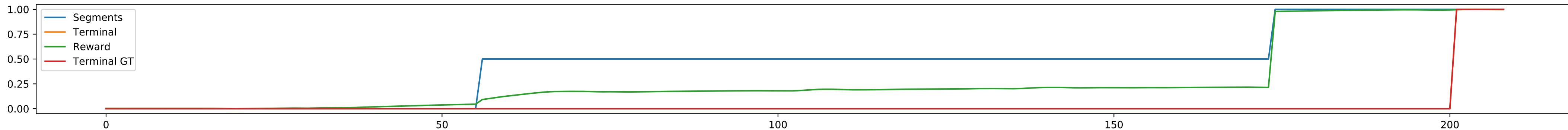
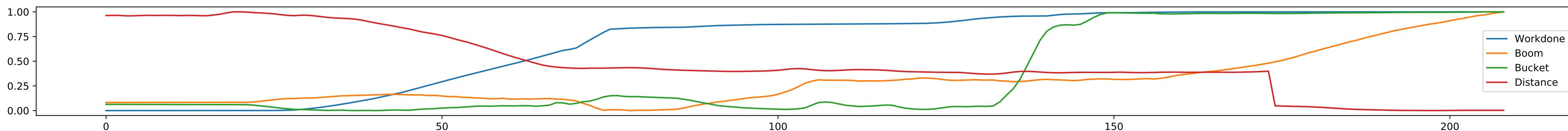
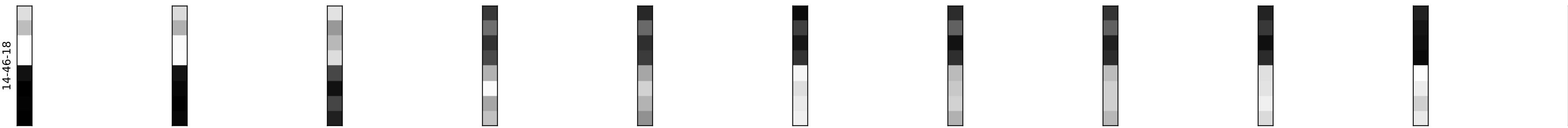
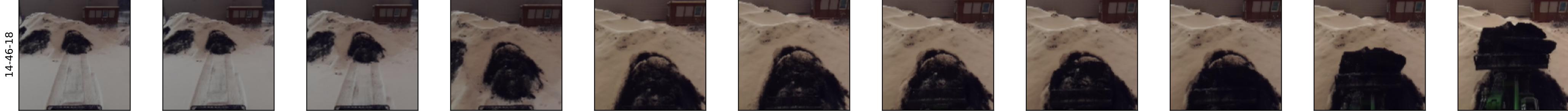


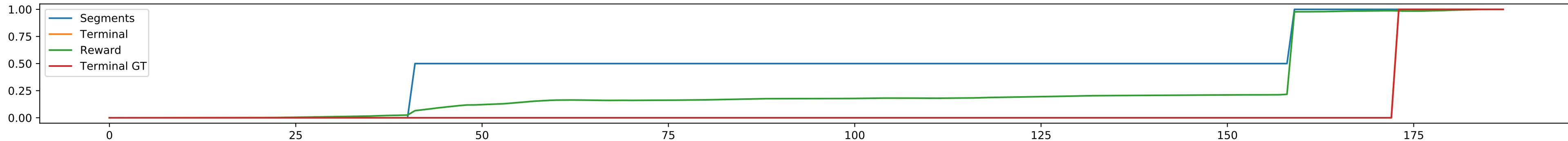
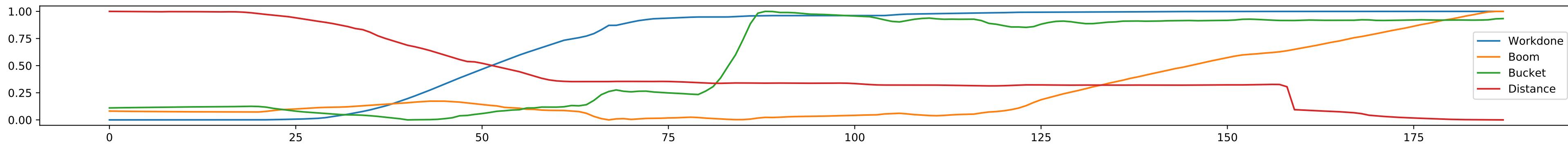
Learning Reward from Demonstrations

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

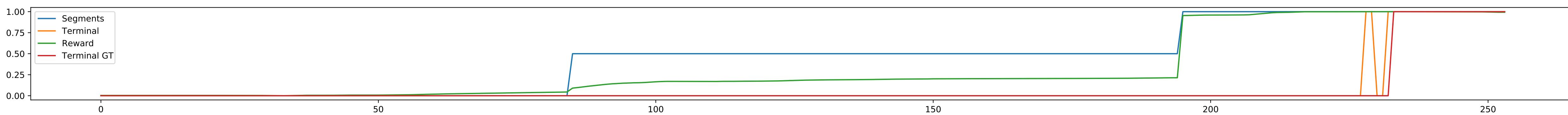
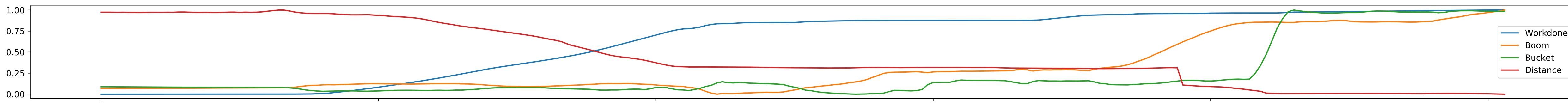
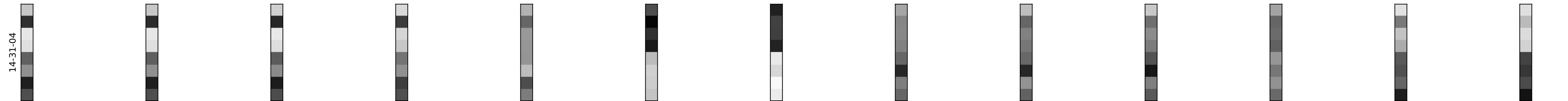
winter - 14-46-18



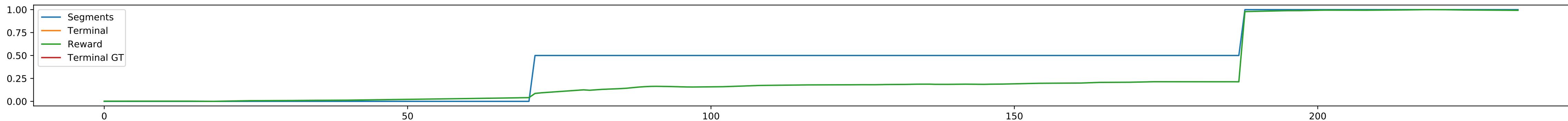
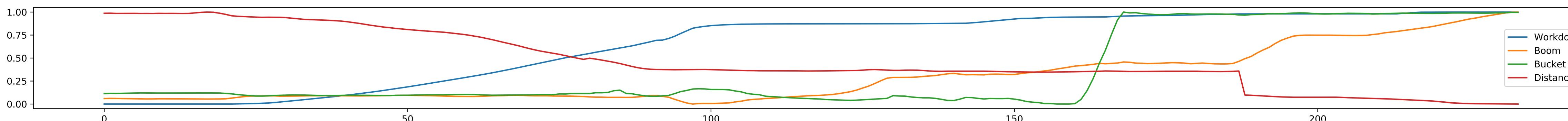
winter - 14-40-52



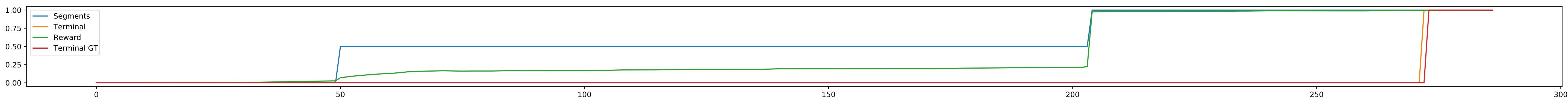
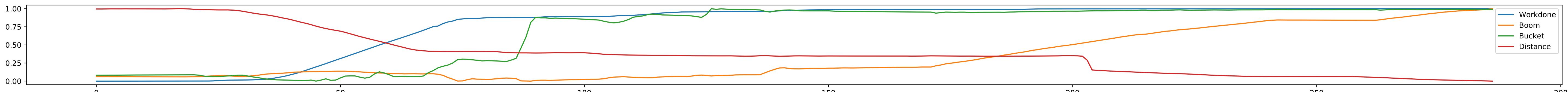
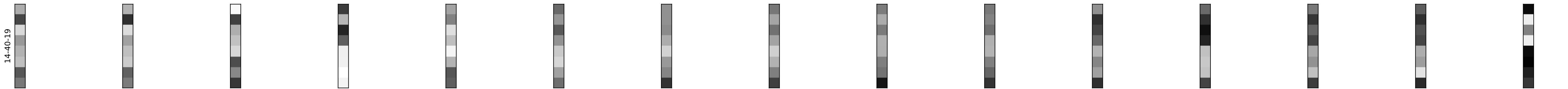
winter - 14-31-04



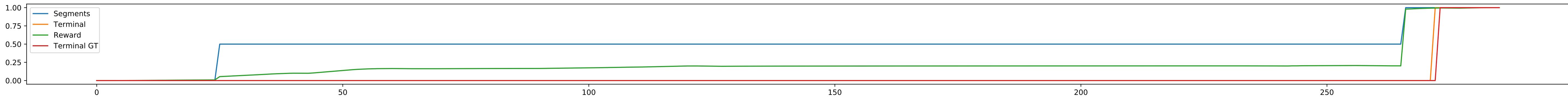
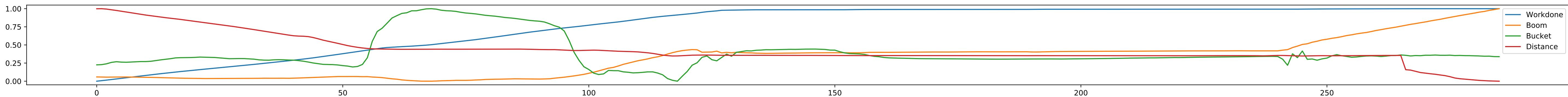
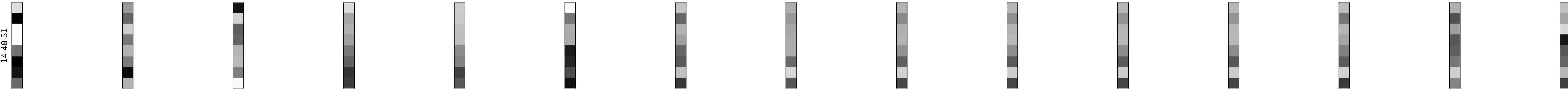
winter - 14-28-58



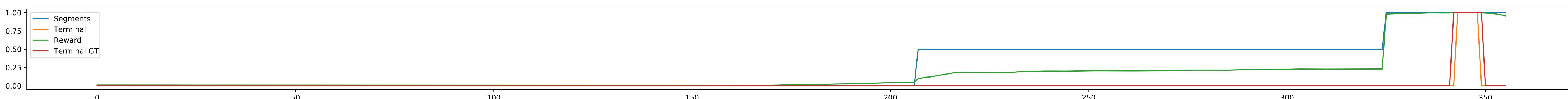
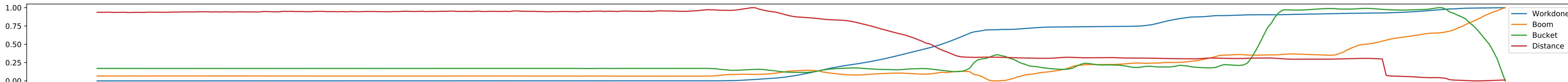
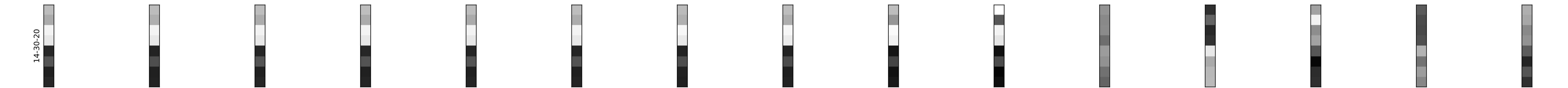
winter - 14-40-19



winter - 14-48-31



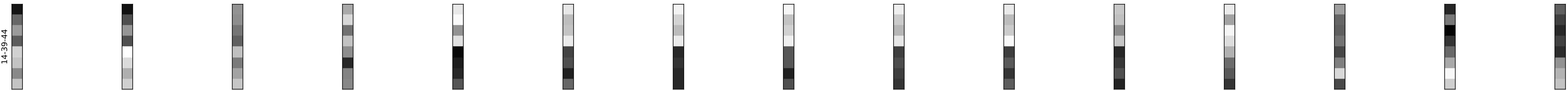
winter - 14-30-20



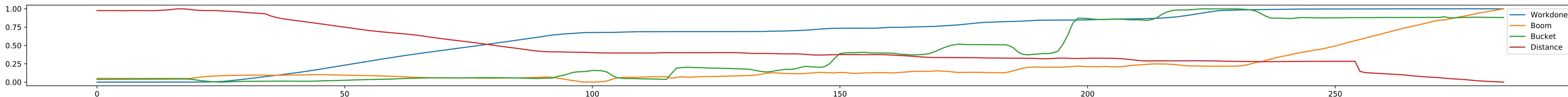
winter - 14-39-44



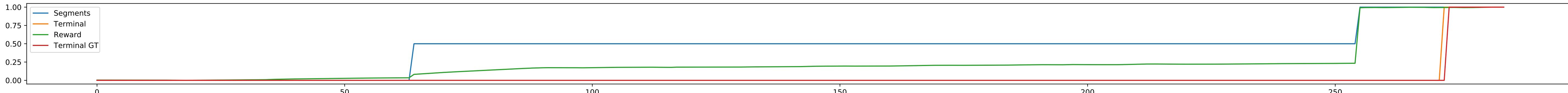
14-39-44



14-39-44

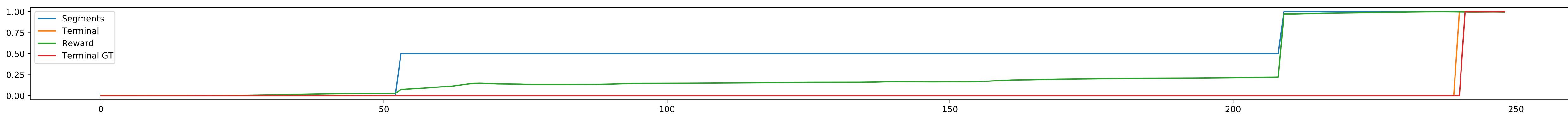
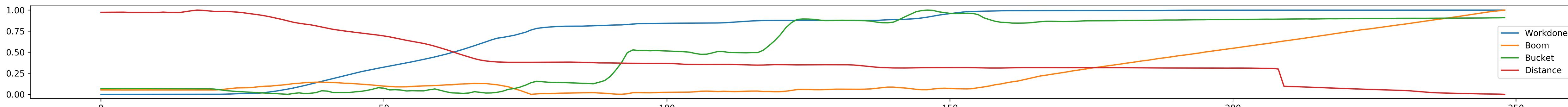
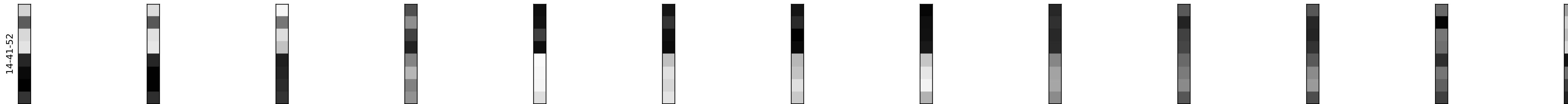


Workdone
Boom
Bucket
Distance

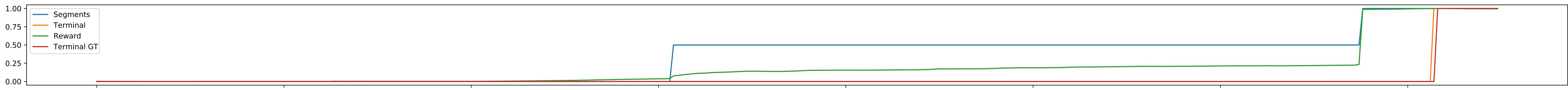
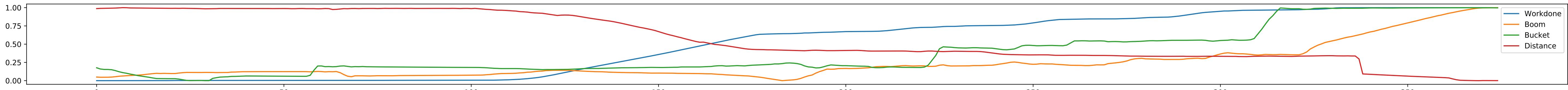
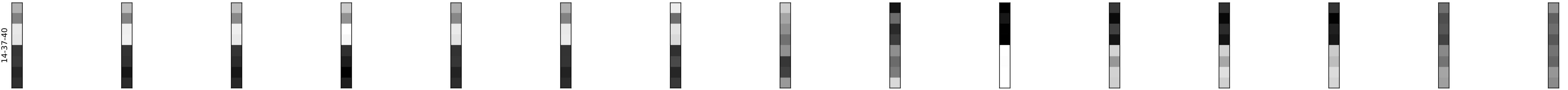


Segments
Terminal
Reward
Terminal GT

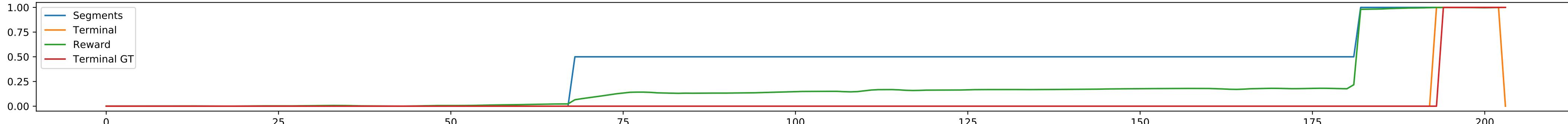
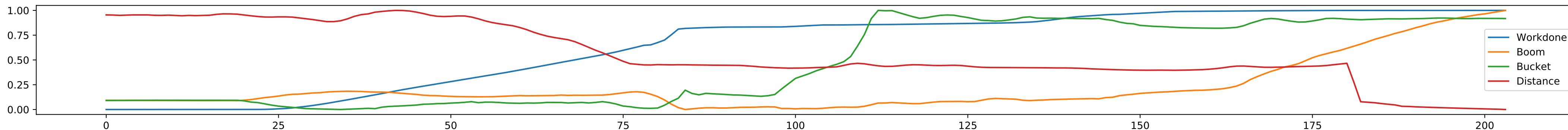
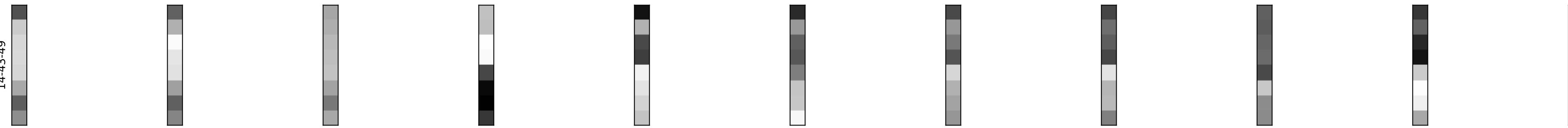
winter - 14-41-52



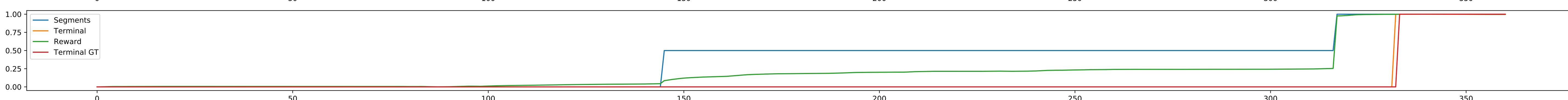
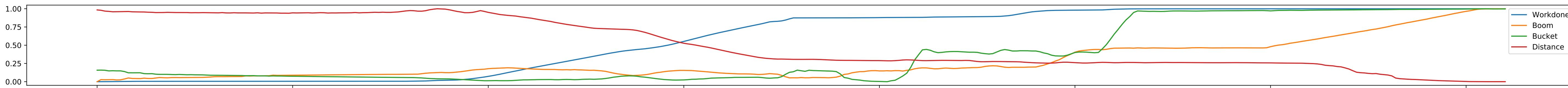
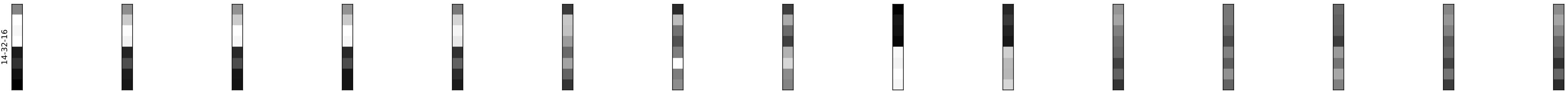
winter - 14-37-40



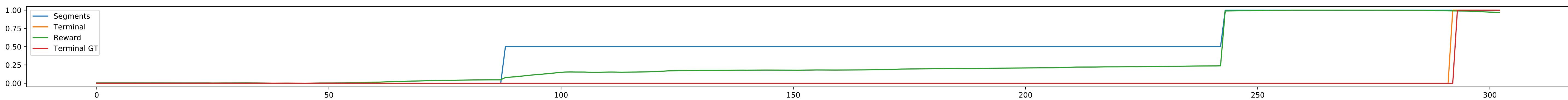
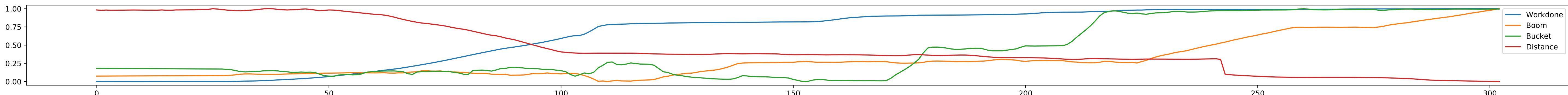
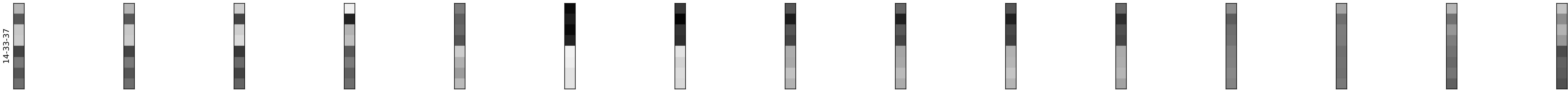
winter - 14-43-49



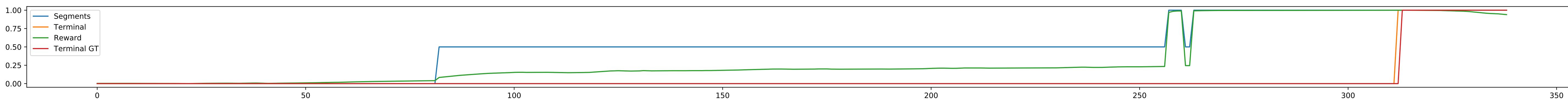
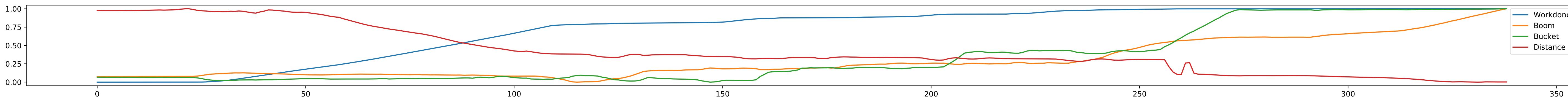
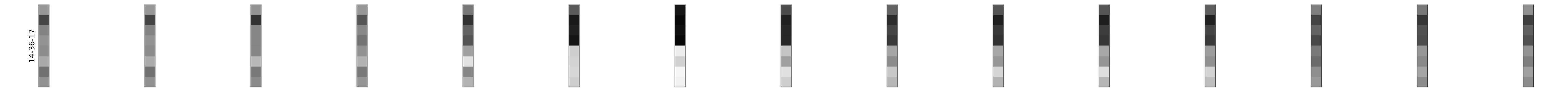
winter - 14-32-16



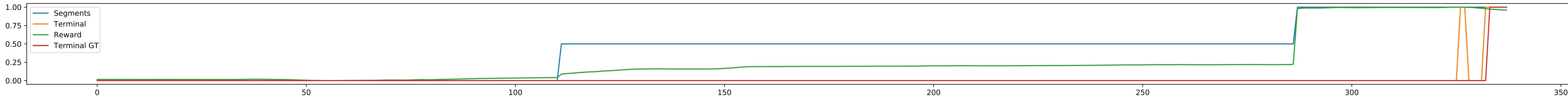
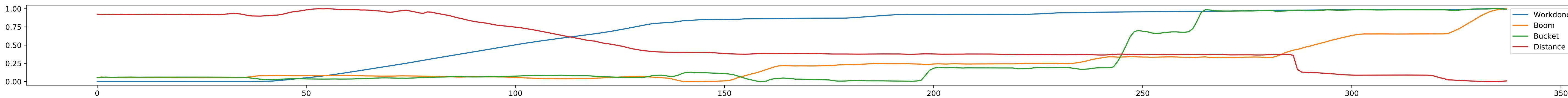
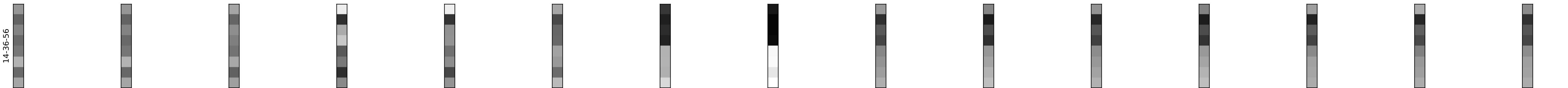
winter - 14-33-37



winter - 14-36-17



winter - 14-36-56

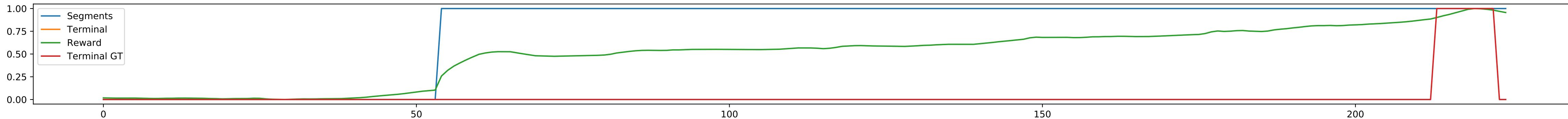
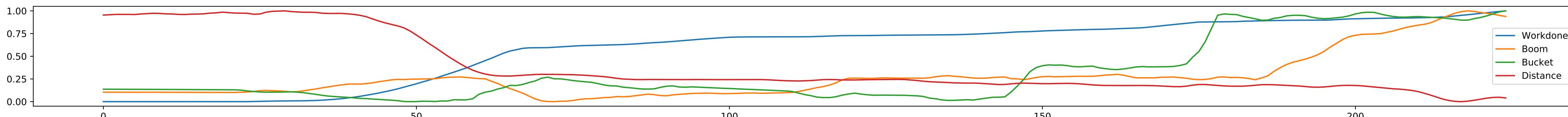


winter - 14-41-22

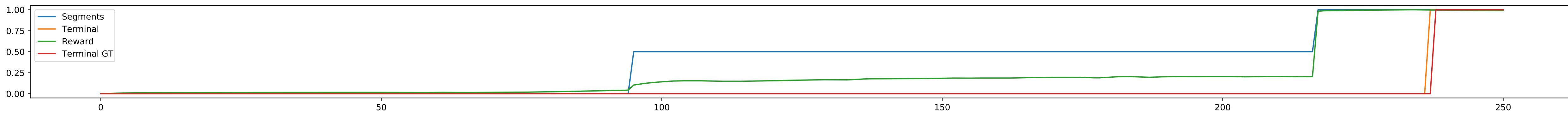
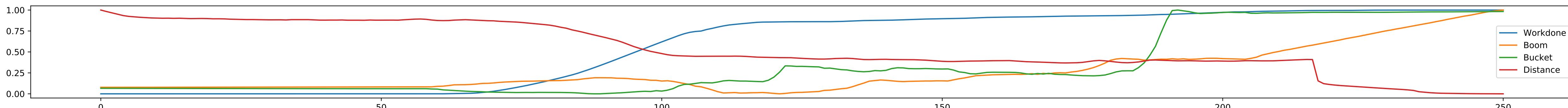
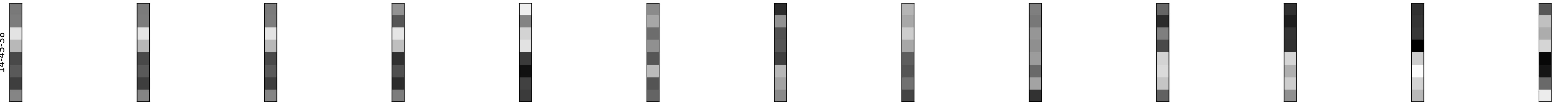
14-41-22



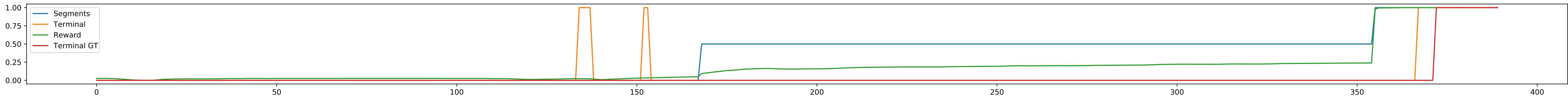
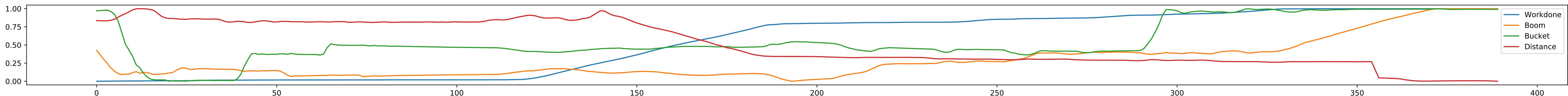
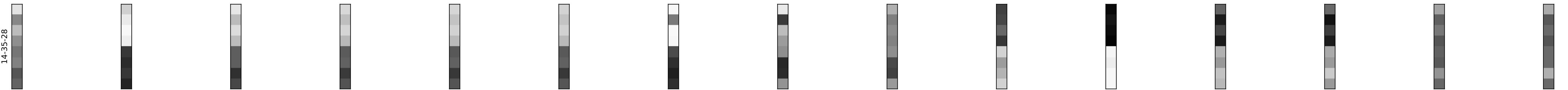
14-41-22



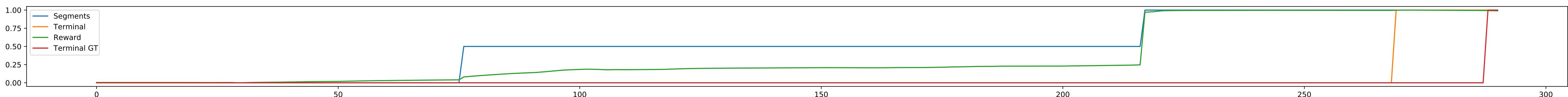
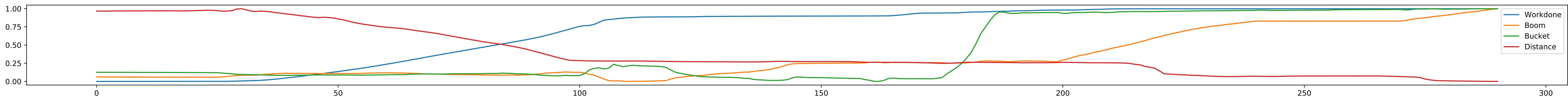
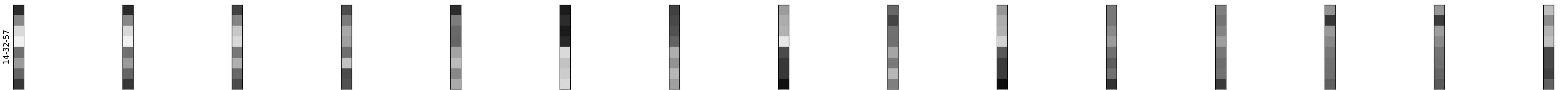
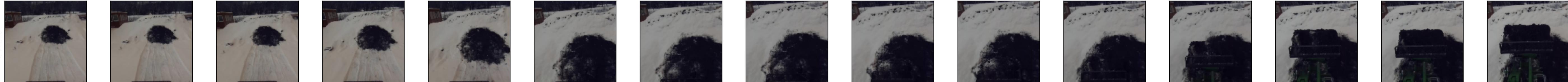
winter - 14-45-38



winter - 14-35-28

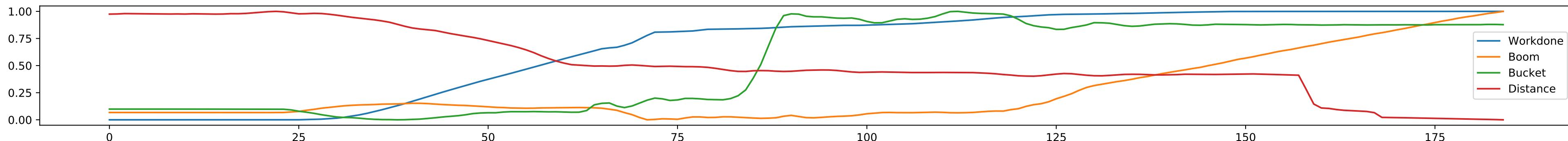


winter - 14-32-57

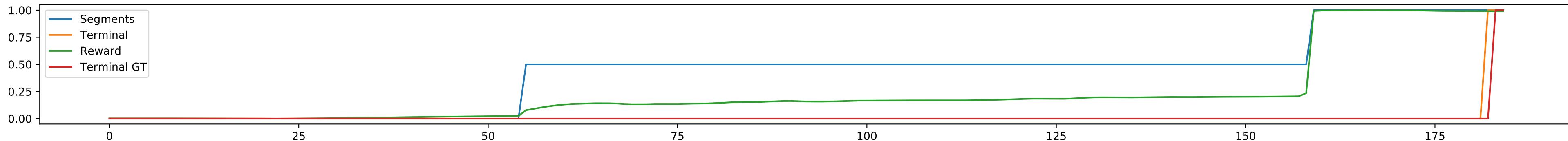


winter - 14-45-06

14-45-06

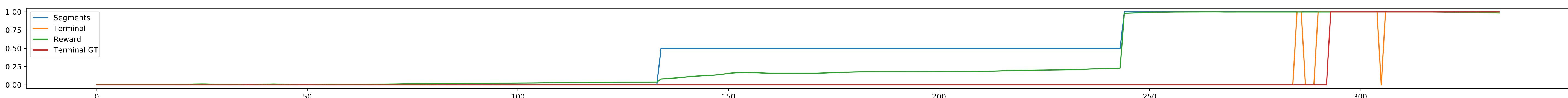
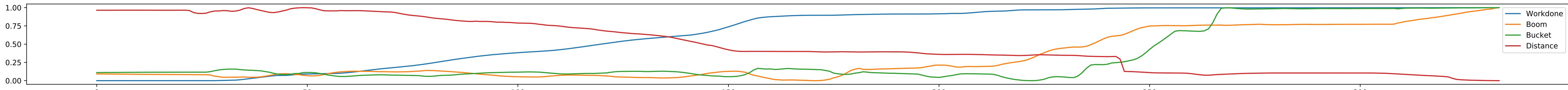
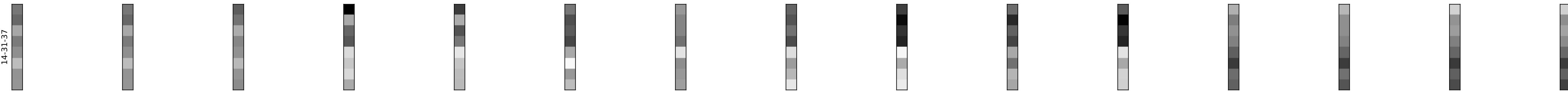


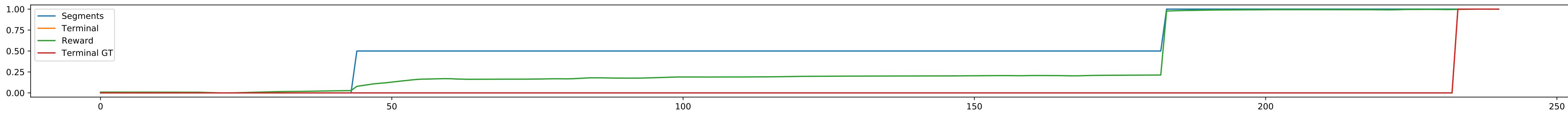
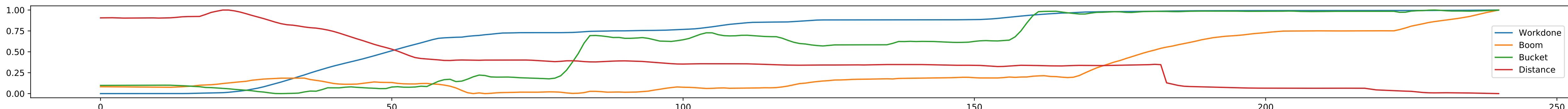
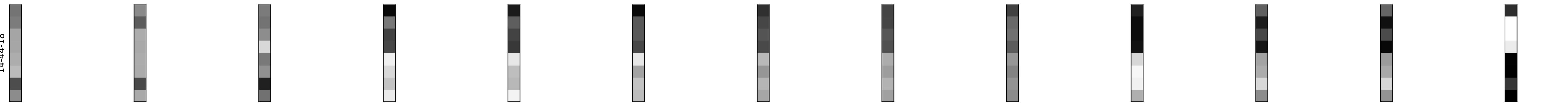
- Workdone
- Boom
- Bucket
- Distance



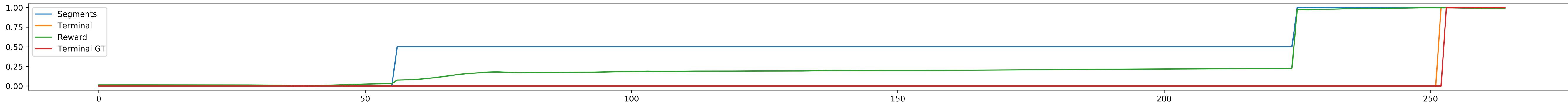
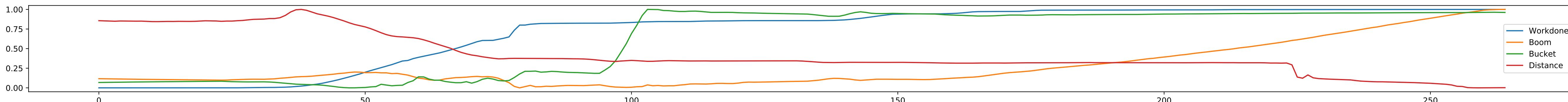
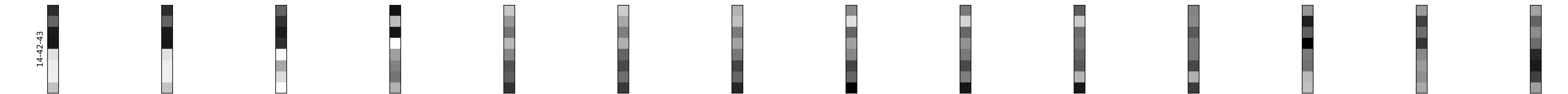
- Segments
- Terminal
- Reward
- Terminal GT

winter - 14-31-37

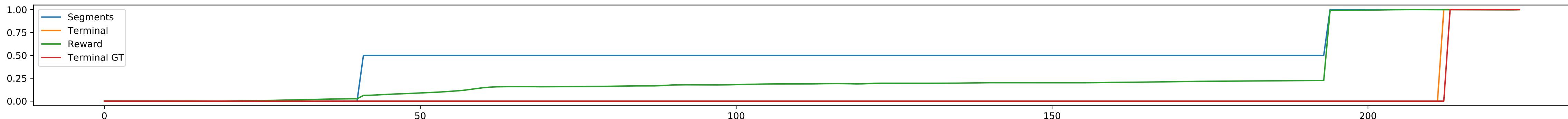
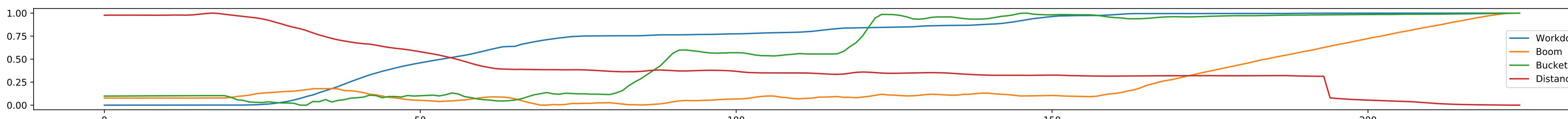




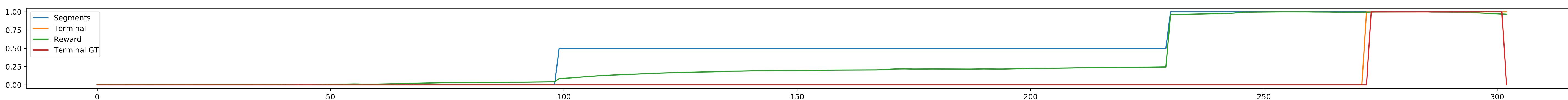
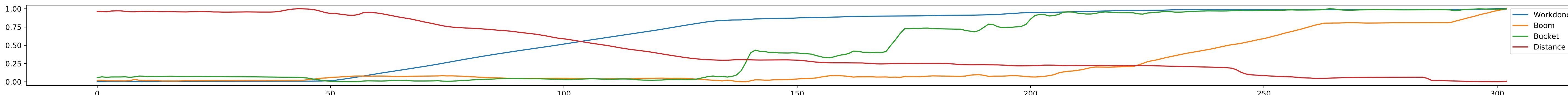
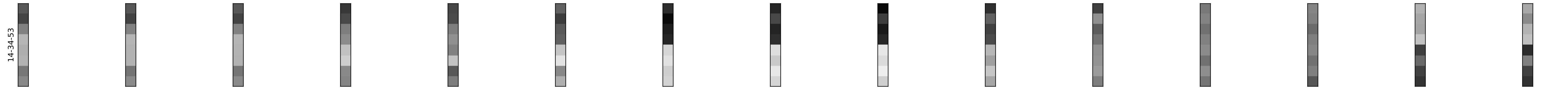
winter - 14-42-43



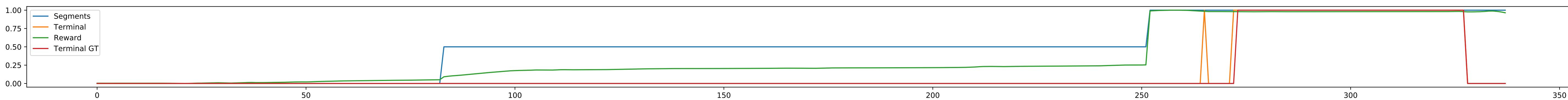
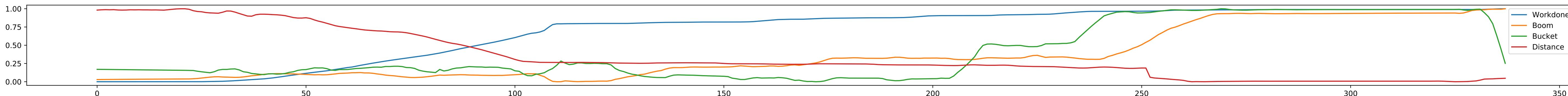
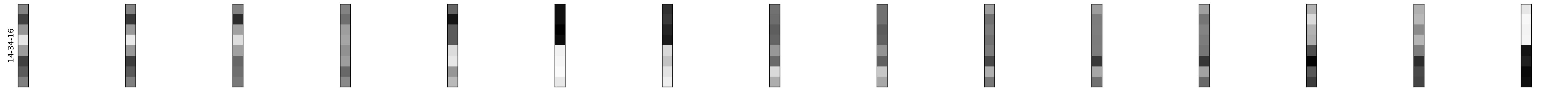
winter - 14-43-16



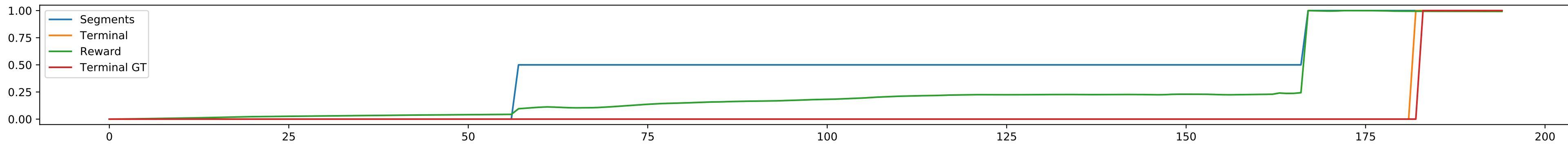
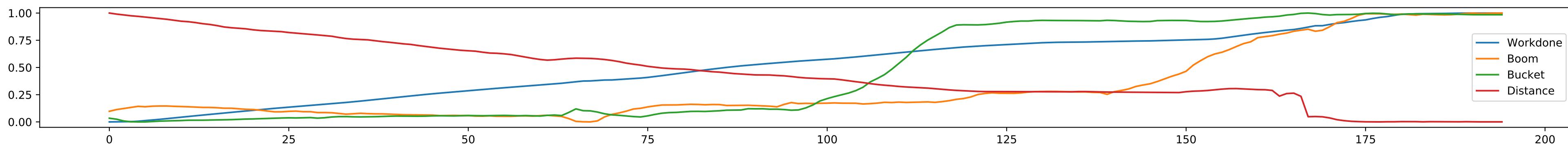
winter - 14-34-53



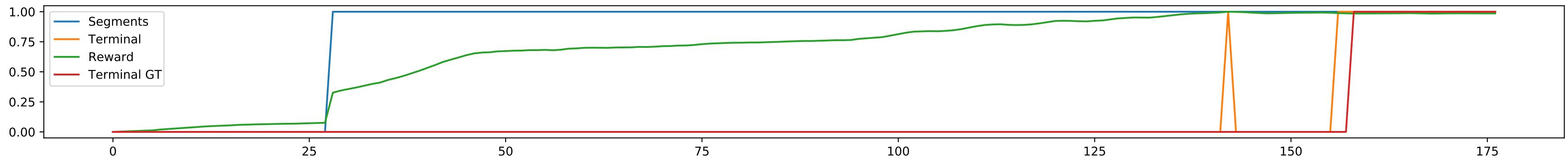
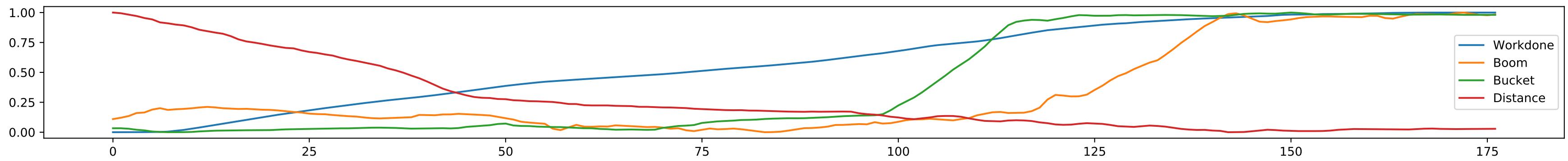
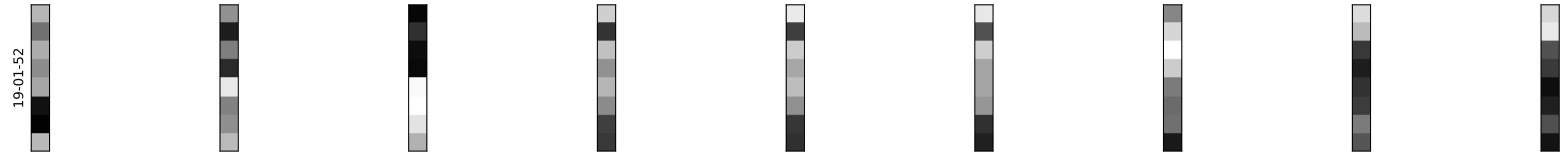
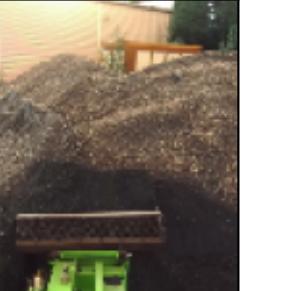
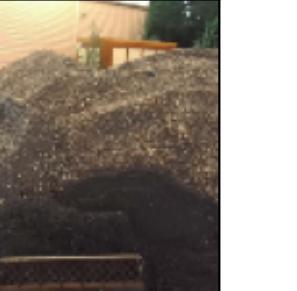
winter - 14-34-16



autumn - 16-23-38

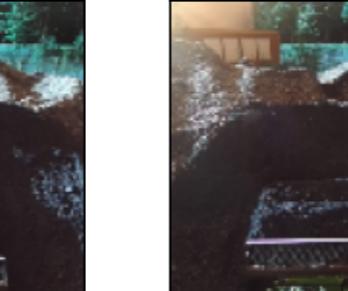


autumn - 19-01-52

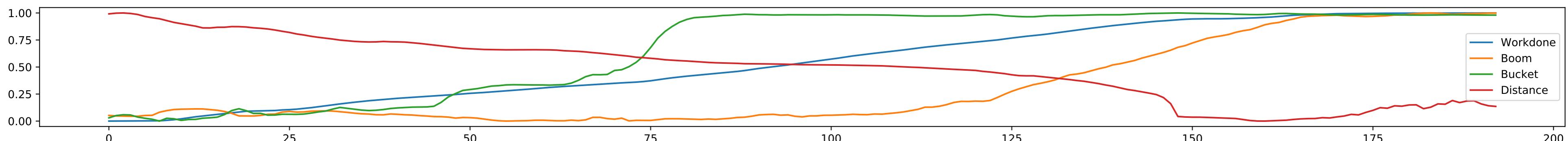
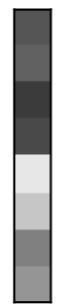


autumn - 16-39-57

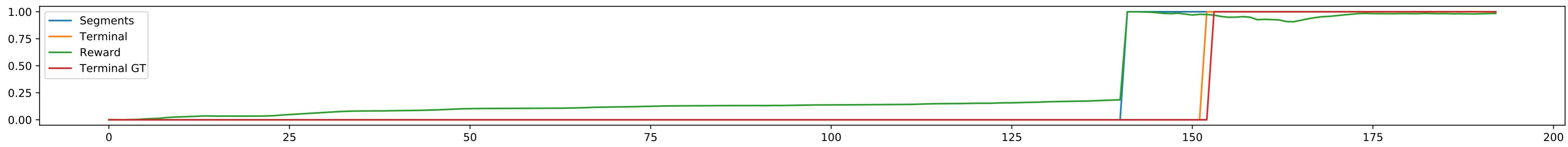
16-39-57



16-39-57



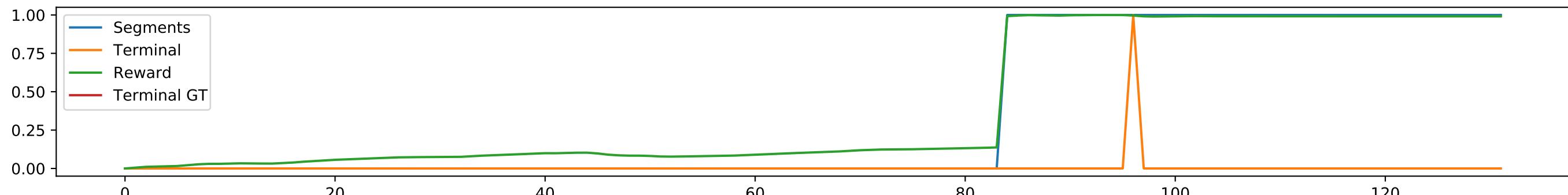
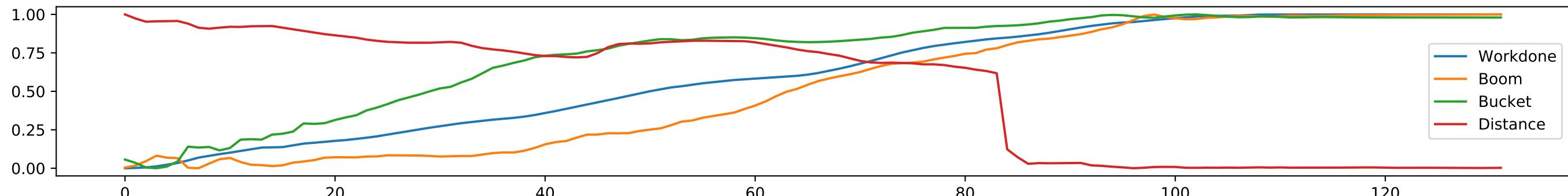
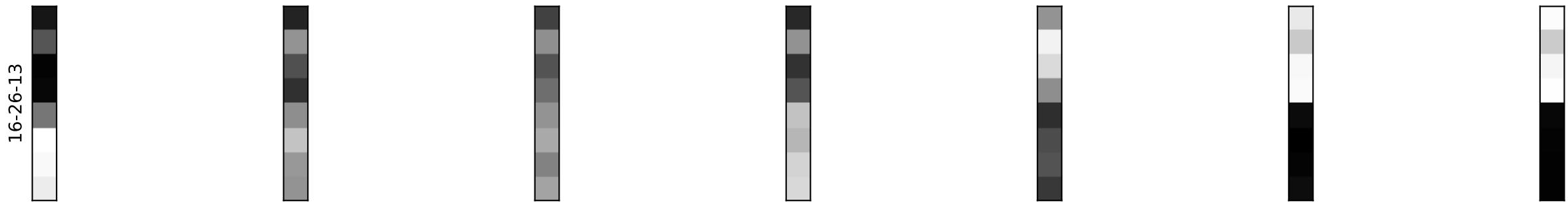
- Workdone
- Boom
- Bucket
- Distance



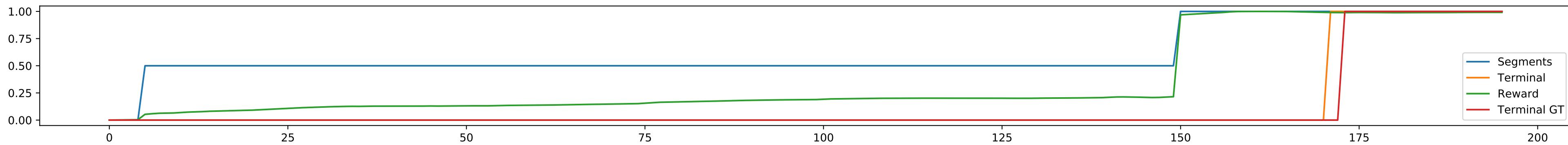
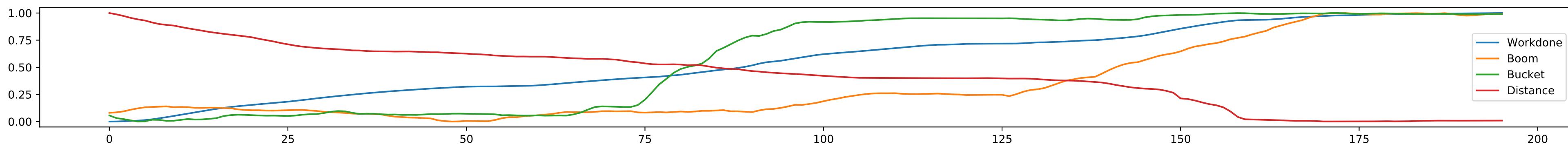
- Segments
- Terminal
- Reward
- Terminal GT

- Segments
- Terminal
- Reward
- Terminal GT

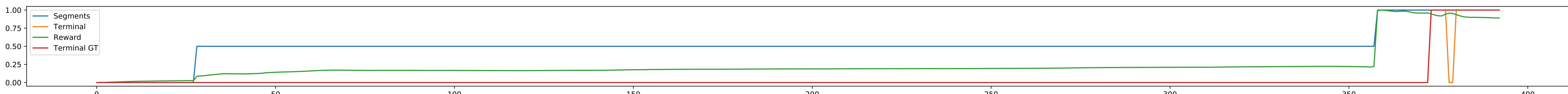
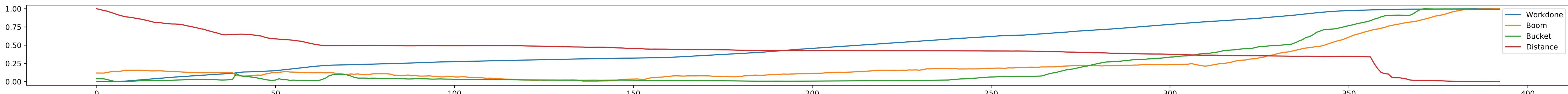
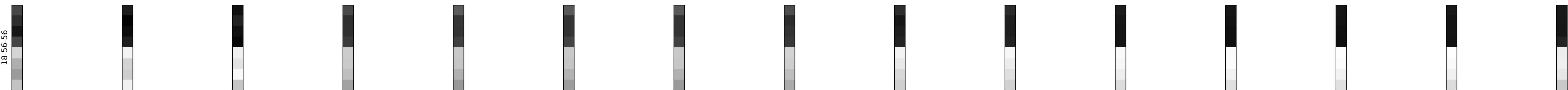
autumn - 16-26-13



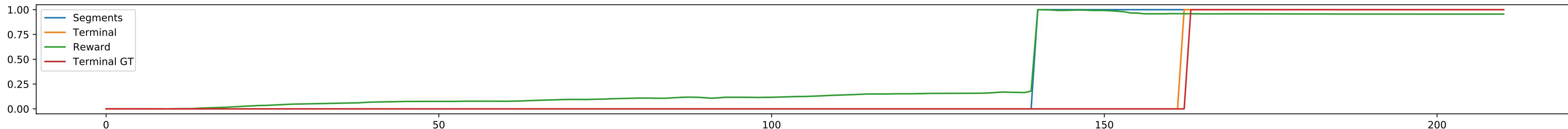
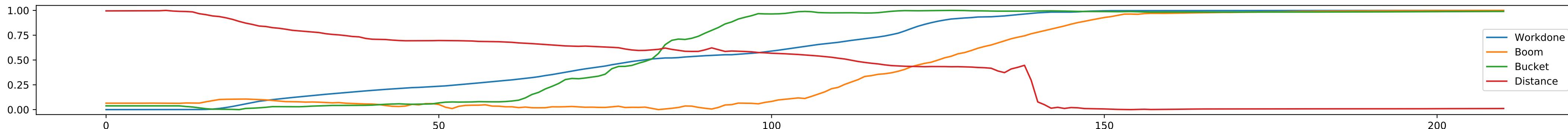
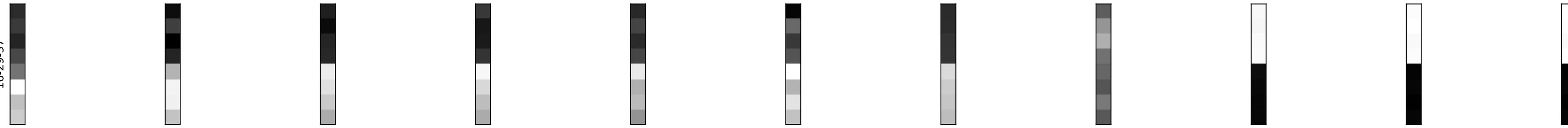
autumn - 16-31-52



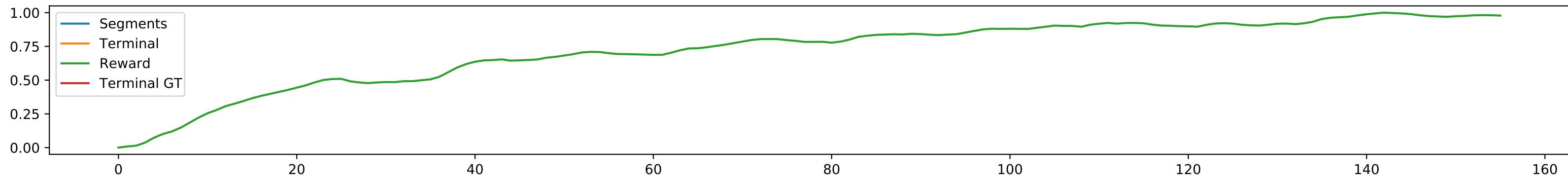
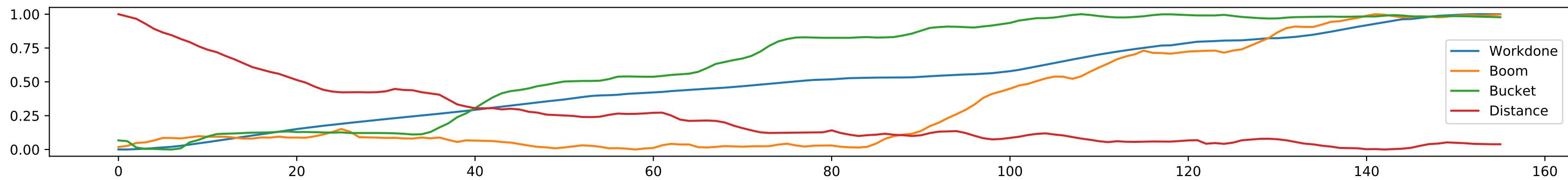
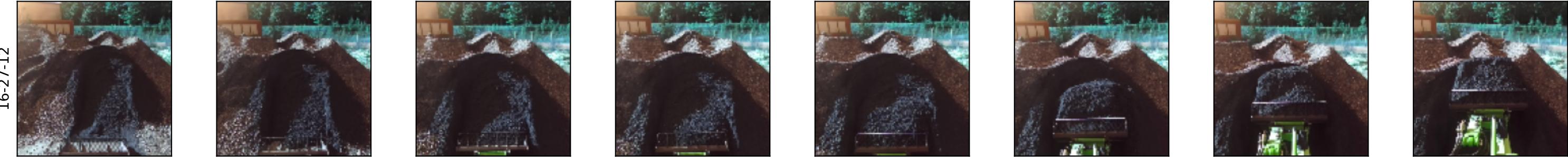
autumn - 18-56-56



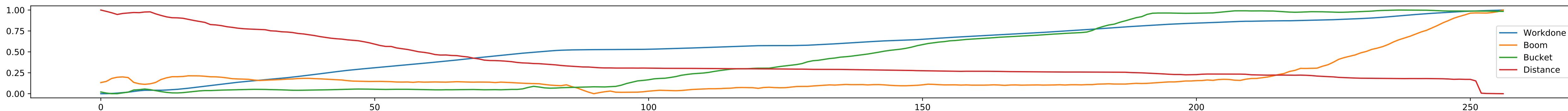
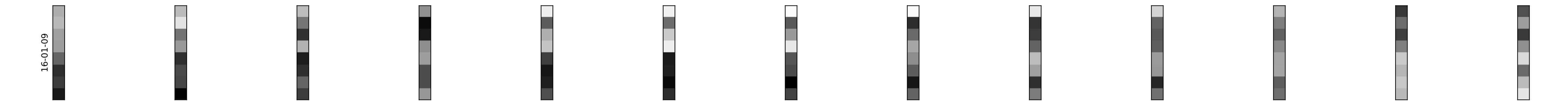
autumn - 16-29-37



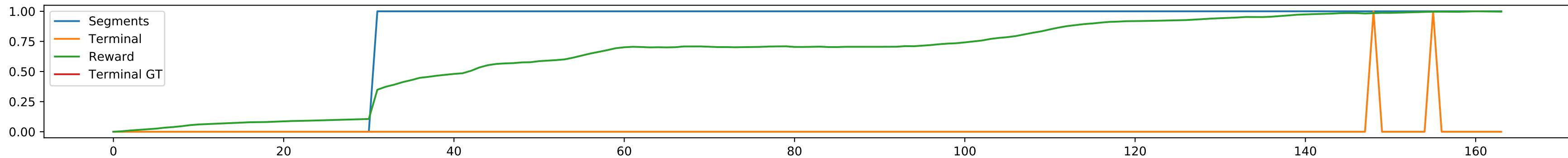
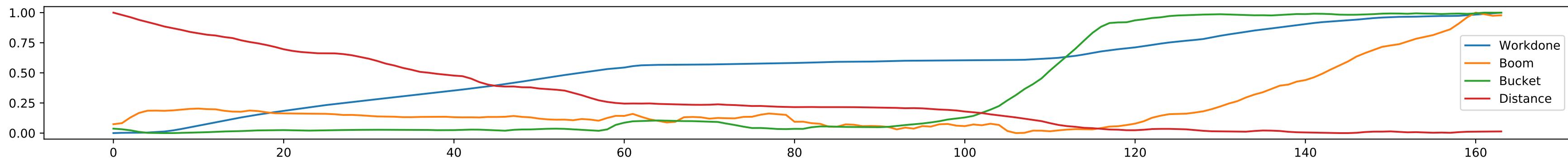
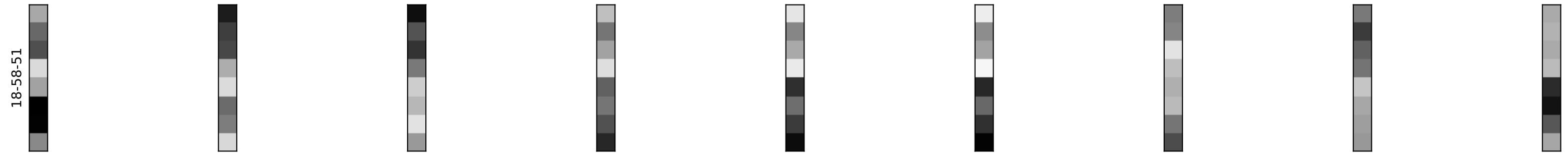
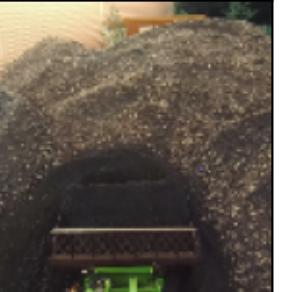
autumn - 16-27-12



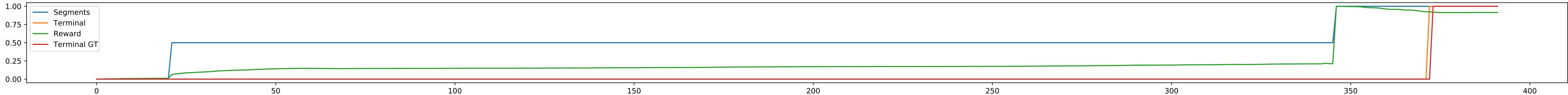
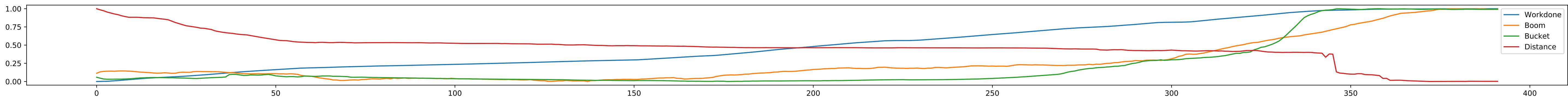
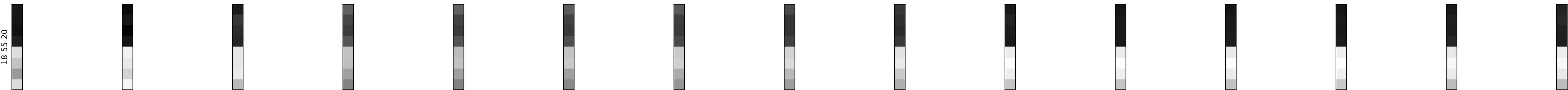
autumn - 16-01-09



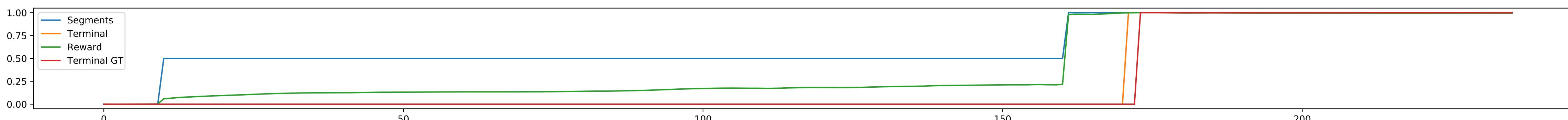
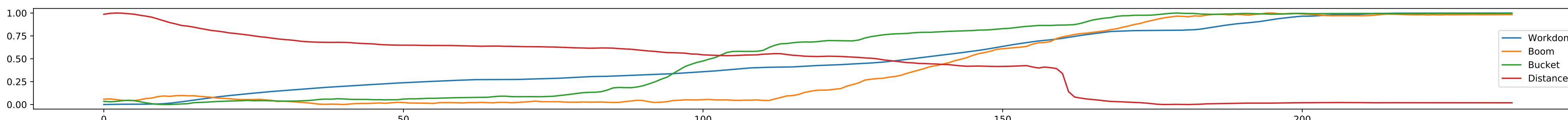
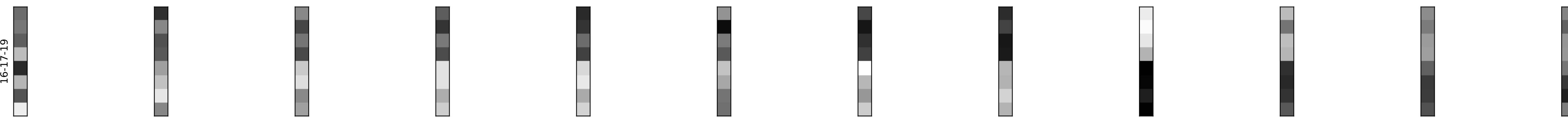
autumn - 18-58-51



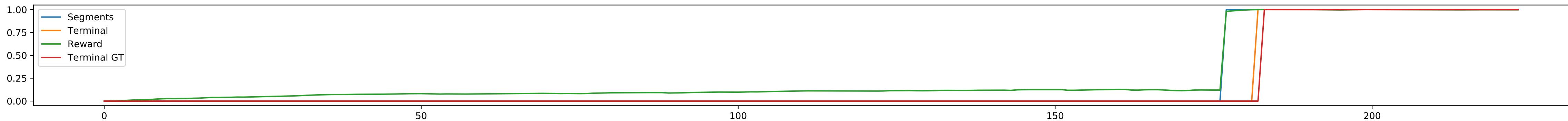
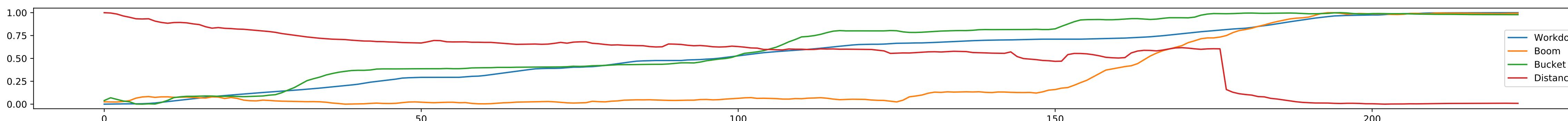
autumn - 18-55-20



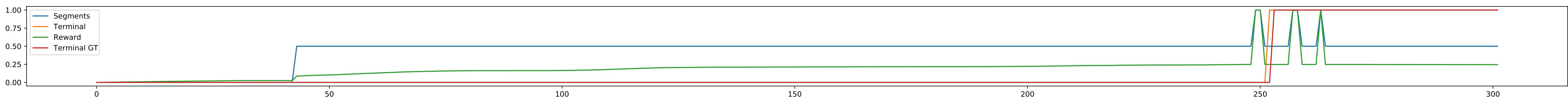
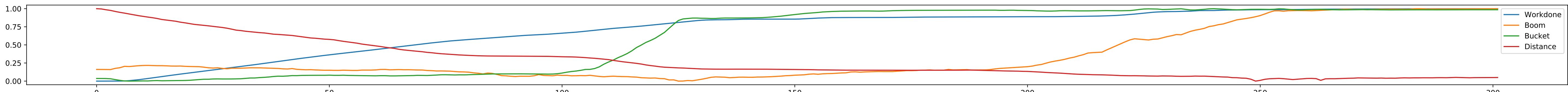
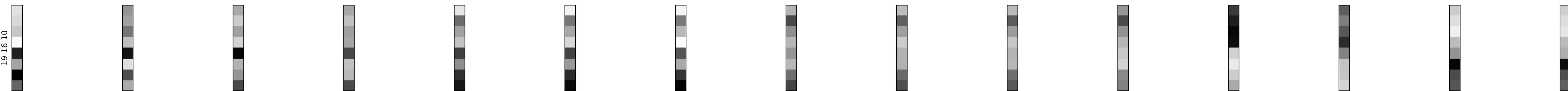
autumn - 16-17-19



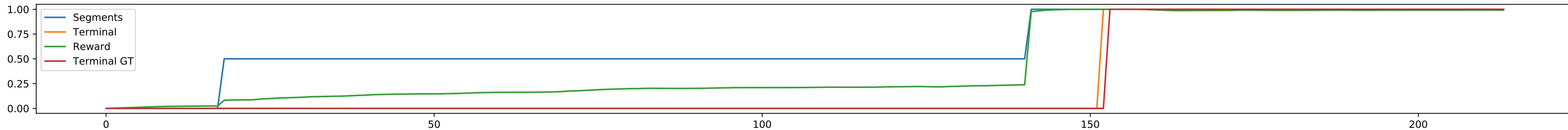
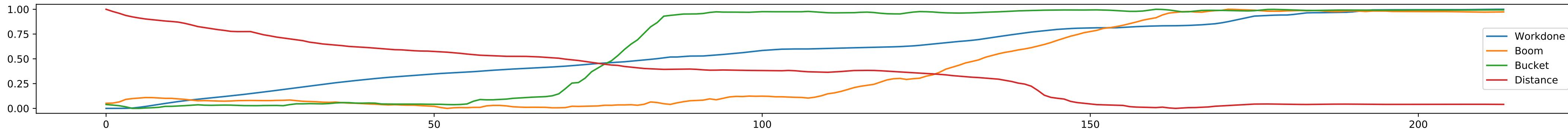
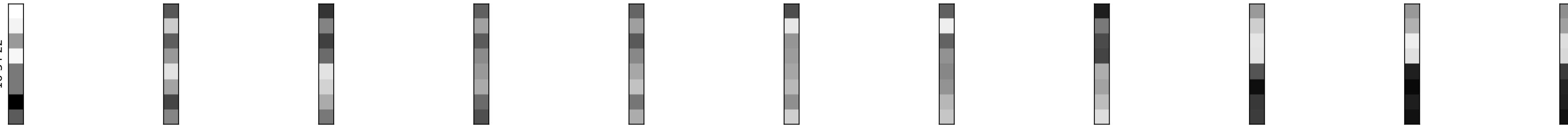
autumn - 16-27-52



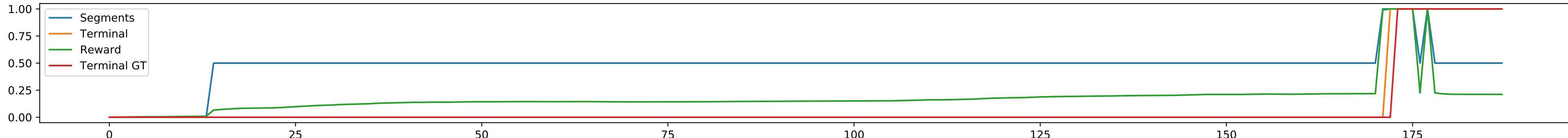
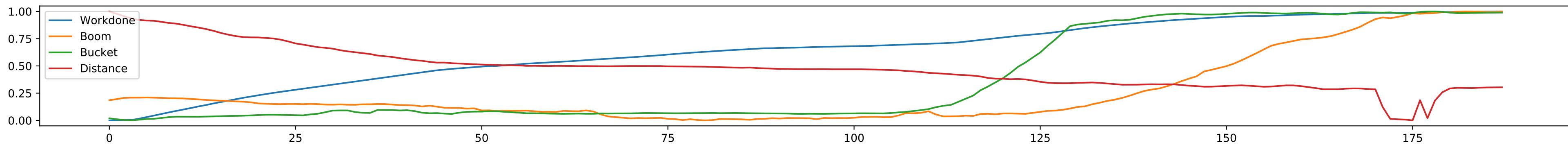
autumn - 19-16-10



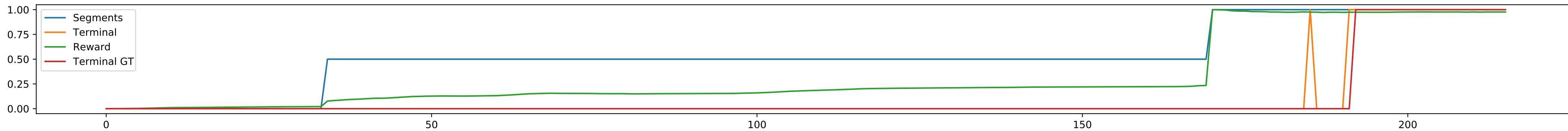
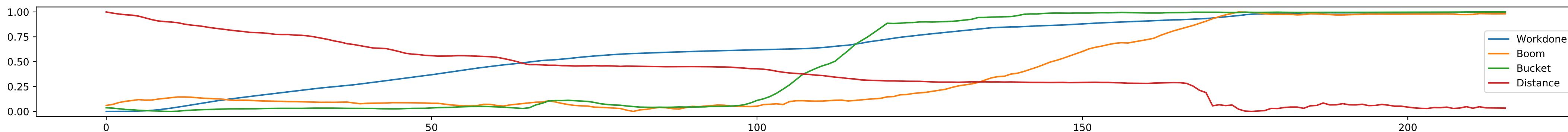
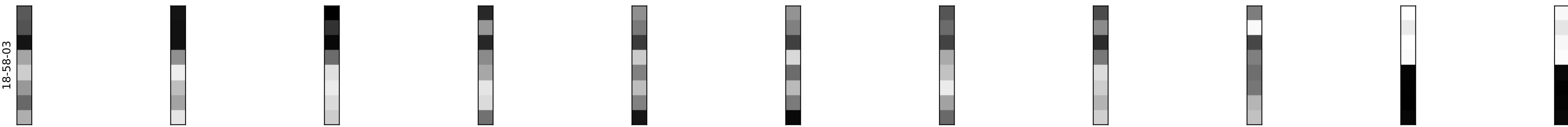
autumn - 16-34-22



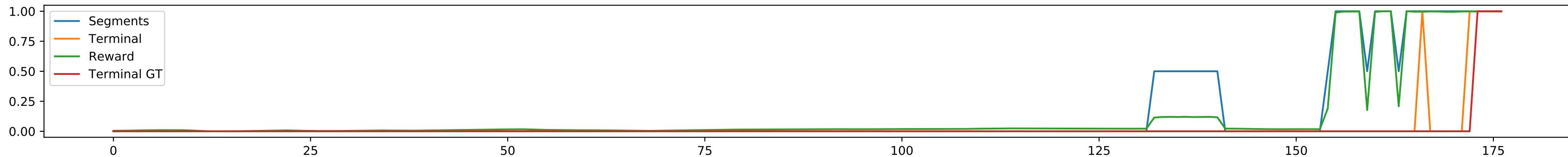
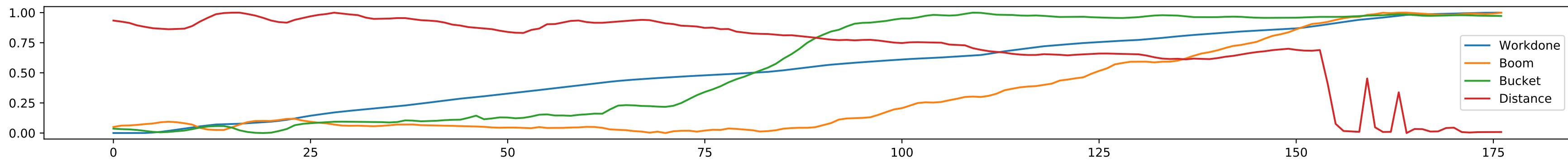
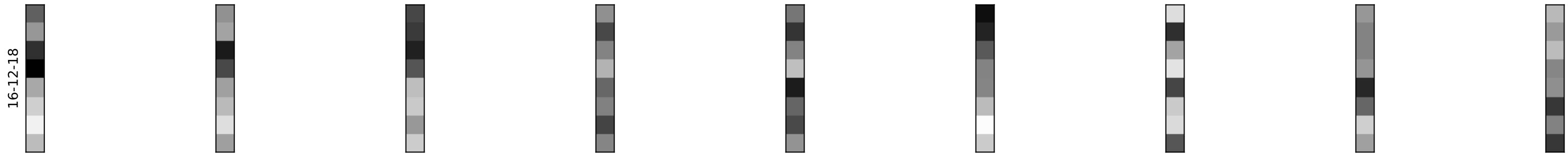
autumn - 18-54-34



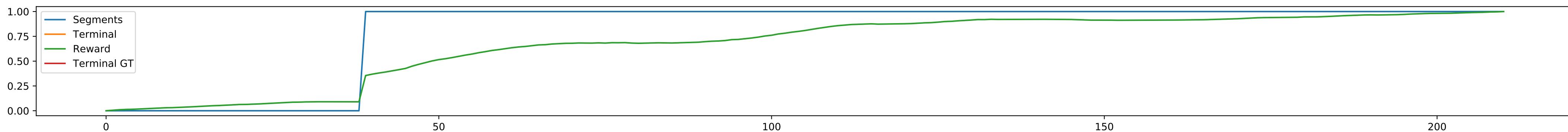
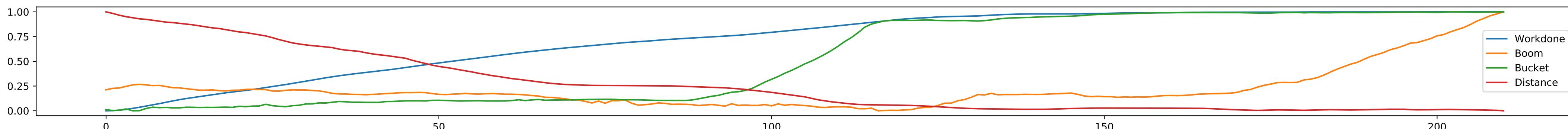
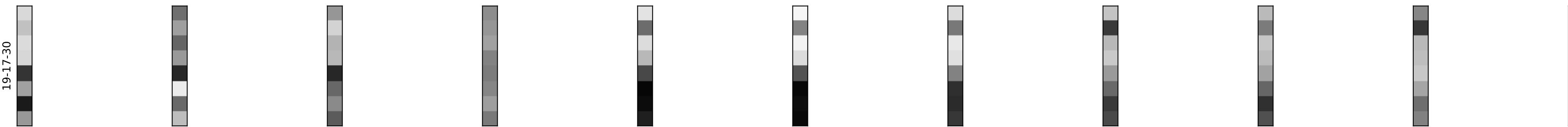
autumn - 18-58-03



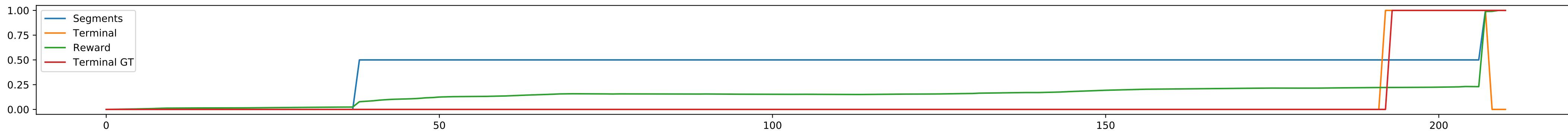
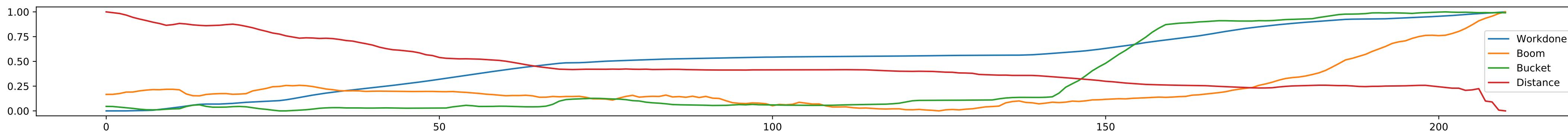
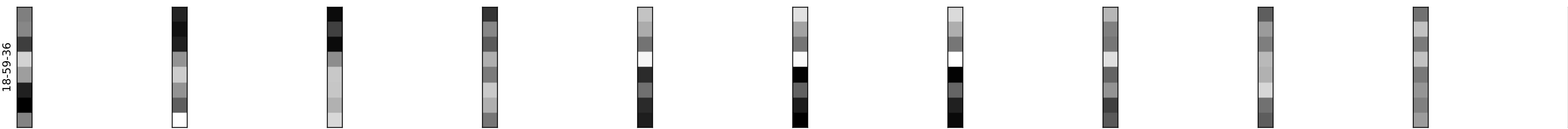
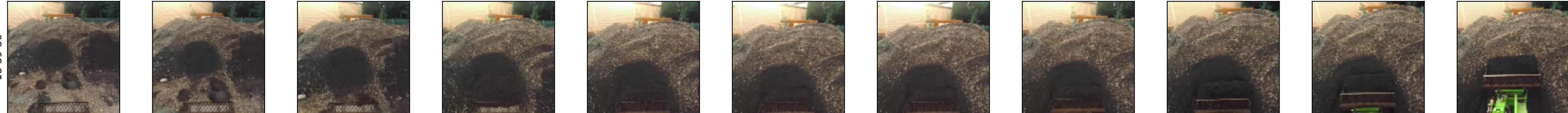
autumn - 16-12-18



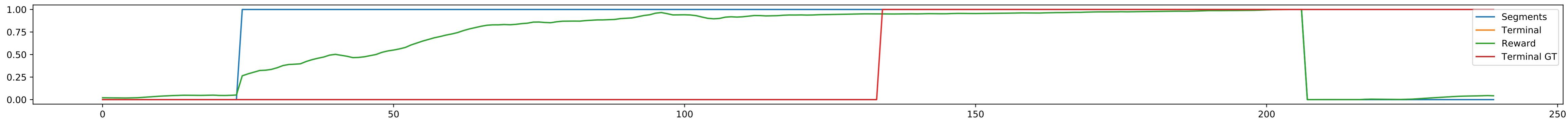
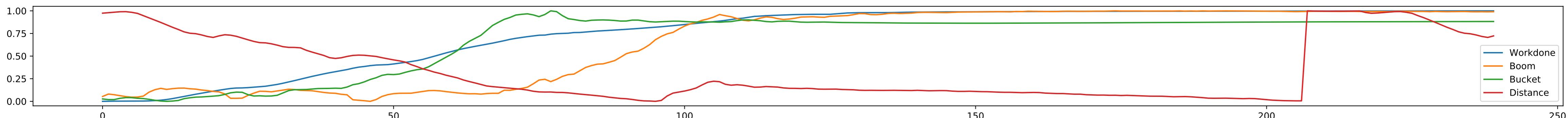
autumn - 19-17-30



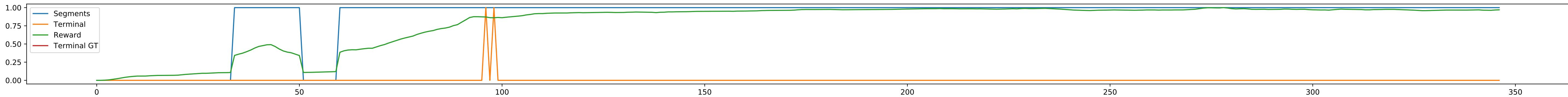
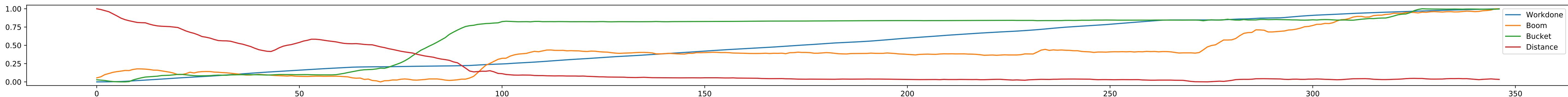
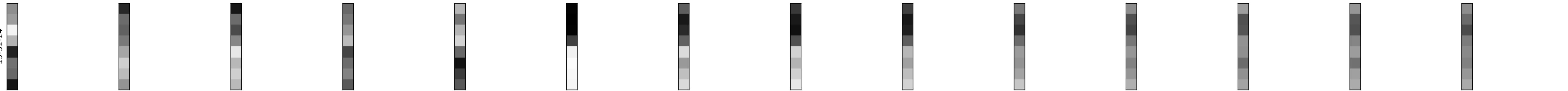
autumn - 18-59-36



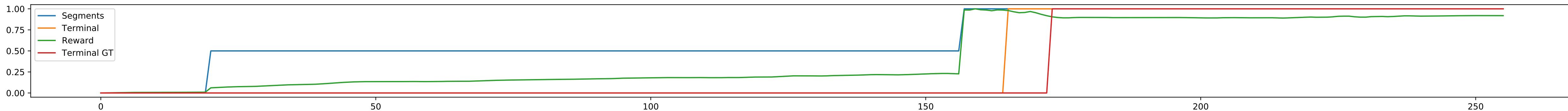
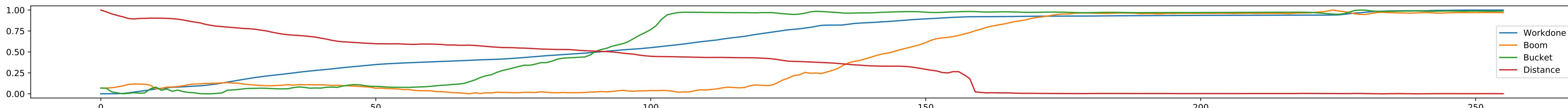
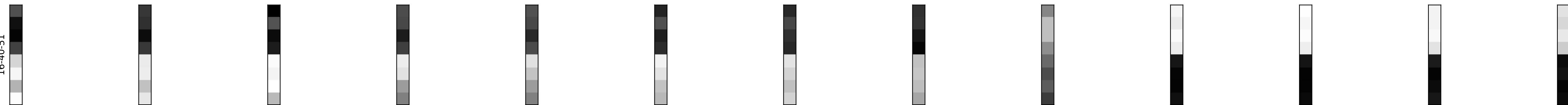
autumn - 18-50-54



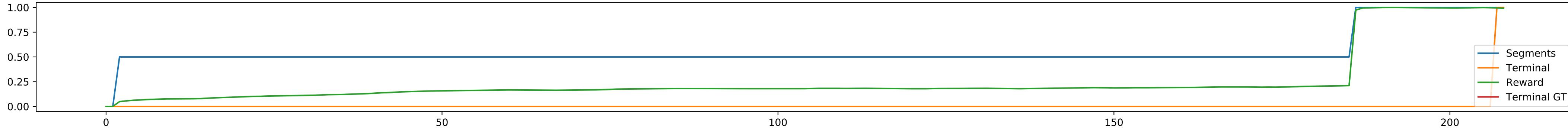
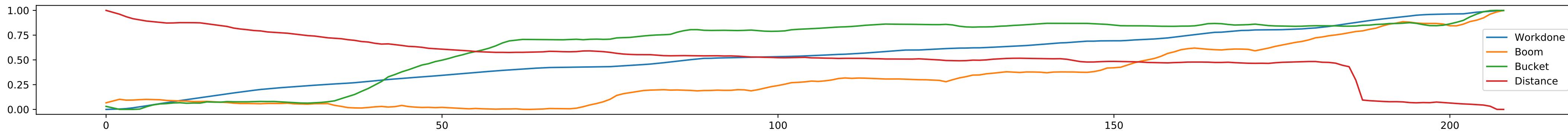
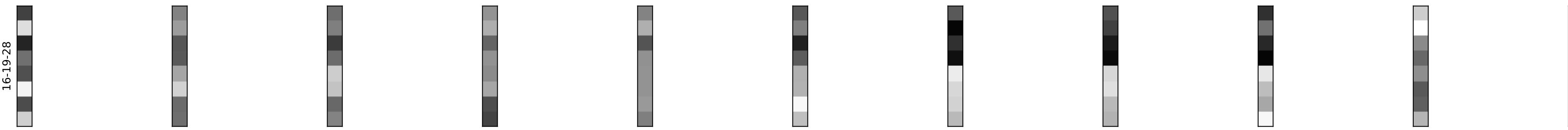
autumn - 19-31-14



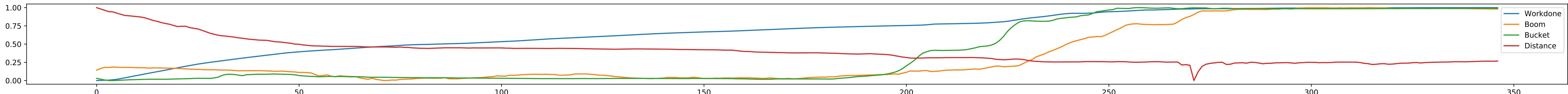
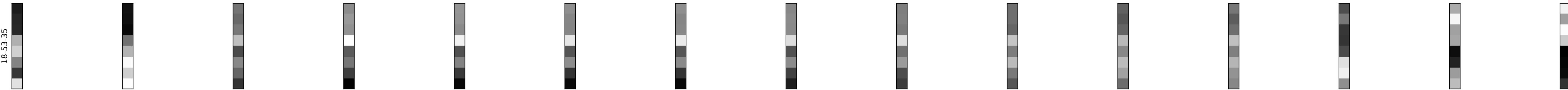
autumn - 16-40-51



autumn - 16-19-28

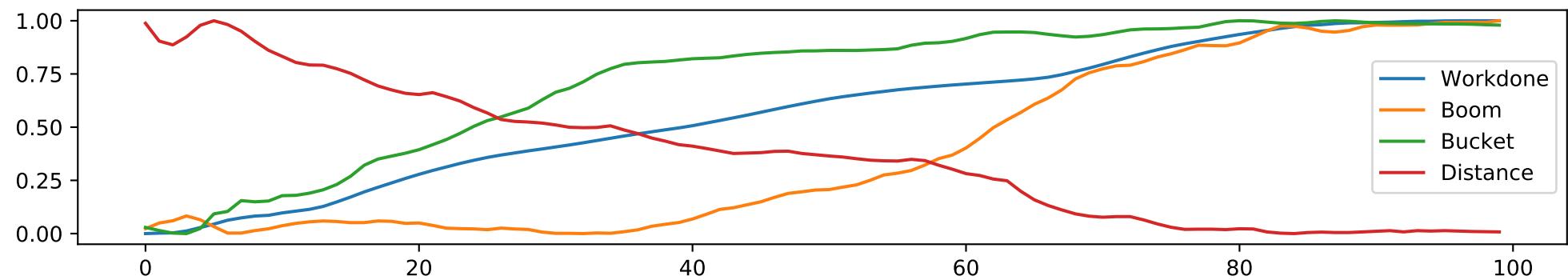
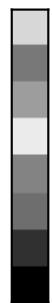
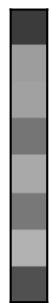
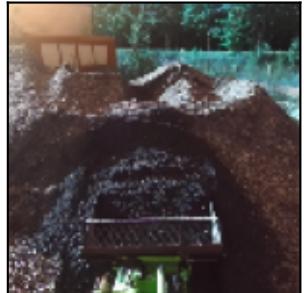


autumn - 18-53-35

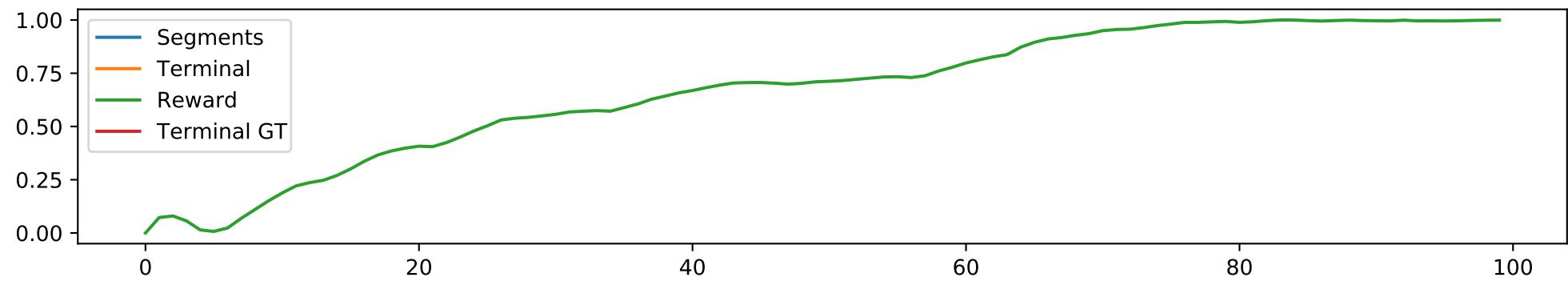


autumn - 16-18-15

16-18-15



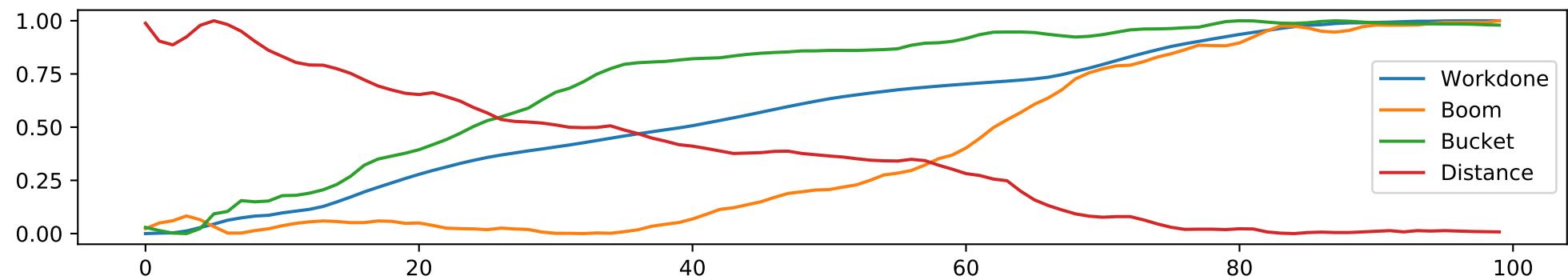
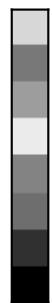
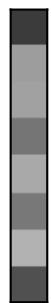
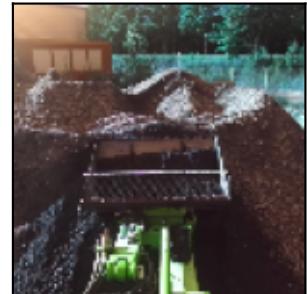
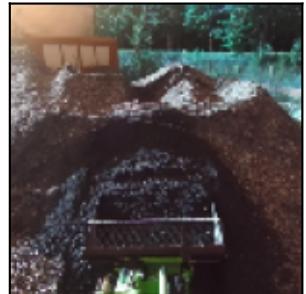
- Workdone
- Boom
- Bucket
- Distance



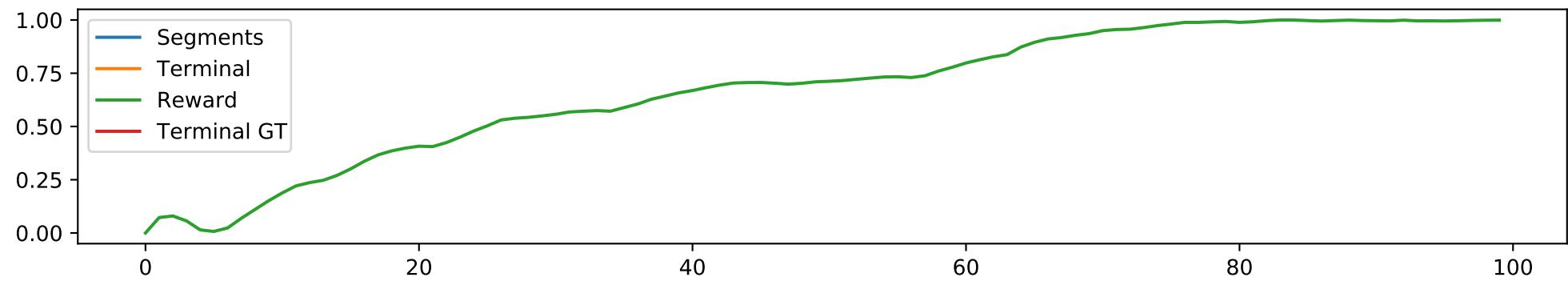
- Segments
- Terminal
- Reward
- Terminal GT

autumn - 16-18-15

16-18-15



- Workdone
- Boom
- Bucket
- Distance



- Segments
- Terminal
- Reward
- Terminal GT