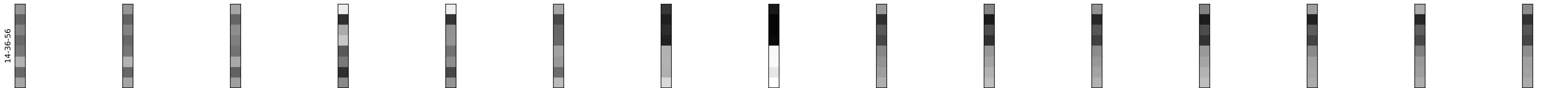
winter - 14-33-37



winter - 14-36-17



winter - 14-36-56

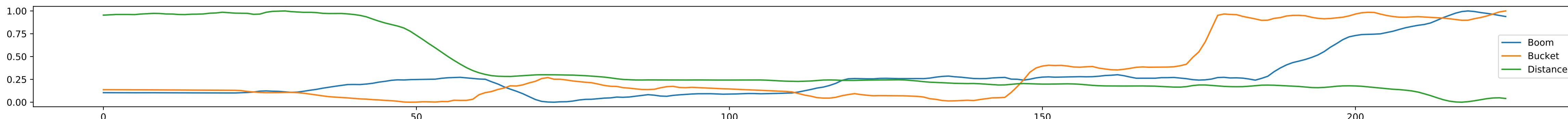


winter - 14-41-22

14-41-22



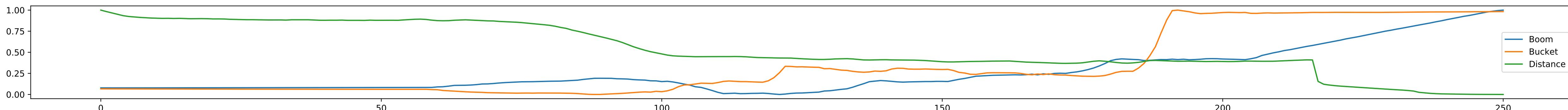
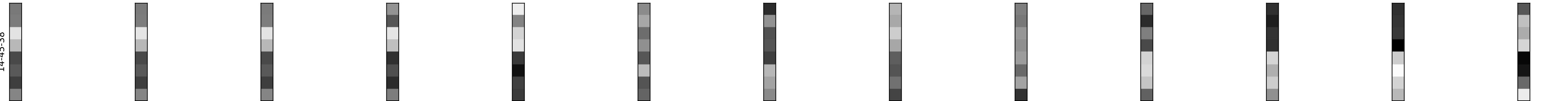
14-41-22



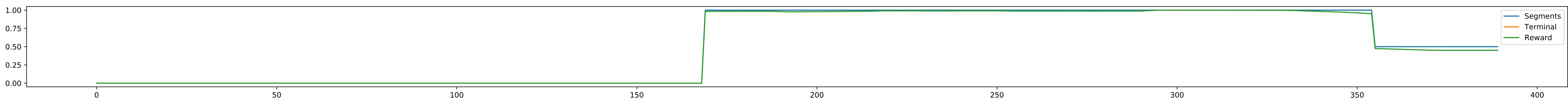
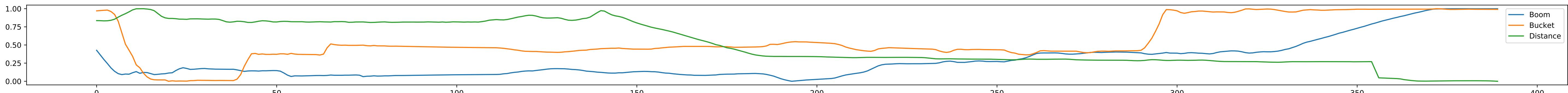
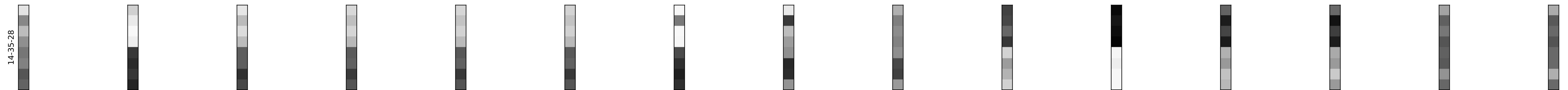
winter - 14-45-38



14-45-38



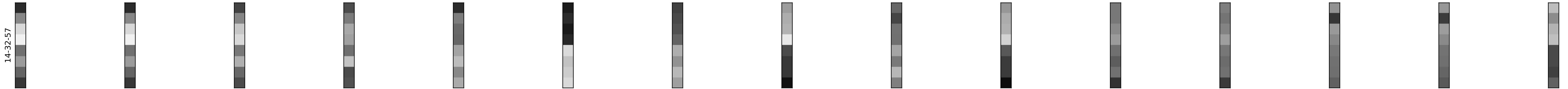
winter - 14-35-28



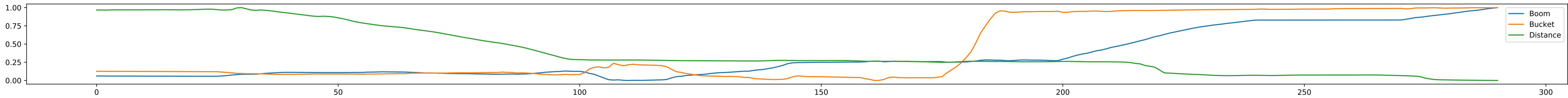
winter - 14-32-57



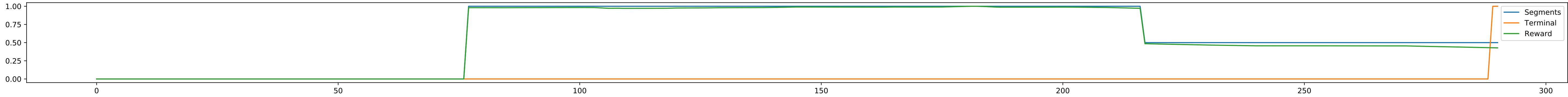
14-32-57



14-32-57



Boom
Bucket
Distance



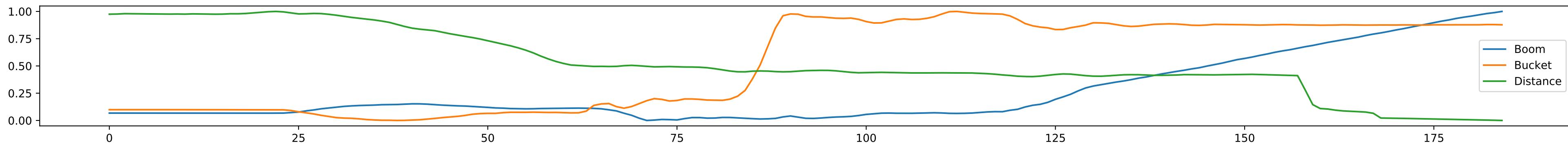
Segments
Terminal
Reward

winter - 14-45-06

14-45-06



14-45-06

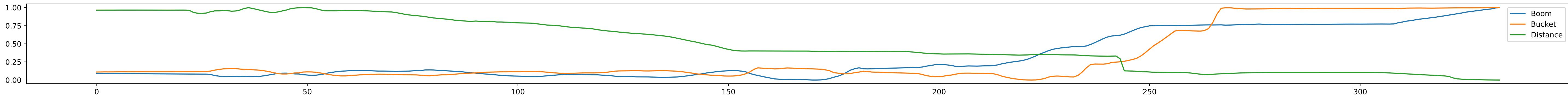
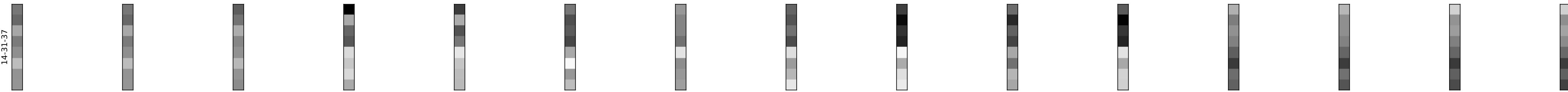


- Boom
- Bucket
- Distance

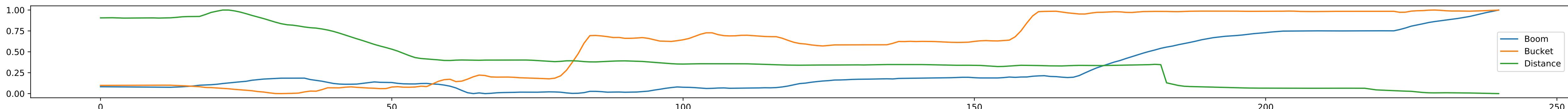
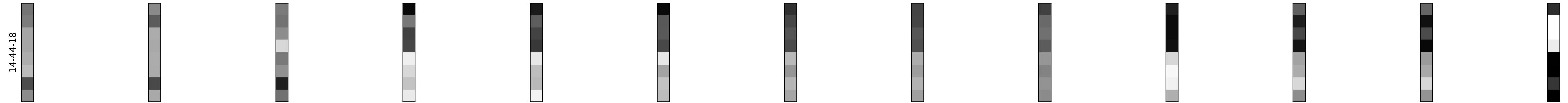


- Segments
- Terminal
- Reward

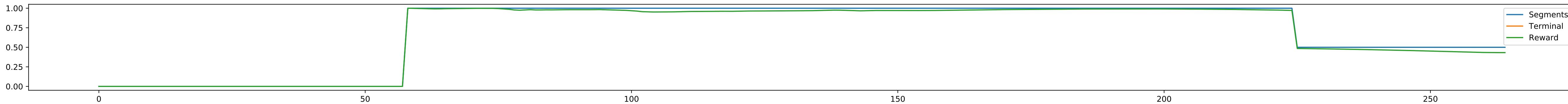
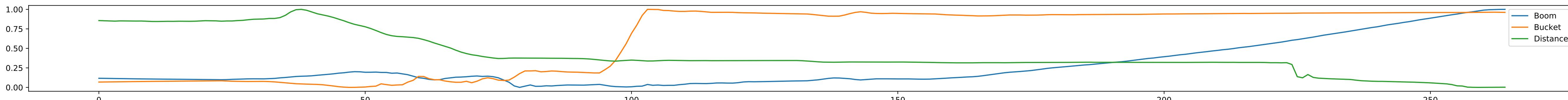
winter - 14-31-37



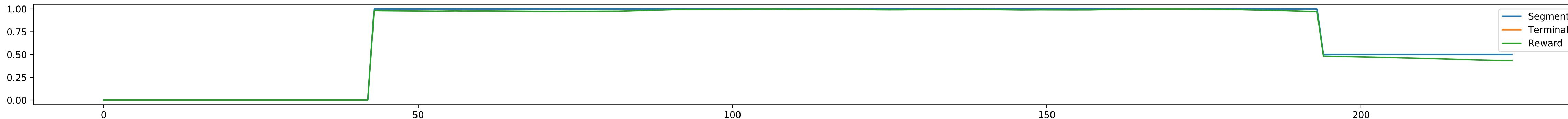
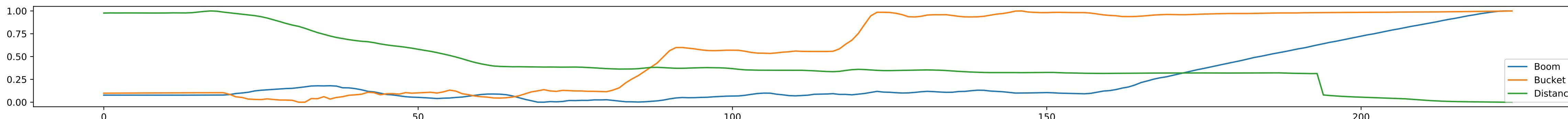
winter - 14-44-18



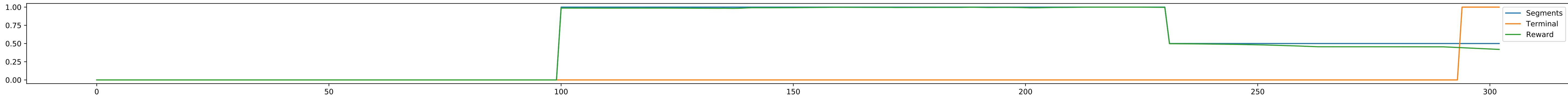
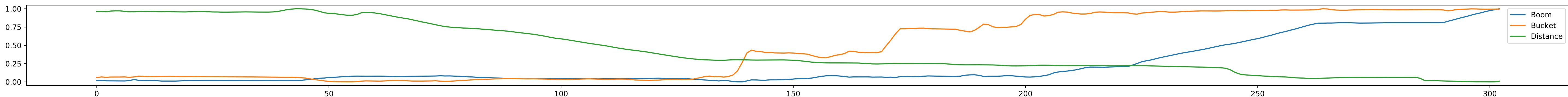
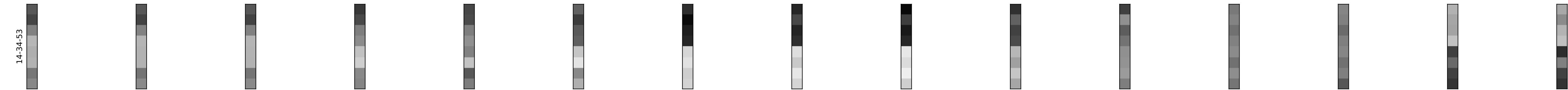
winter - 14-42-43



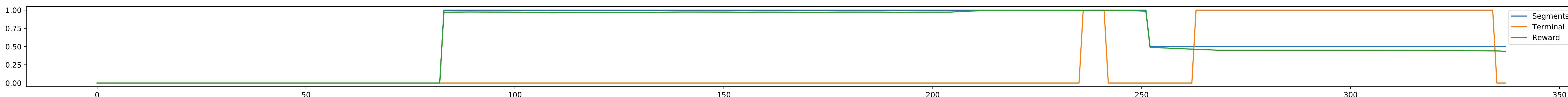
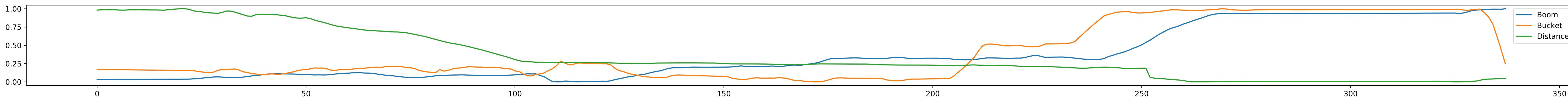
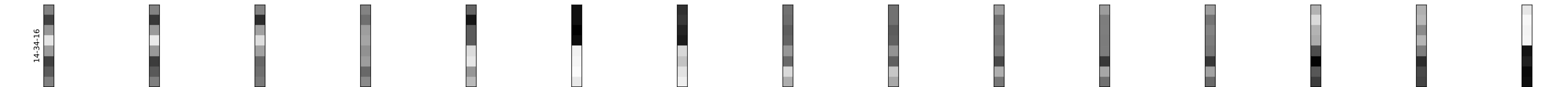
winter - 14-43-16



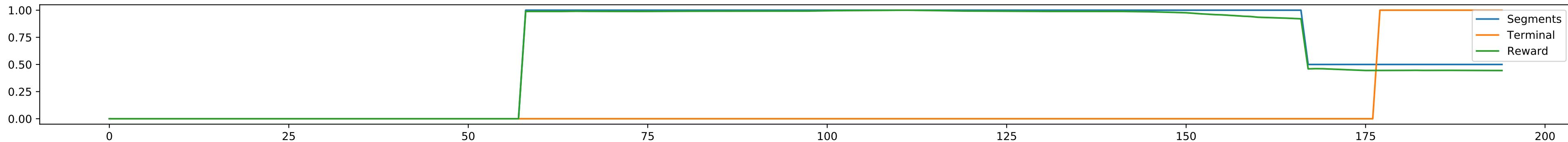
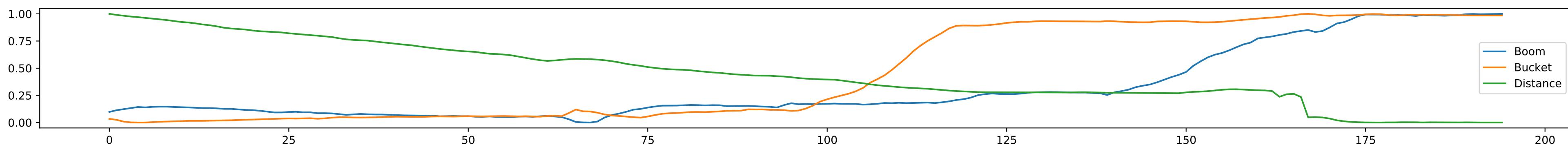
winter - 14-34-53



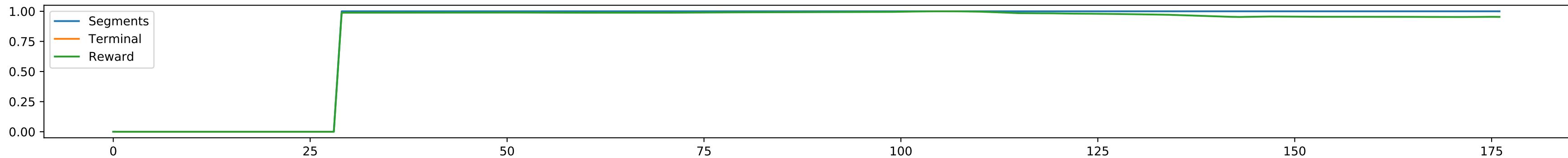
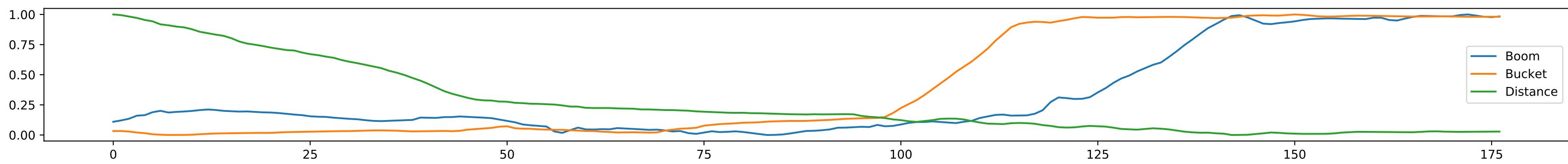
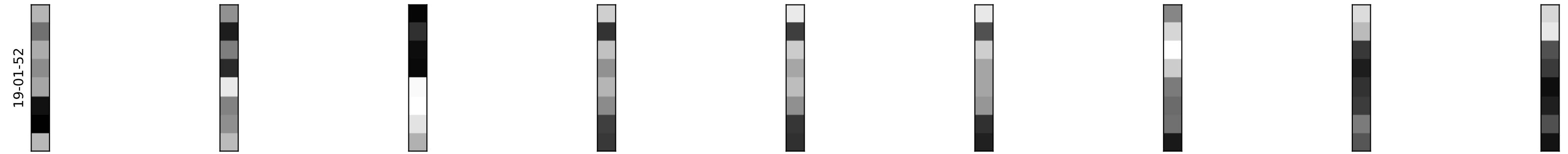
winter - 14-34-16



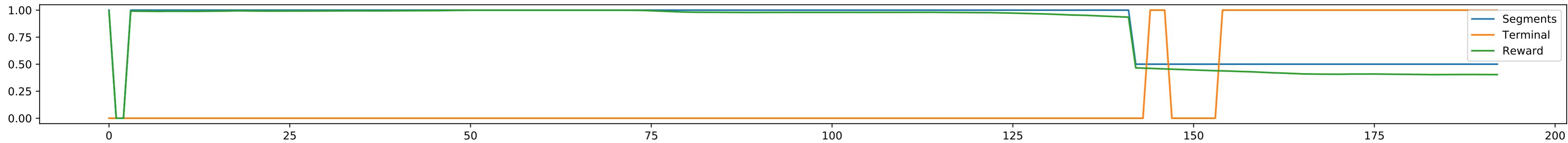
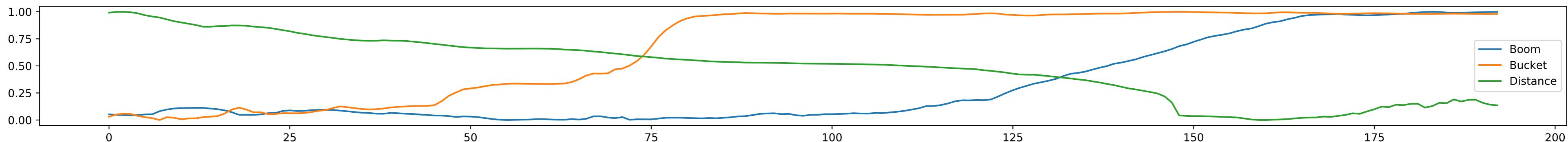
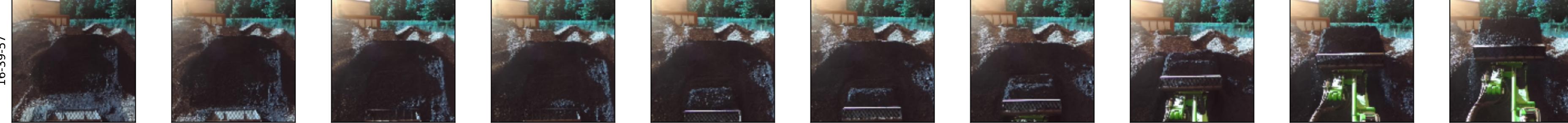
autumn - 16-23-38



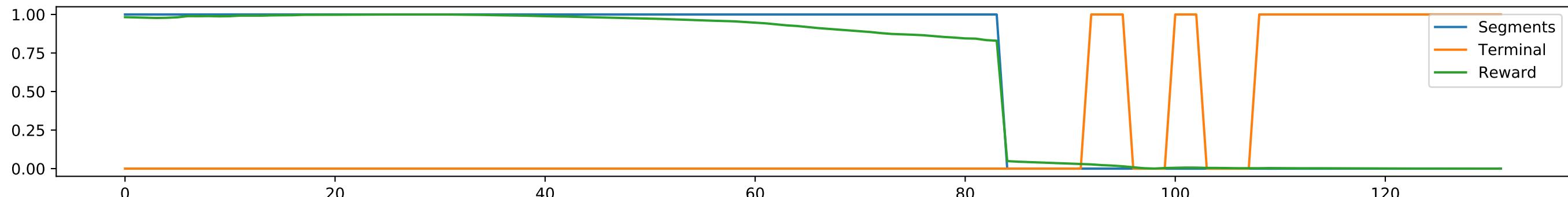
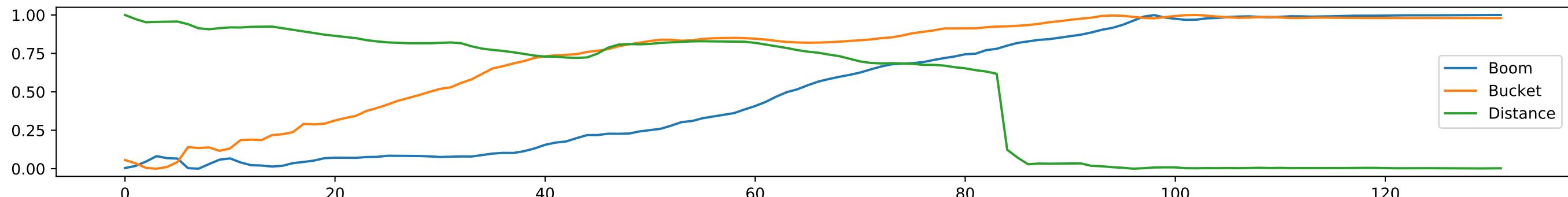
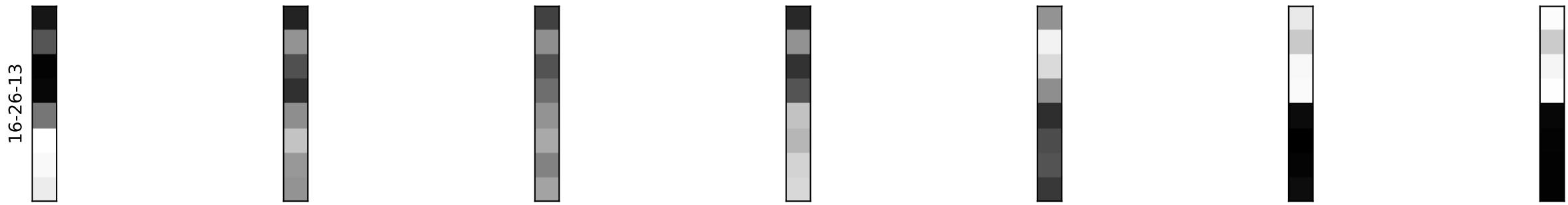
autumn - 19-01-52



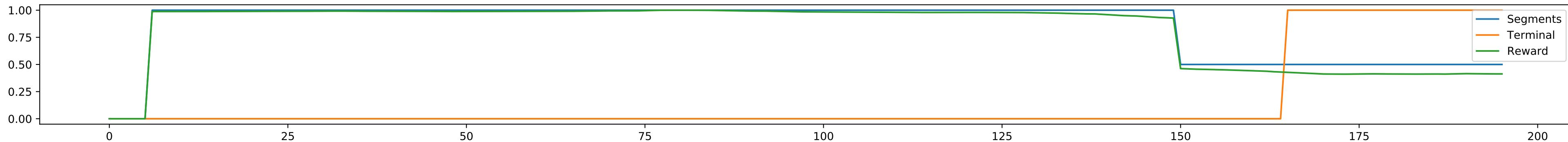
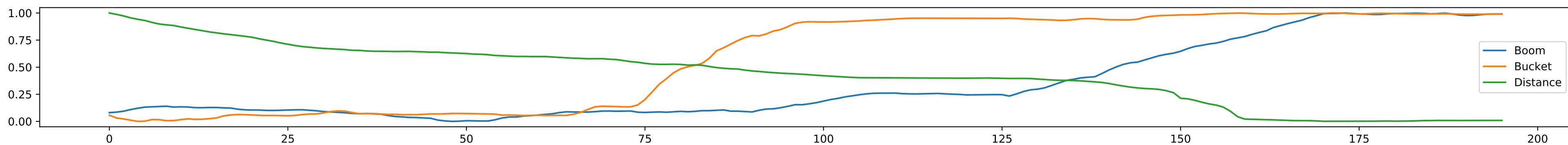
autumn - 16-39-57



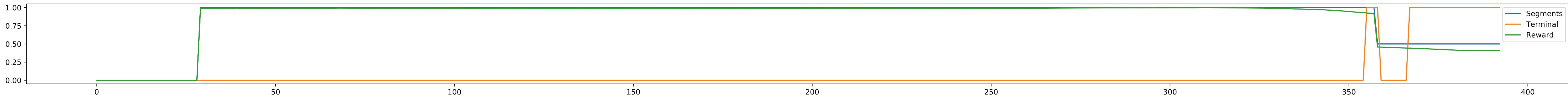
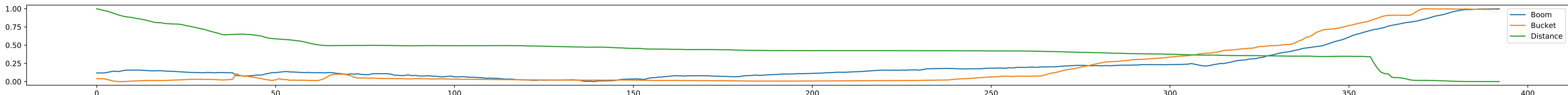
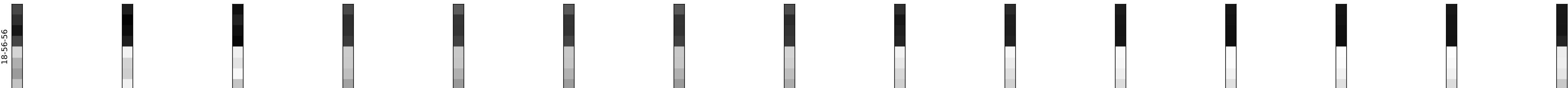
autumn - 16-26-13



autumn - 16-31-52



autumn - 18-56-56

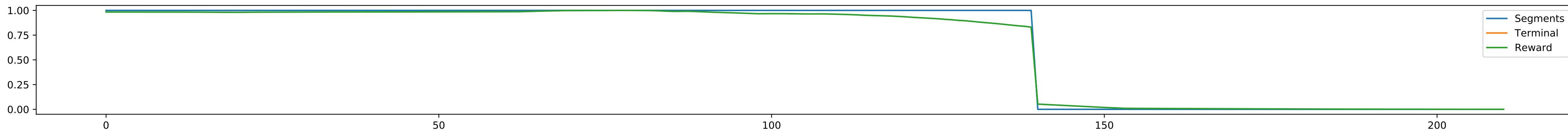
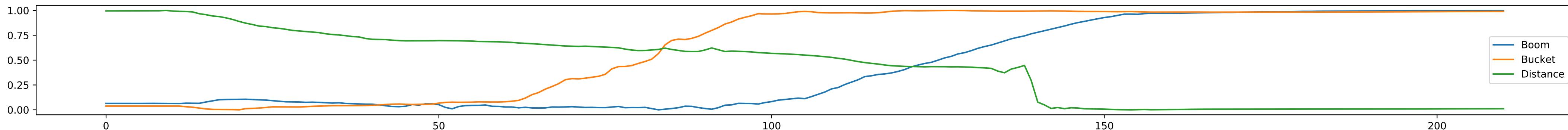
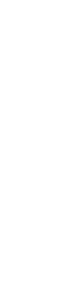
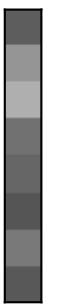


autumn - 16-29-37

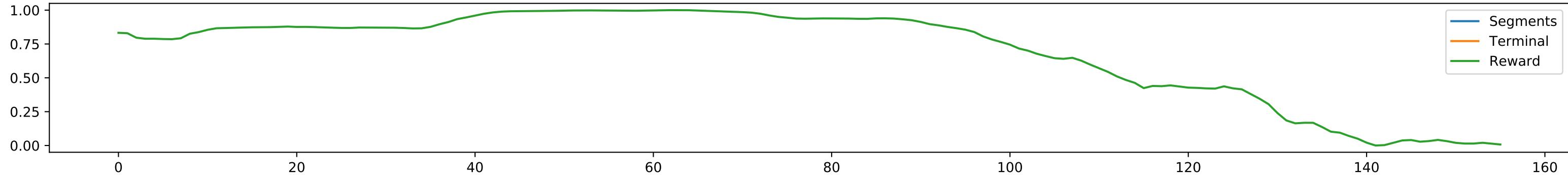
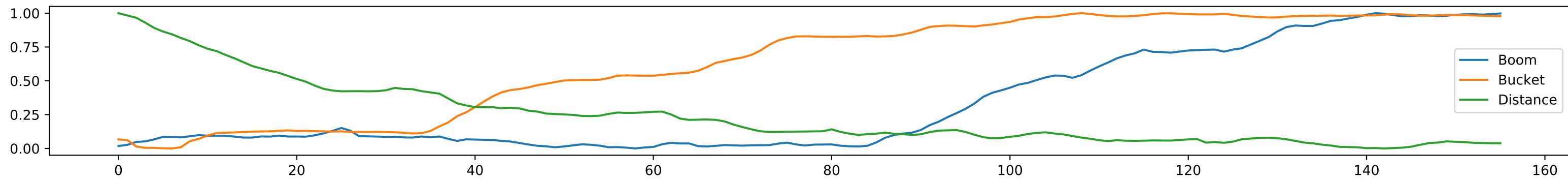
16-29-37



16-29-37

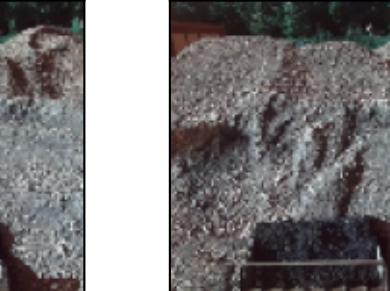
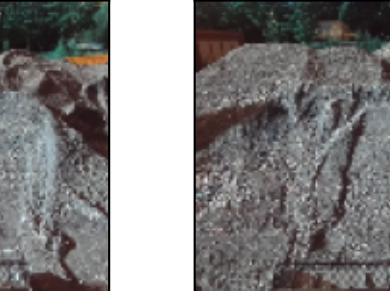


autumn - 16-27-12

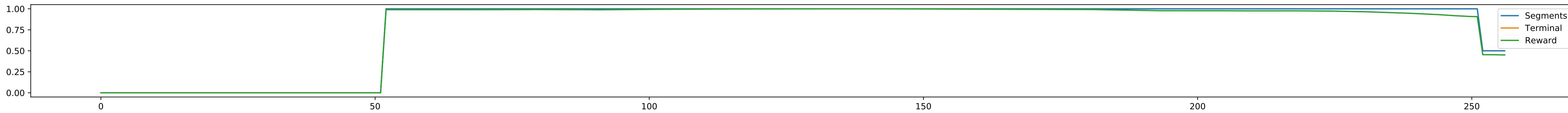
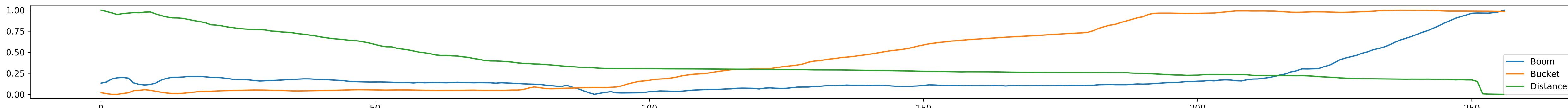
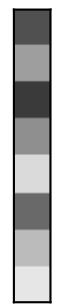
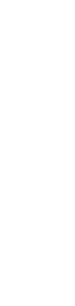
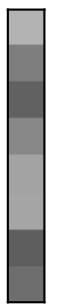


autumn - 16-01-09

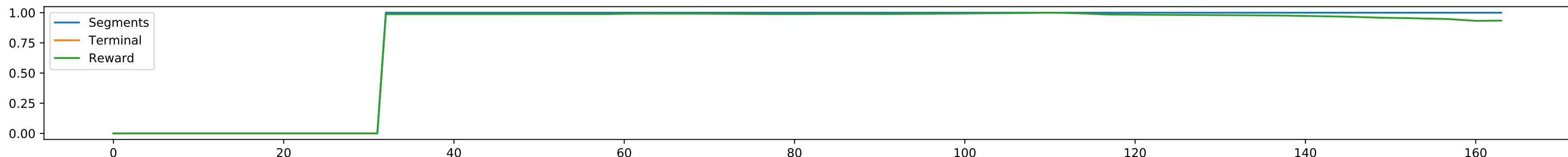
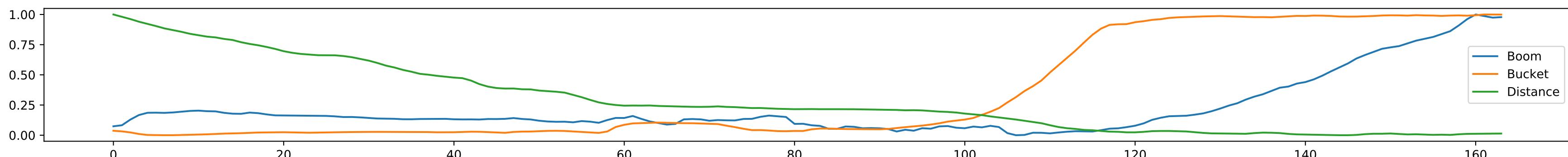
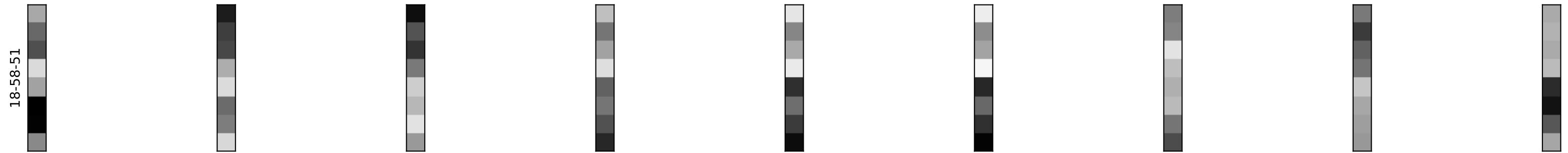
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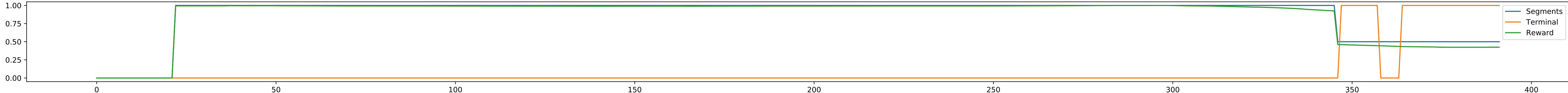
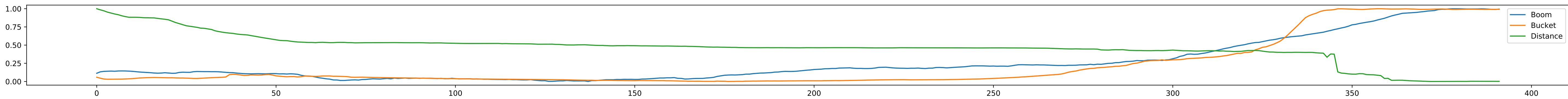
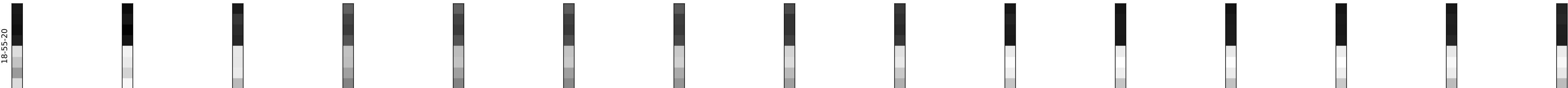
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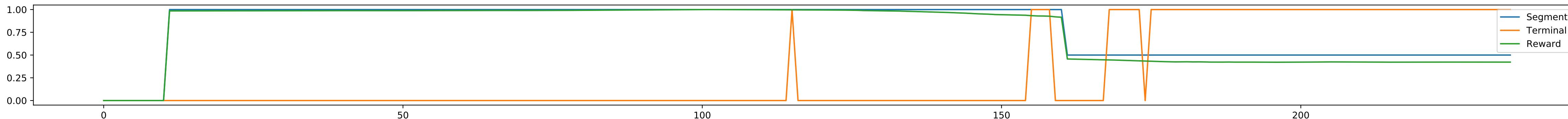
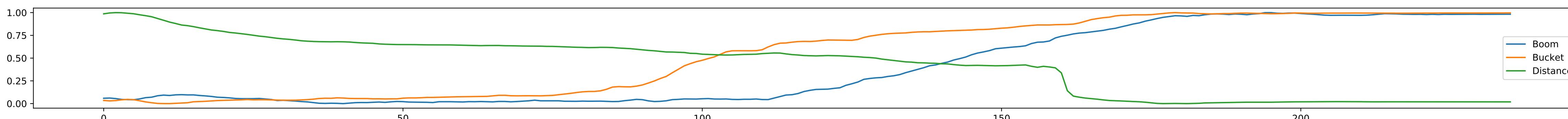
autumn - 18-58-51



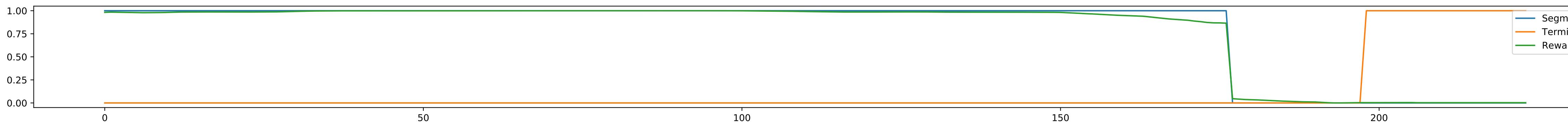
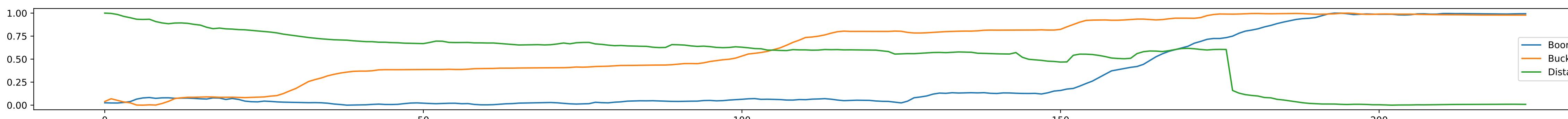
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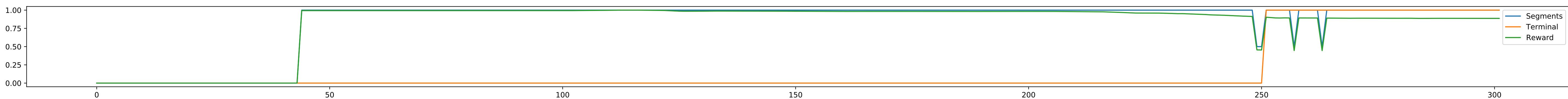
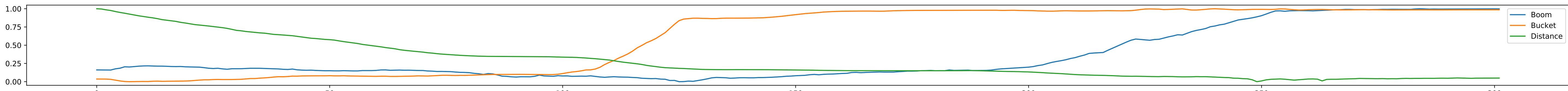
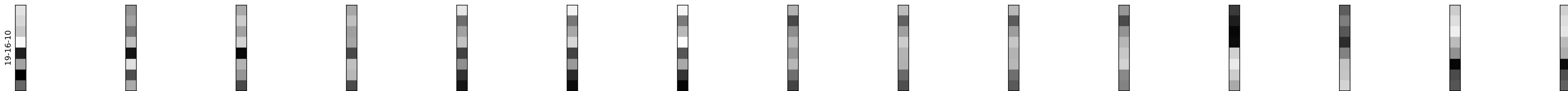
autumn - 16-17-19



autumn - 16-27-52



autumn - 19-16-10

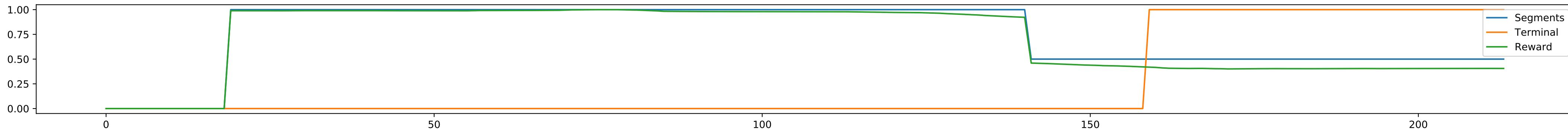
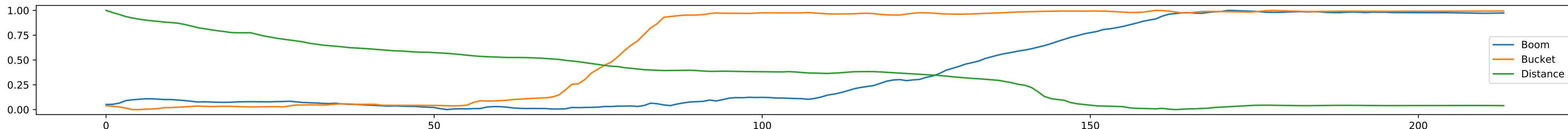
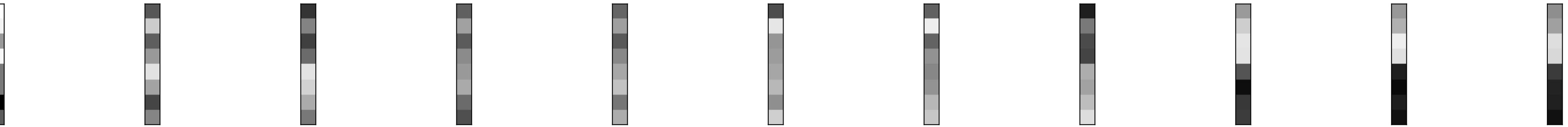


autumn - 16-34-22

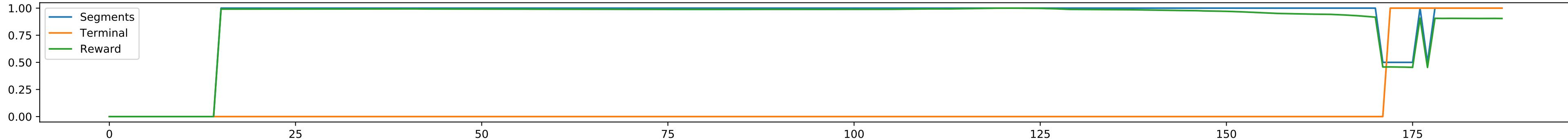
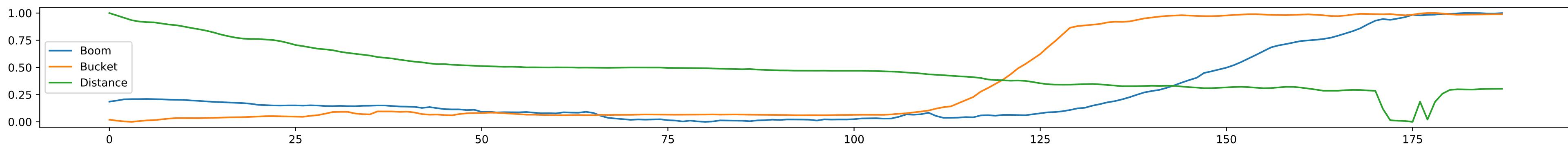
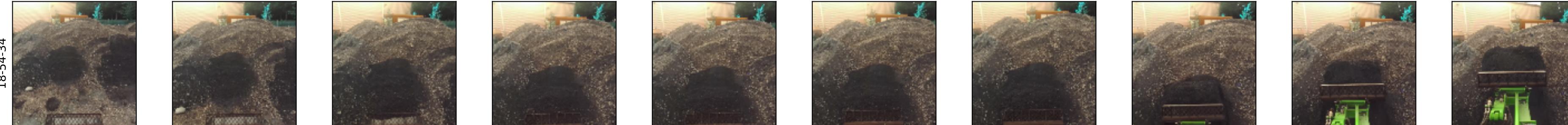
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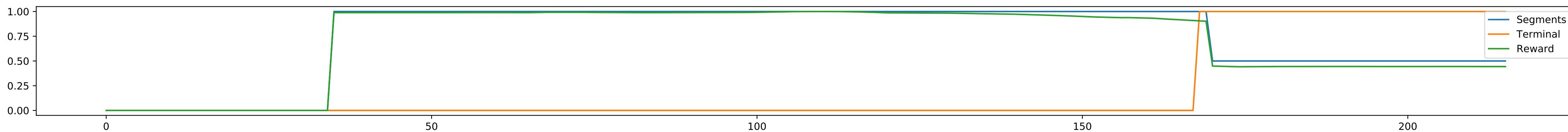
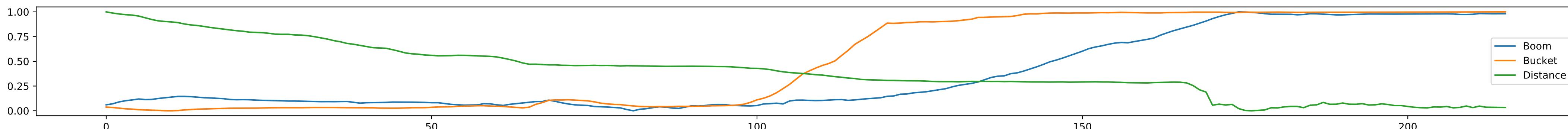
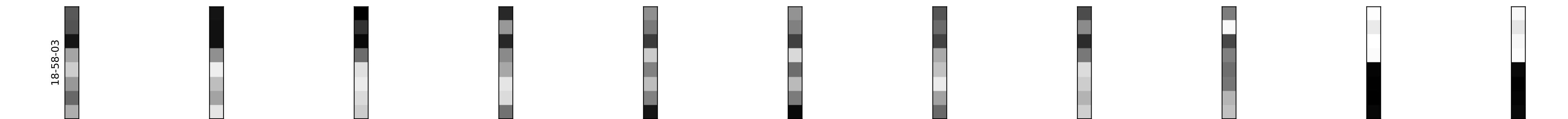
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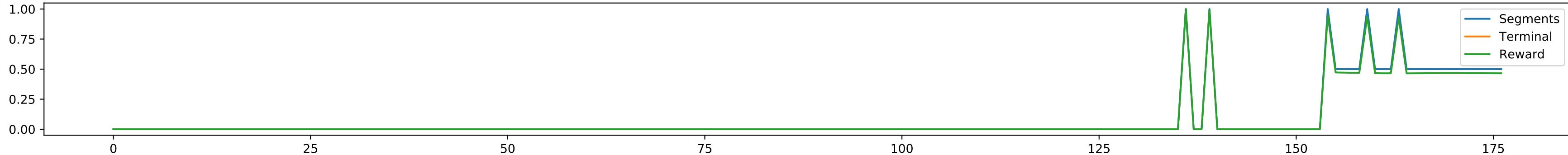
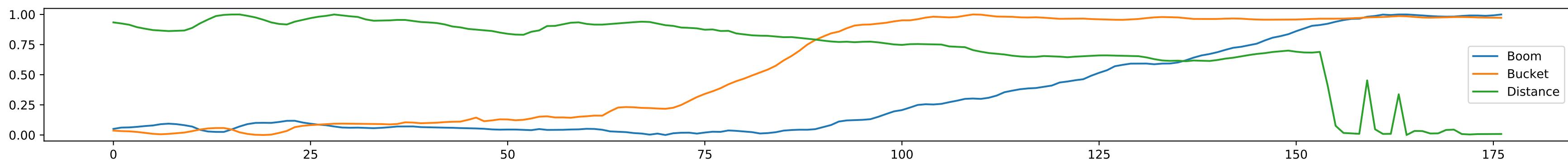
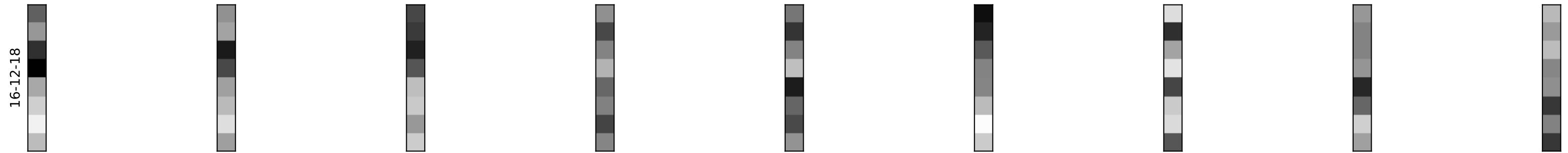
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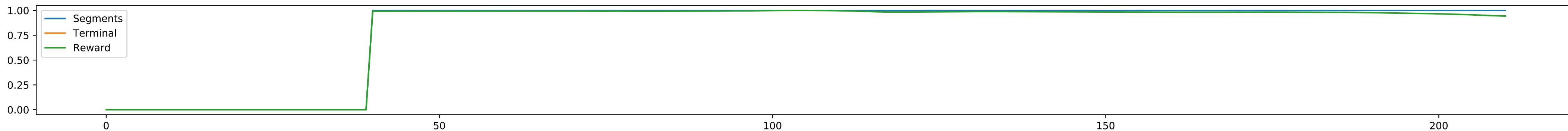
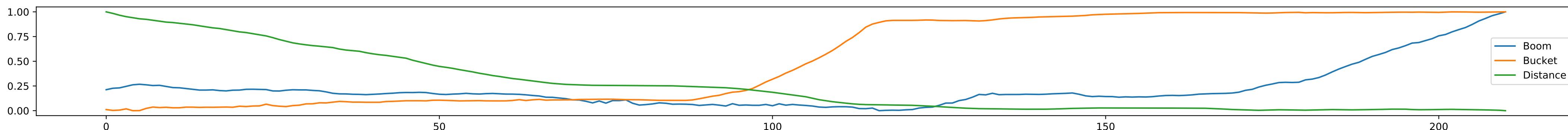
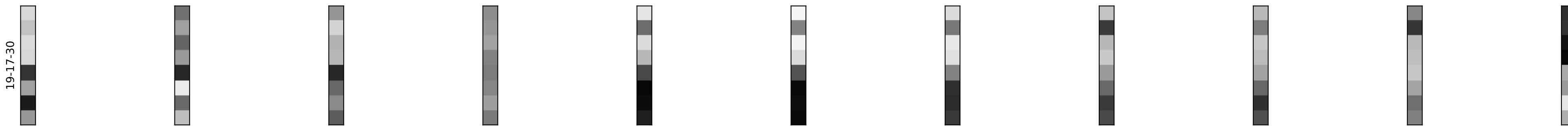
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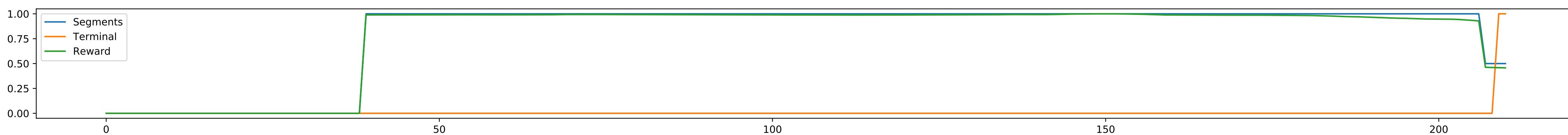
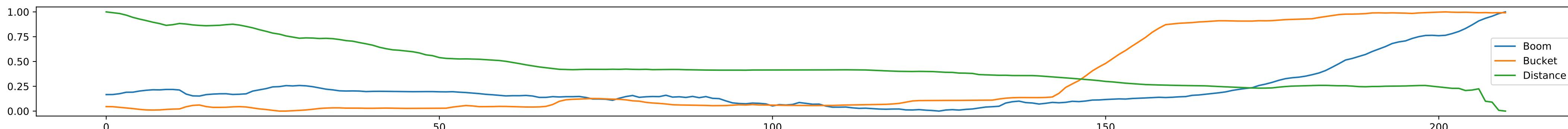
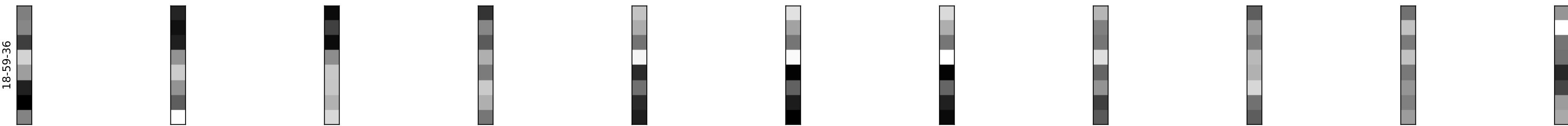
autumn - 16-12-18



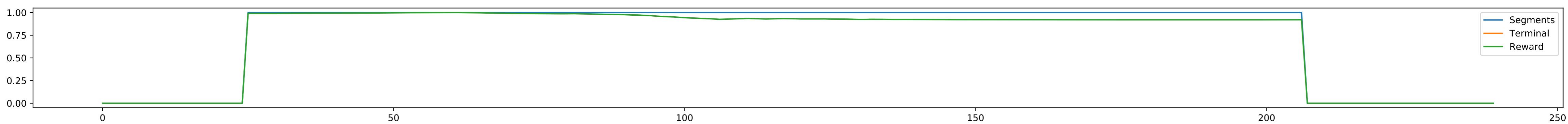
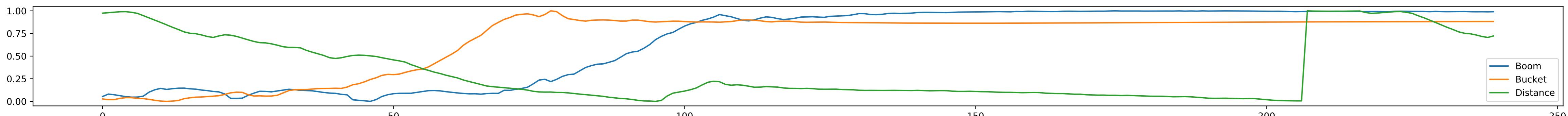
autumn - 19-17-30



autumn - 18-59-36



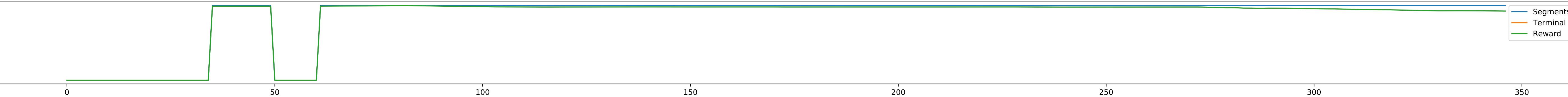
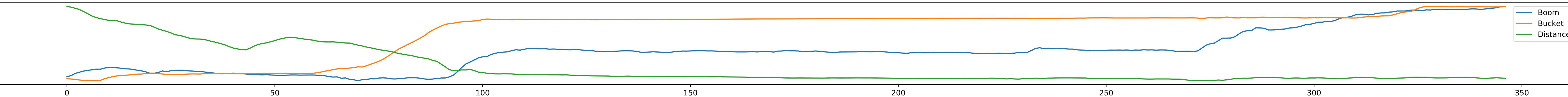
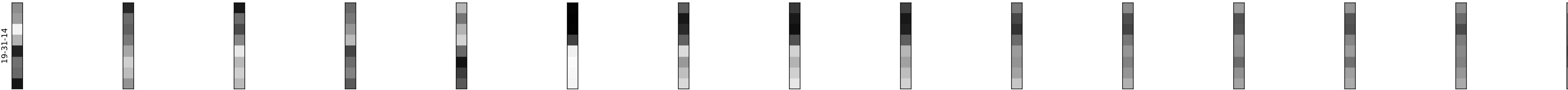
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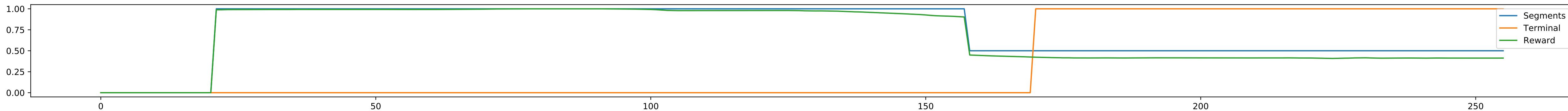
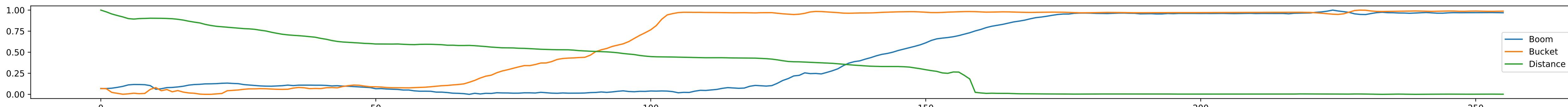
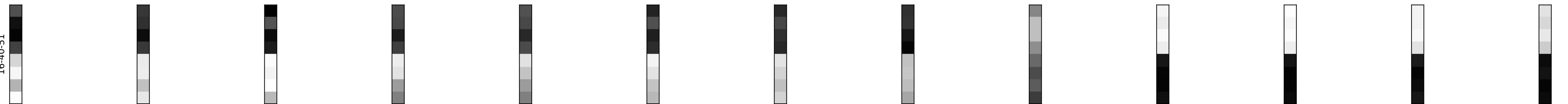
autumn - 19-31-14



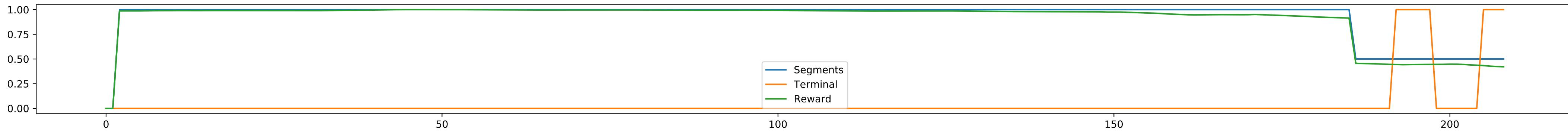
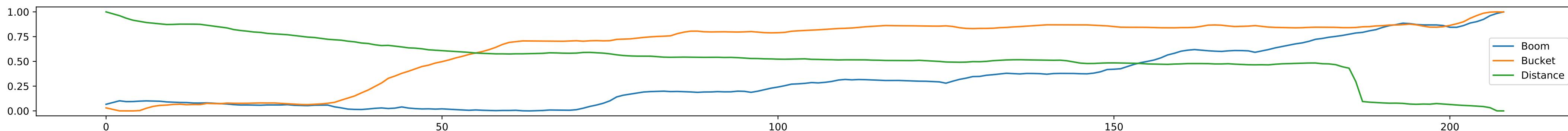
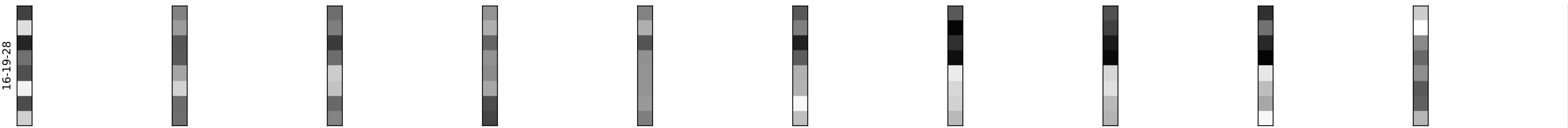
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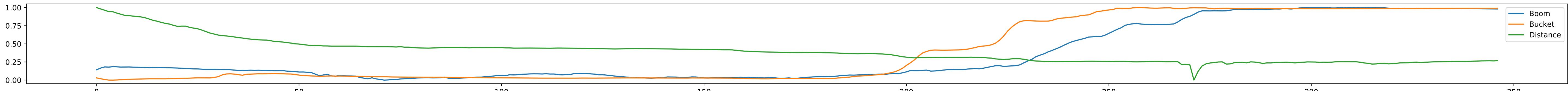
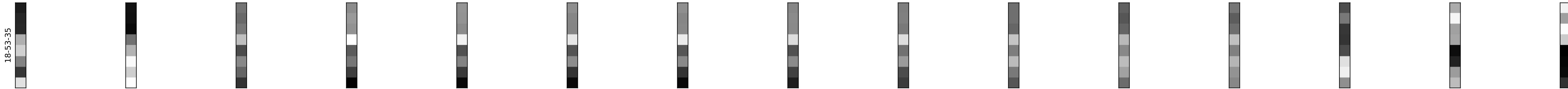
autumn - 16-40-51



autumn - 16-19-28



autumn - 18-53-35

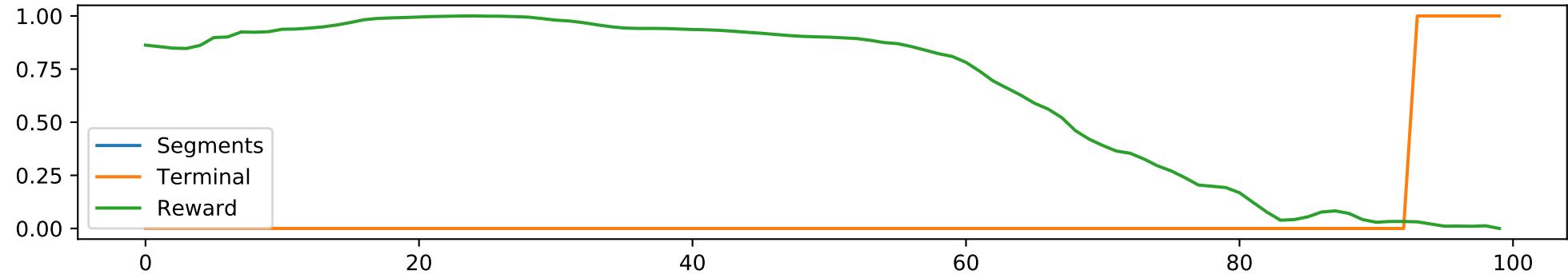
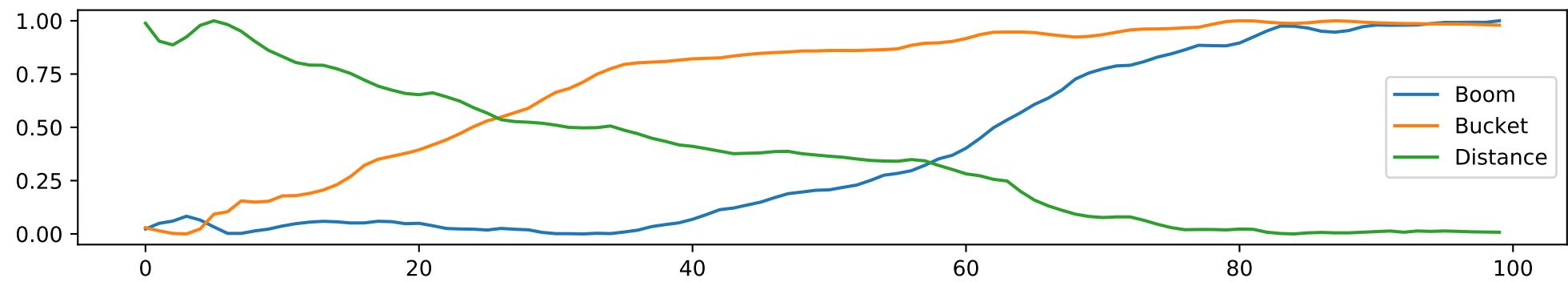


autumn - 16-18-15

16-18-15



16-18-15



autumn - 16-18-15

16-18-15



16-18-15

