



DCASE 2022 CHALLENGE



DCASE Challenge 2013 - 2022

- Well-established challenge, based on open data and different tasks to solve
- Important channel for publishing new datasets and asking new research questions on environmental sound scene analysis
- Expanding in terms of research topics: audio classification, but also source localization/separation, video, language
- Diverse setups in terms of ML, from supervised classification to weak supervision, unsupervised learning, few-shot learning

Participation statistics

Edition	Tasks	Entries	Teams
2013	3	31	21
2016	4	84	67
2017	4	200	74
2018	5	223	81
2019	5	311	109
2020	6	473	138
2021	6	394	127
2022	6	410	135

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Judges' award

DCASE 2022 Challenge



Task 1: Low-Complexity Acoustic Scene Classification



Task 2: Unsupervised Anomalous Sound Detection for Machine Condition Monitoring Applying Domain Generalization Techniques



Task 3: Sound Event Localization and Detection Evaluated in Real Spatial Sound Scenes



Task 4: Sound Event Detection in Domestic Environments



Task 5: Few-shot Bioacoustic Event Detection



Task 6: Automated Audio Captioning and Language-Based Audio Retrieval

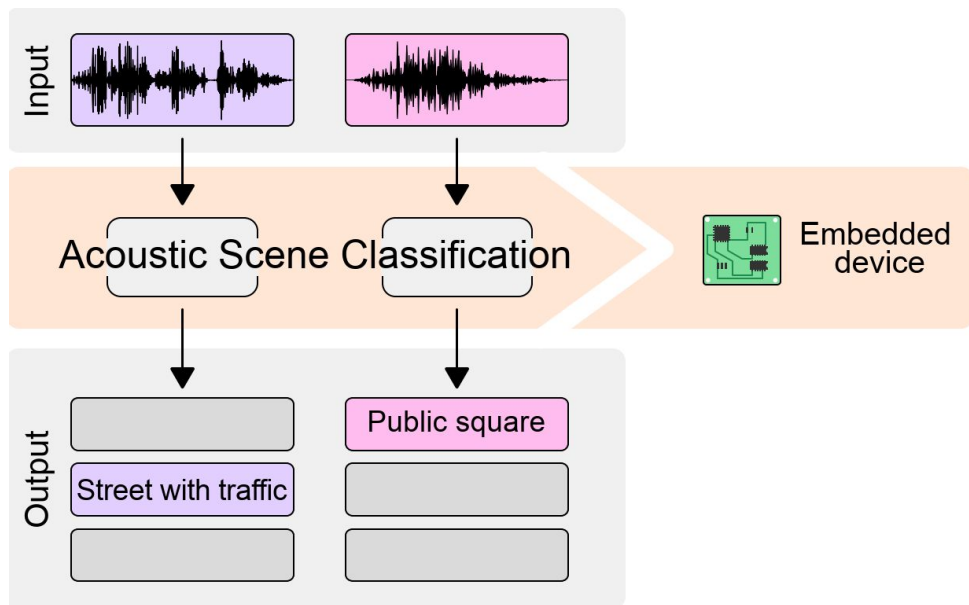
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Task 1: Low-Complexity Acoustic Scene Classification

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Classification of audio recordings into one of ten predefined scene classes



New in 2022:

- 128 K parameters (total, incl. zero) in INT8 representation
- 30 MMACs (suitable for Cortex-M4 devices)
- 1s audio clips (short inference time)

Low-Complexity Acoustic Scene Classification

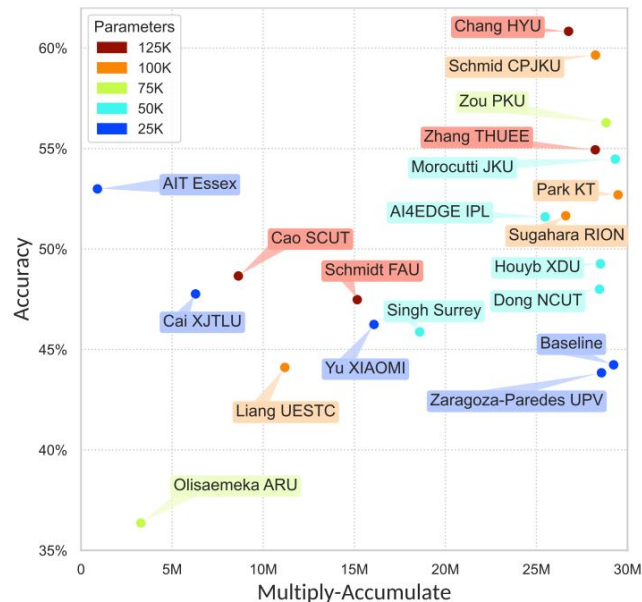
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Low-Complexity Acoustic Scene Classification

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Overall trends:

- As always, mel energies and augmentation
- CNNs, some residual networks (not as much as in 2021)
- Most systems are close to the allowed limits for complexity
- Simple networks, but focus on training and augmentation: quantization-aware training, knowledge distillation



Task 1: Summary

- Despite clever architectural designs, networks trained with optimized preprocessing and training strategies outperform the other approaches
- Small number of submissions compared to previous years.
 - Is the task too difficult?
 - Is ASC not of interest anymore?
- What kind of ASC task is still topical?