Sound Event Localization and Detection with pre-trained Audio Spectrogram Transformer and Multichannel Separation Network

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November 1, 2022

LINE

Key Ideas of the System

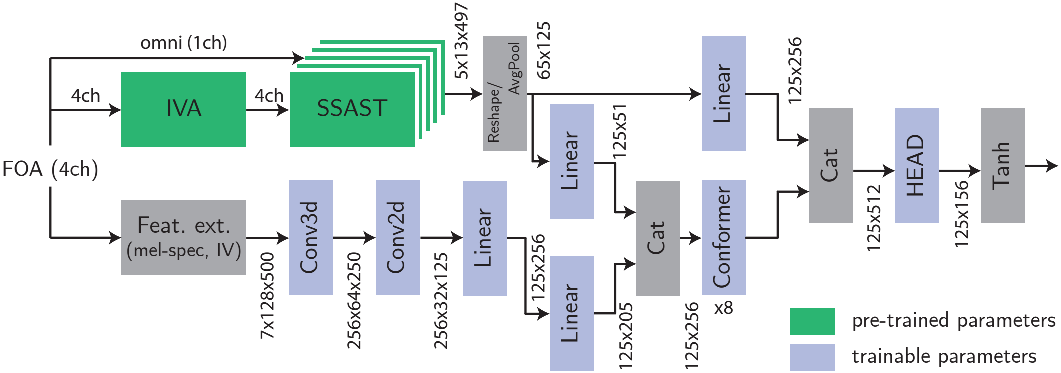
Key Components Evaluated

1. Fine-tune self-supervised audio spectrogram transfomer (AST) for SED
2. Pre-train a multichannel separation network (IVA)
3. MLP output head (vs. linear) (MLP)
4. Fine-tuning on STARSS22 only (FINE)
5. Post-processing with per class thresholds (POST)

Other

- Simulate 20 h of extra data (overlap. 4, with interference)
- Augmentations (rotations, SpecAugment)

Network Architecture



Results of Ablation Study

Model	ER↓	F↑	LE↓	LR↑	SELD ↓
Baseline (FOA) [Adavanne22]					
	0.71	0.21	29.3	0.46	0.5507
Base Network					
	0.58	0.42	19.08	0.60	0.4154
+MLP	0.59	0.41	17.02	0.61	0.4174
+FINE	0.56	0.45	16.31	0.56	0.4094
+POST	0.54	0.46	**15.87**	0.56	0.3994
Architecture III					
+AST	0.58	0.42	18.76	0.61	0.4147
+IVA	0.57	0.44	17.96	0.62	0.4037
+MLP	0.57	0.46	18.30	0.62	0.3980
+FINE	0.55	0.49	17.50	0.64	0.3792
+POST	**0.50**	**0.51**	17.13	**0.62**	**0.3644**