**T2 Audio tagging with noisy labels and minimal supervision**

### Motivation
- General-purpose sound event recognizers
- follow-up of DCASE2018 Task2, but:
  - double number of categories
  - much more data
  - multi-class ⇒ multi-label

**Dataset: FSDKaggle2019**
- 80 classes, over 100 hours
- labels/clip 1.2 ⇒ 1.4
- variable length 0.3 ⇒ 30s

**Baseline System**
- Log mel spectrogram patches
- 1s window, 0.5s hop, 64 mel bands
- MobileNet v1
- Conv/13 Depth-Separable Conv/13
- Weight sharing, adaptive weighting of noisy samples, MixMatch, ...
- Train on noisy YFCC for ~10 epochs, label smoothing, max pool
- Audio representation

**Adopted techniques**
- Log-mel energies, waveform, CQT, ...
- Mainly CNN/CRNN: VGG, DenseNet, ResNe(X)t, Shake-Shake, Frequency-Aware CNNs, Squeeze-and-Excitation, MobileNet
- Heavy usage of ensembles (2 ⇒ 170): several nets or snapshot learning. Aggregation of predictions or shallow meta-learning
- Exploiting curated train set: mixup, SpecAugment, SpecMix, TTA, ...
- Label noise: semi-supervised learning, instance selection, multi-task learning, loss functions, per-class loss weighting, stochastic weight averaging, adaptive-weighting of noisy samples, MixMatch, ...

### Task Description
- **Goal**: predict labels among 80 diverse categories
- multi-label audio tagging
- many noisy labels & limited supervision
- domain Freesound - Flickr

**Metric: label-weighted label-ranking average precision (lwlraps)**

\[ \text{lwlraps}: \frac{1}{|\mathcal{C}|} \sum_{c \in \mathcal{C}} \sum_{s \in \mathcal{S}} \text{Prec}(s, c) \]

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### Results, Top-8

**Summary & Results, Task 2**

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Results: https://tinyurl.com/y/four.pnum/f_b_ligaj/two.pnuma/eight.pnum

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**Freesound - Flickr**

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