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CAM in Time-Series Classification

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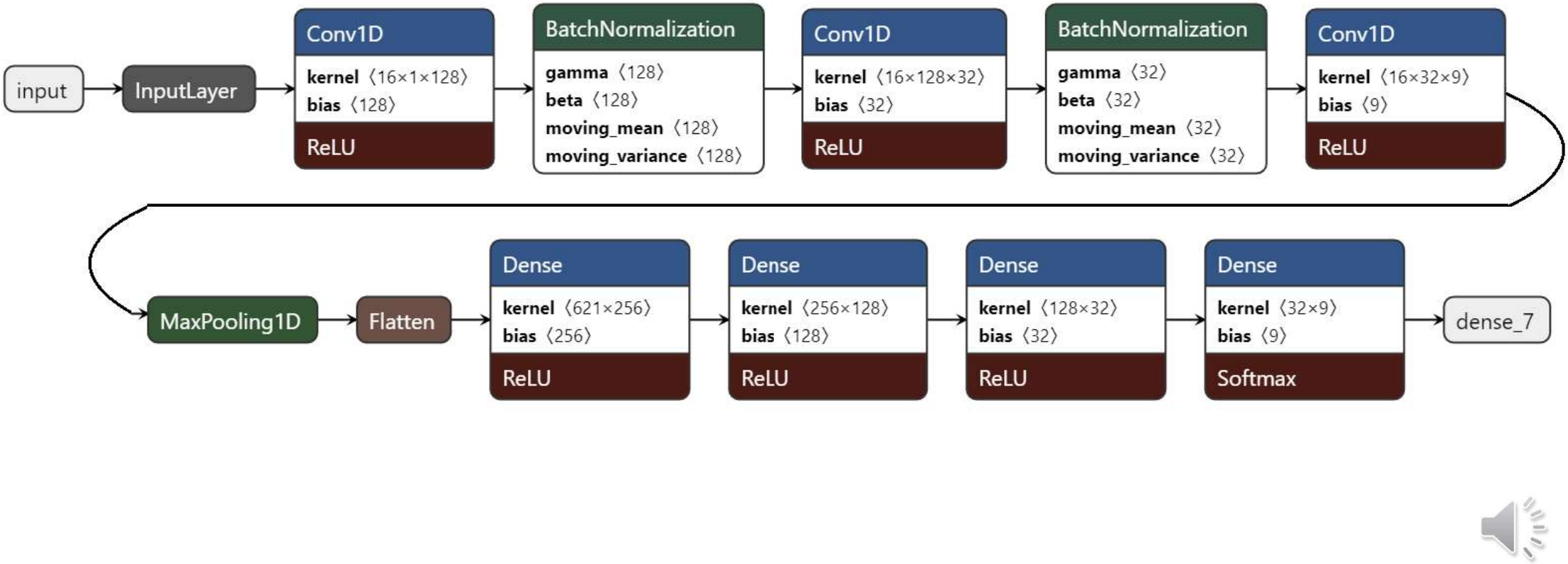
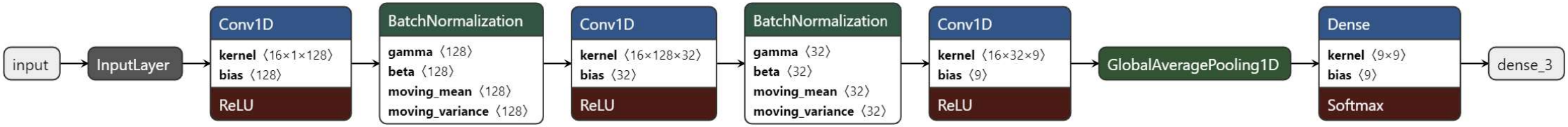
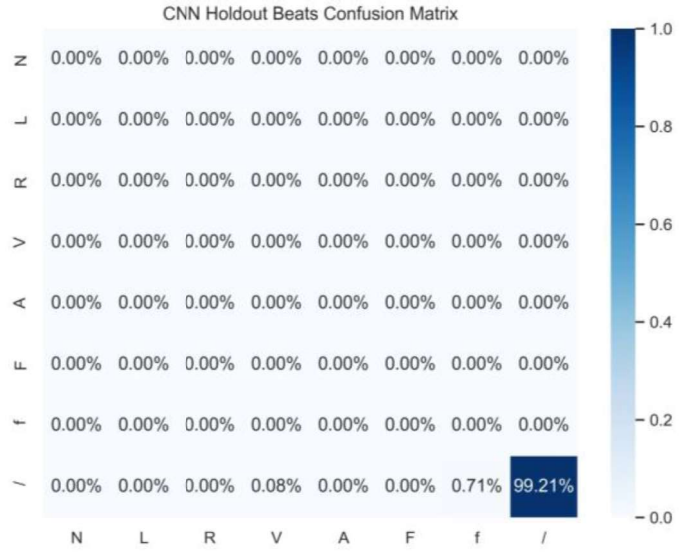
Original CNN Architecture

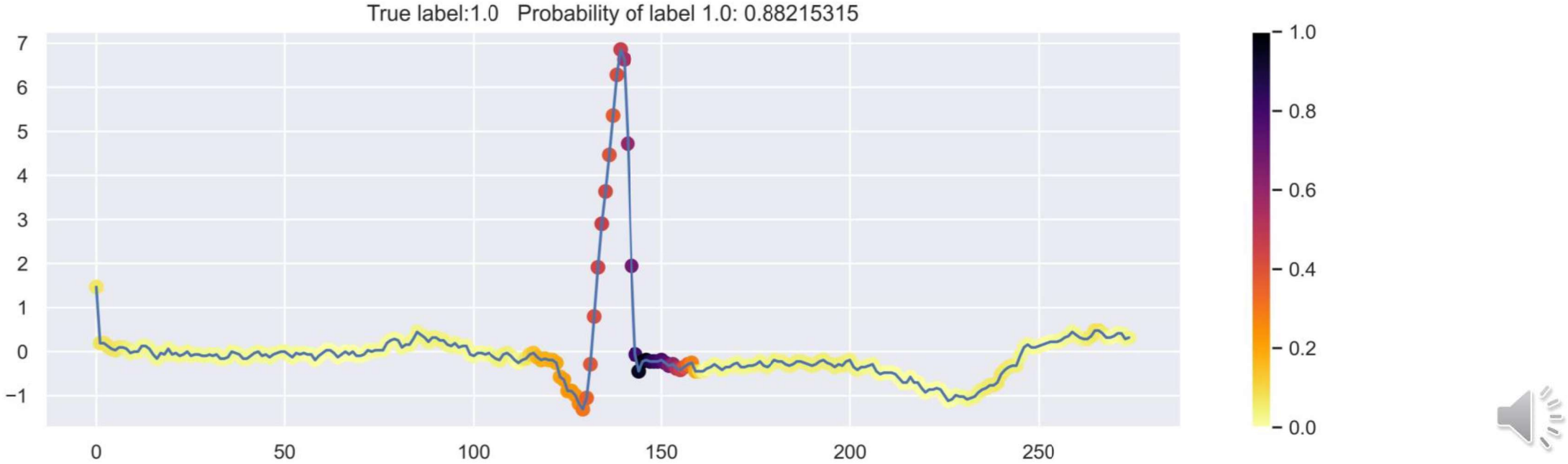


CAM Architecture

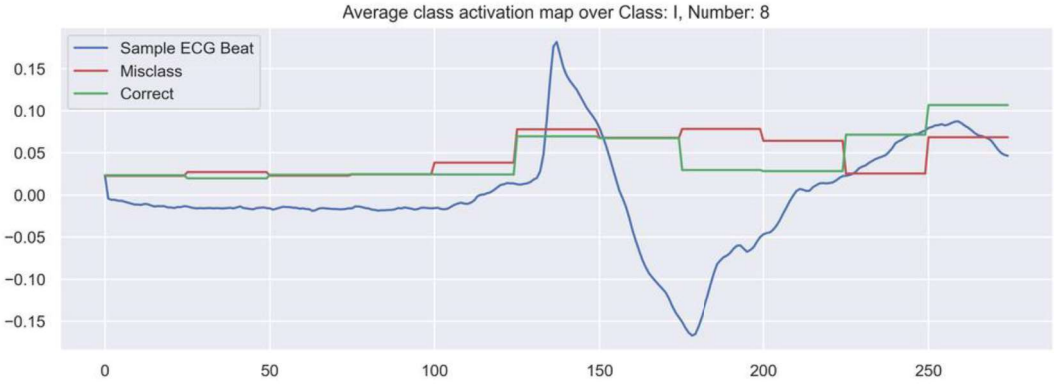


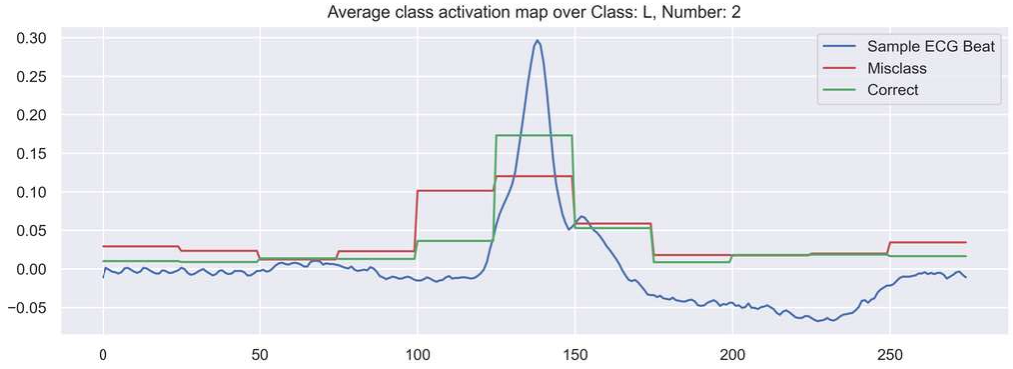
CAM Examples

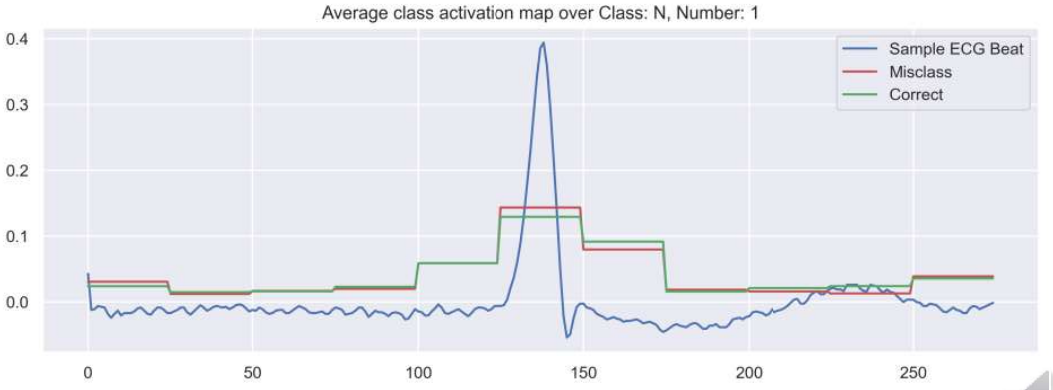




CAM Explanations over Classes







Summary

- CAM provided convincing local explanations of the ECG classification task
- CAM required to change the network architecture
- Local explanations over several samples might be able to provide some insight between correctly and incorrectly classified beats

References

- Zhou et al. ‘Learning Deep Features for Discriminative Localization’, CVPR, 2016.
- Selvaraju et al. ‘Grad-CAM: Visual Explanations from Deep Networks via Gradient-based Localization’, International Journal of Computer Vision, 2019.
- Yola et al. ‘Improving ECG Classification Interpretability using Saliency Maps’, IEEE BIBE, 2020.