Timeseries segmentation feedback

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Outline

1. Context
2. Unsupervised learning – State Detection
3. Unsupervised learning – Change Point Detection
4. Supervised learning
5. Conclusion

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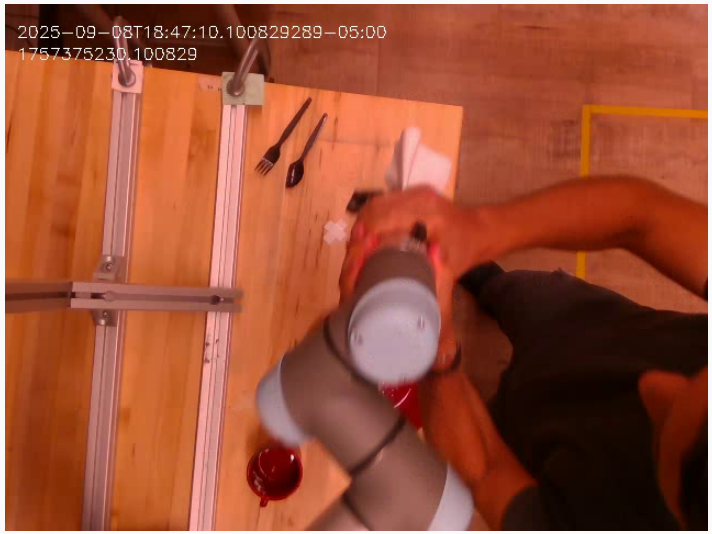
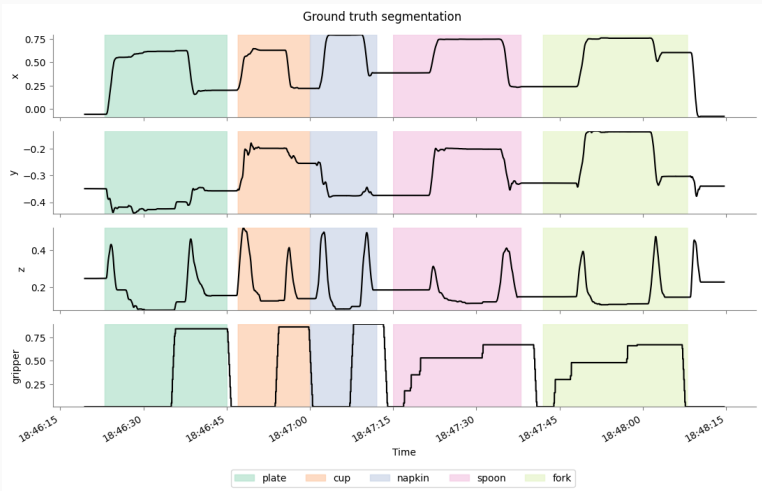
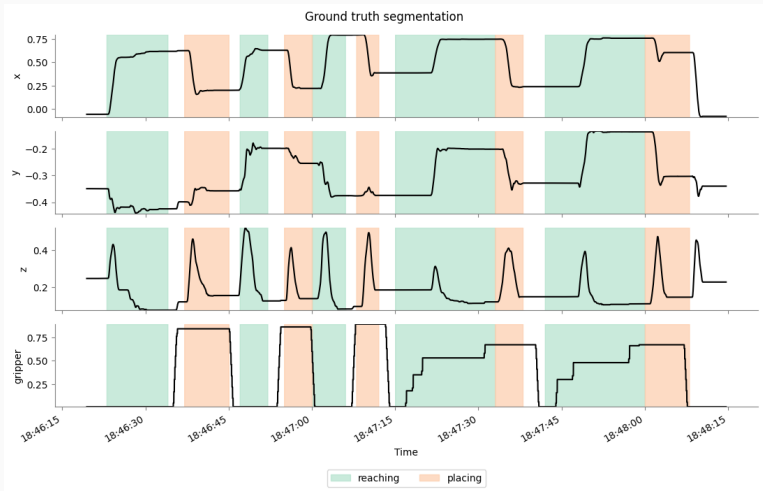
Robot learning of long horizon demonstrations







→ Small data *i.e.*, few demonstrations

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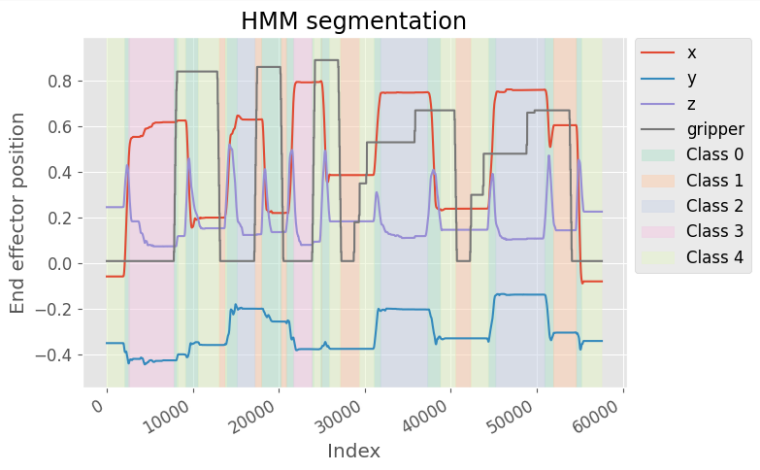
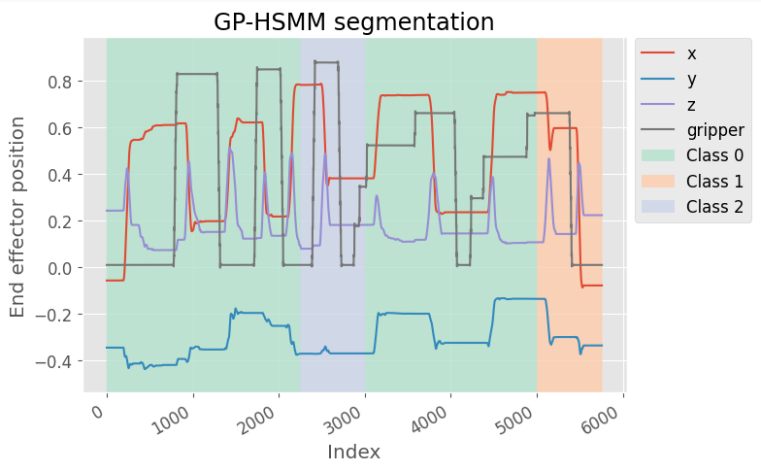
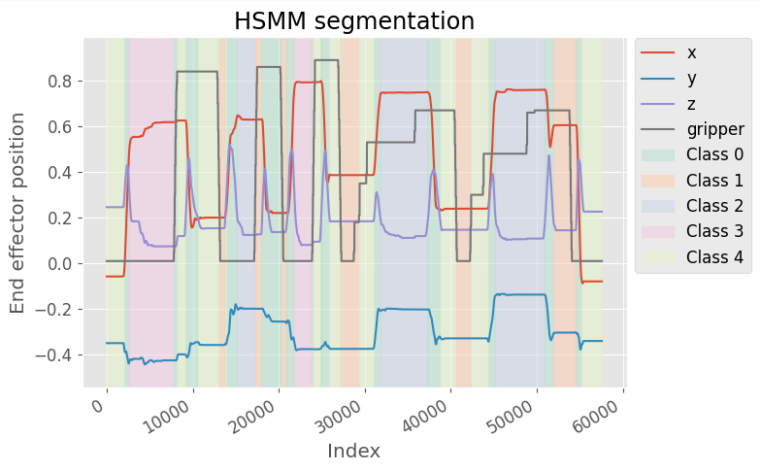
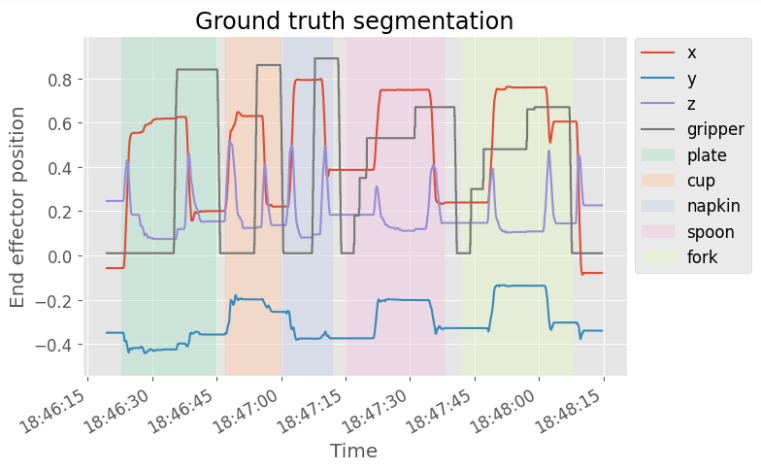
H(S)MM – Higher level movements ✖









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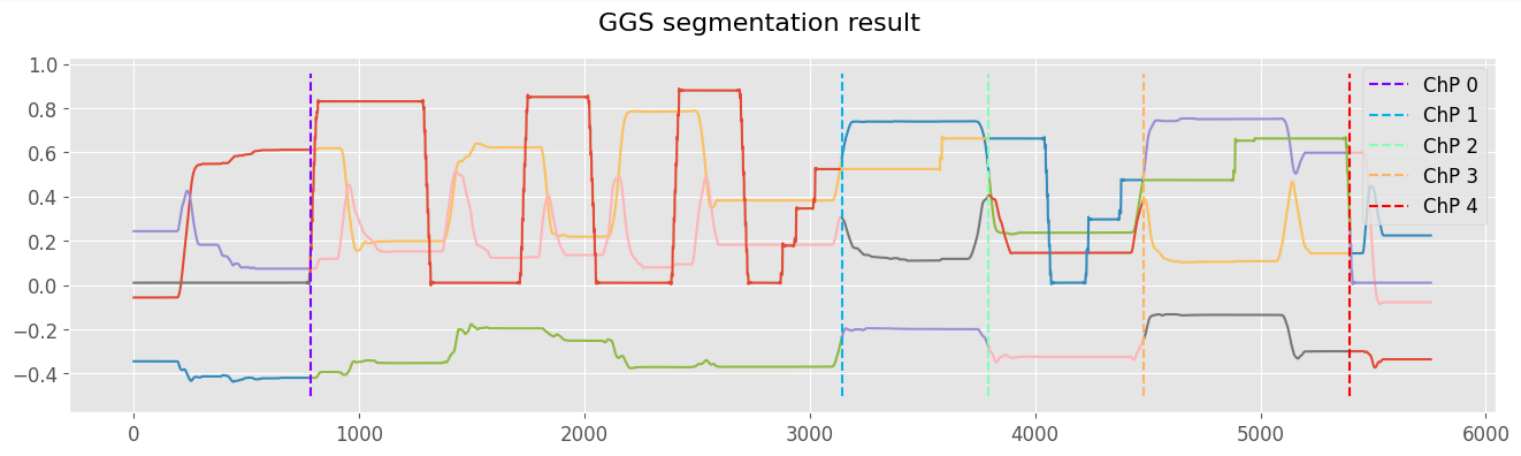
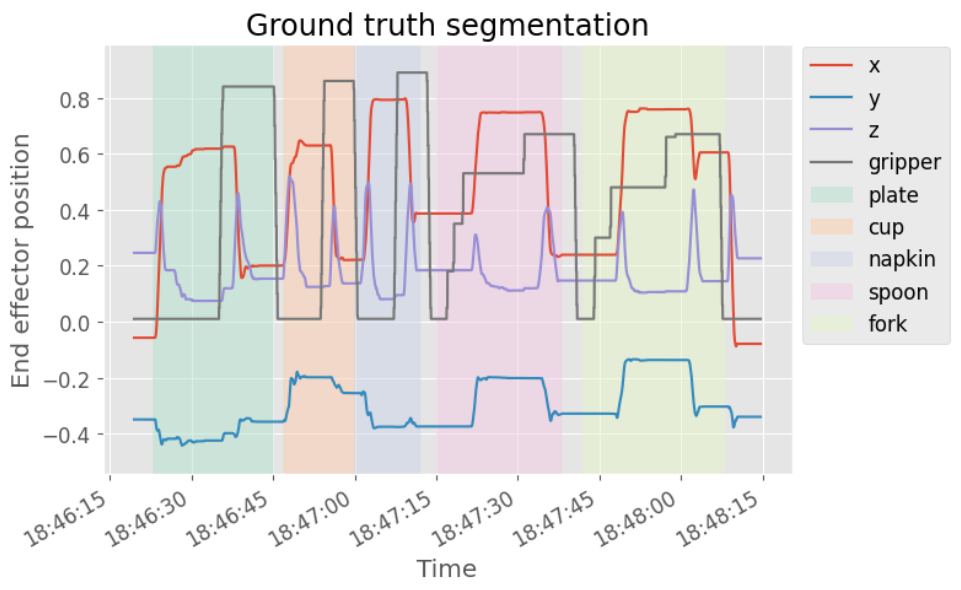
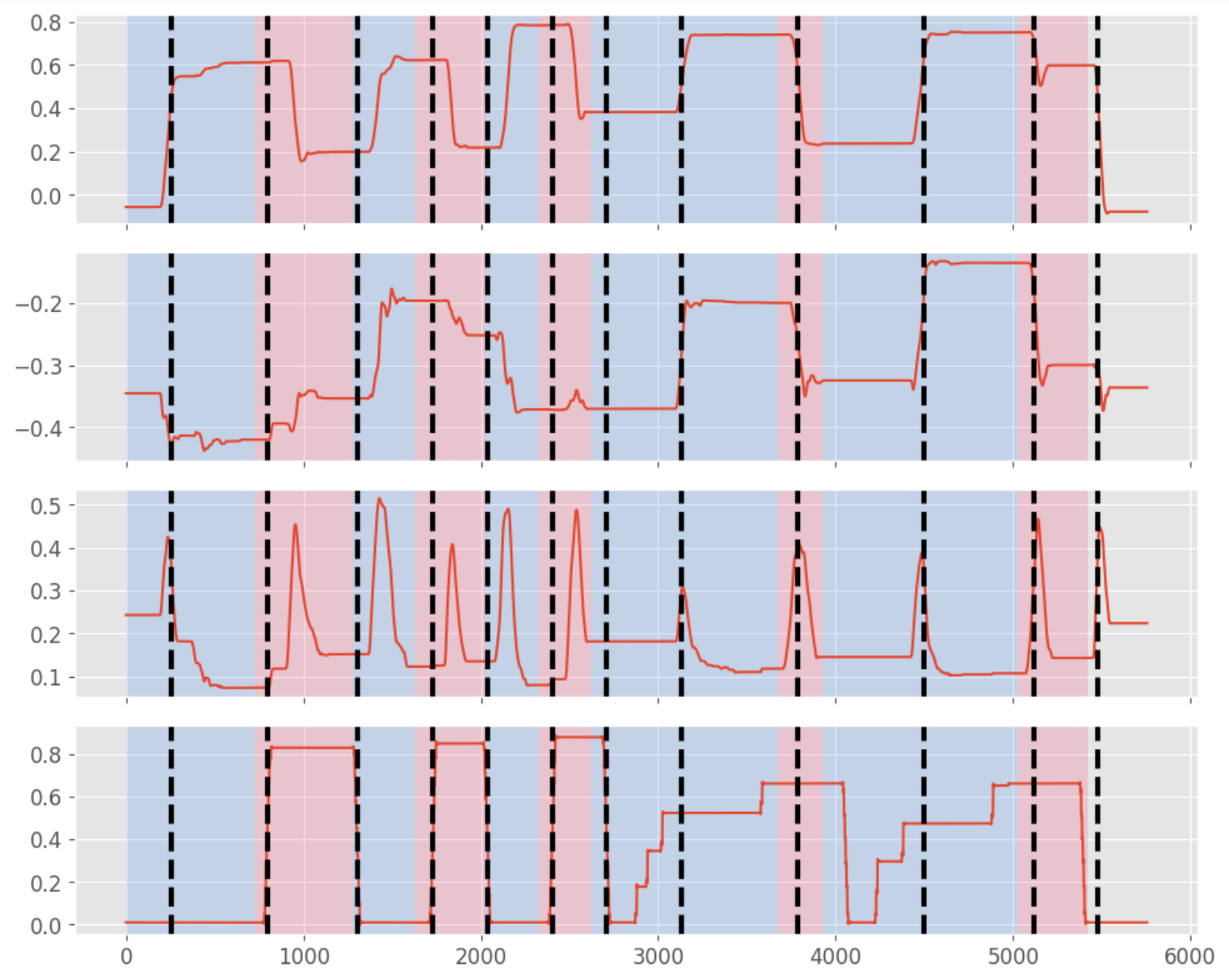
Greedy Gaussian Segmentation – Higher level movements ✖





ruptures – Lower level movements



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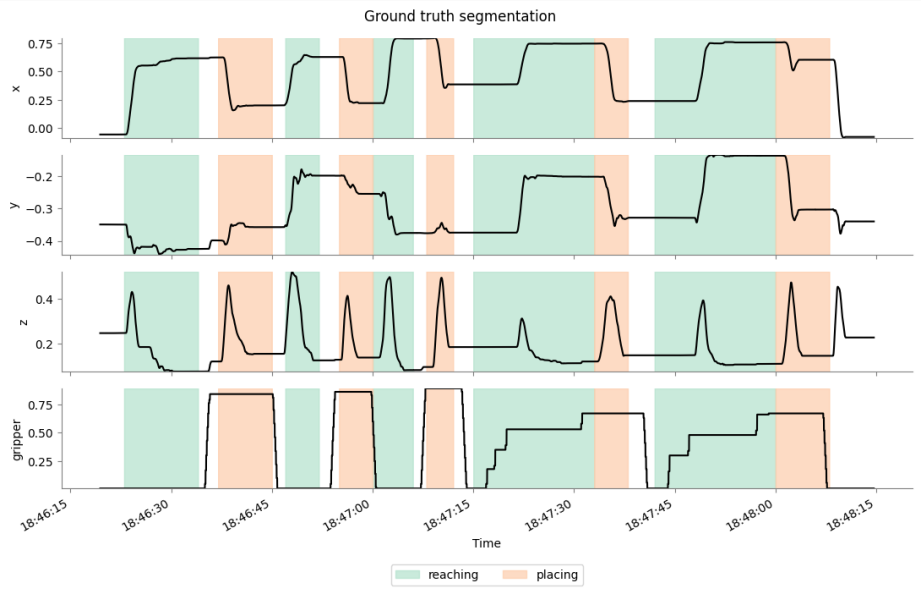
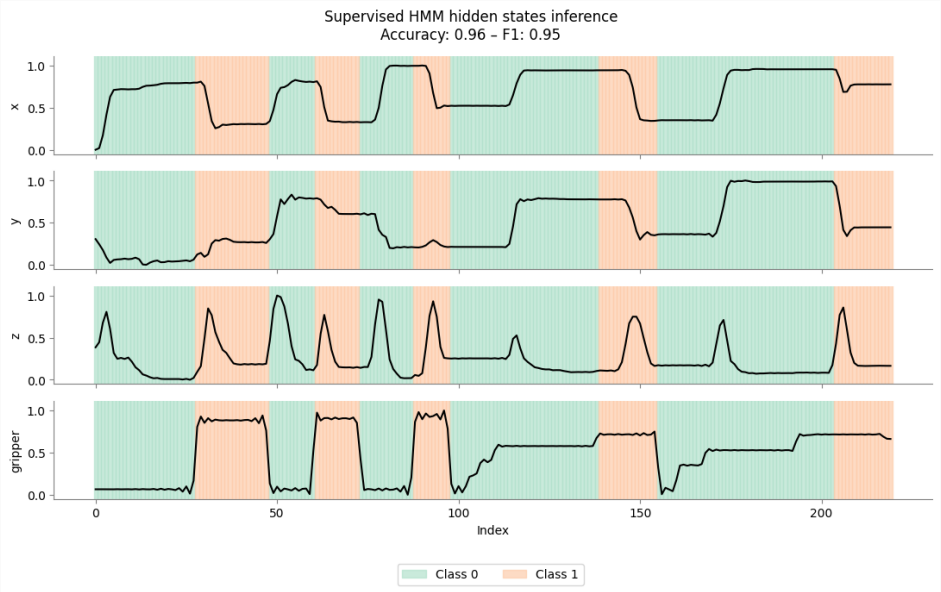
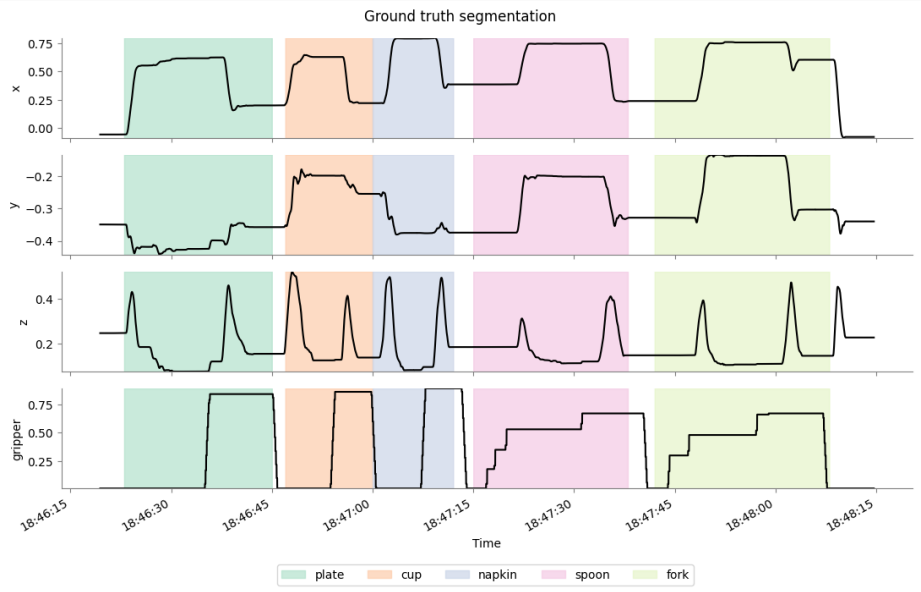
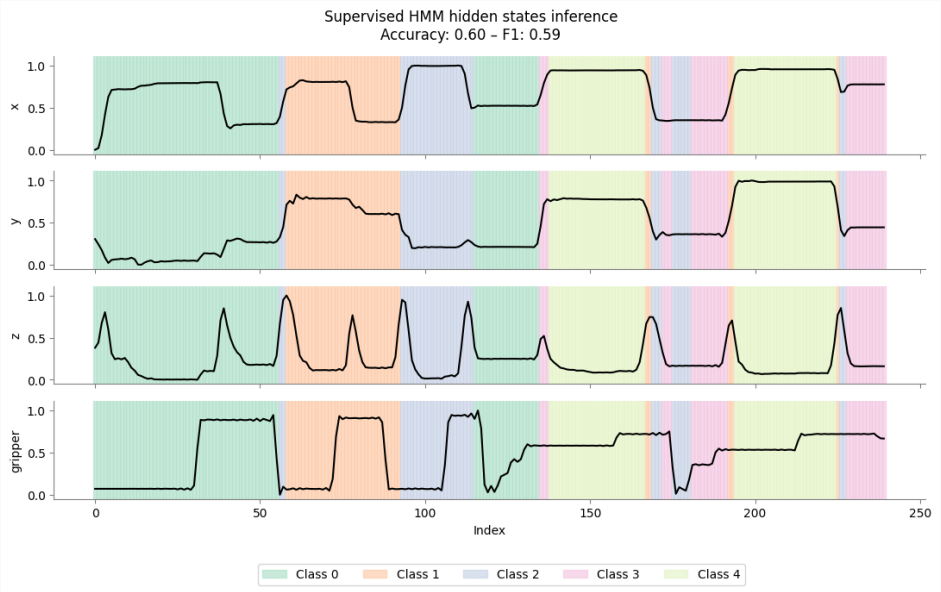
Supervised HMM – Lower level movements





Supervised HMM – Higher level movements ✖





XGBoost – Higher level movements ✖

Split	F1	Accuracy
1	0.2722	0.3741
2	0.1639	0.1872
3	0.1684	0.3381
4	0.1469	0.3501
5	0.1713	0.3458

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Conclusion

- Can model lower level movements with good performance
- Modeling higher level movements remains a challenge

Questions

- Any other method I may have missed that could help solve this problem?
  - Variational inference?
- How to integrate context, *e.g.*, video?
  - Multimodal transformer but probably too data hungry?

Questions ?