

Source-Free Domain Adaptation (SFDA) - Application to Bioacoustics

The research on **Source-Free Domain Adaptation (SFDA)** is crucial because it has practical importance in real-world applications that lack labeled examples from the target domain. Previous SFDA research mainly focused on simple distribution shifts in image classification tasks. However, Google AI's work presented at **ICML 2023** explores the challenging field of bioacoustics, where natural distribution shifts are common, and limited labeled data presents significant obstacles.

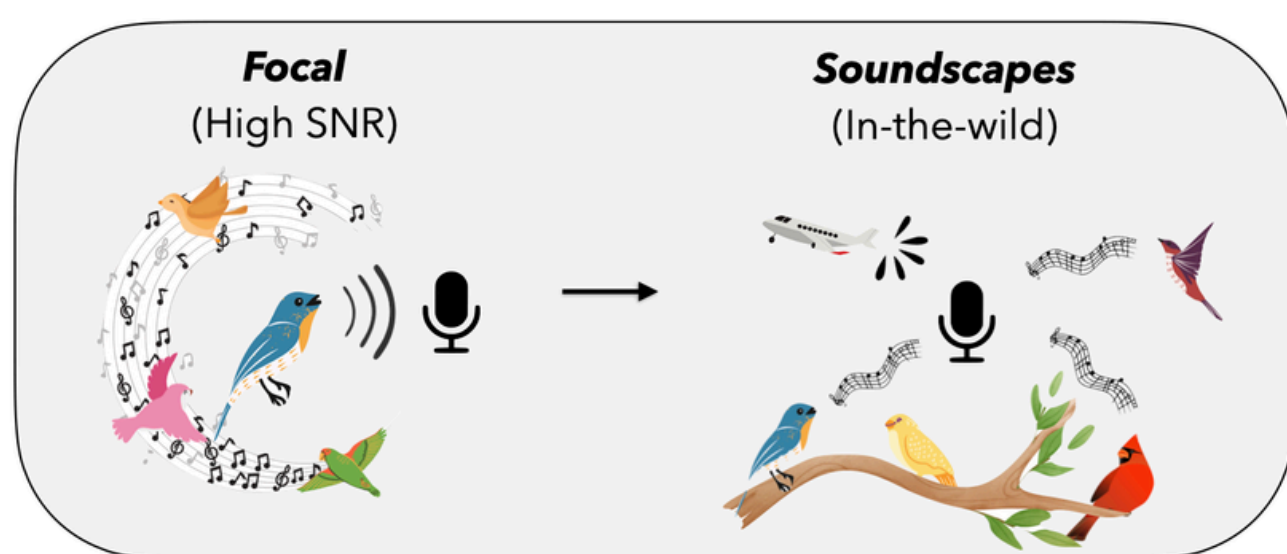


Image source: ai.googleblog.com

NOTELA (NOisy student TEacher with Laplacien Adjustment) is a new method that performs better than existing ones when dealing with real changes in sound from bioacoustics, and it also works well with various vision datasets. The **Noisy Student** method makes the model reconstruct its own predictions on some data, but with added random noise. They simplified this approach by using model dropout as the only source of noise, calling it **Dropout Student (DS)**. Although DS is good at making predictions, it sometimes struggles with different types of data. To improve it, they used the model's feature space as additional information to guide it. This made the model much more stable and significantly improved its performance in tasks involving sound and pictures.

MotionGPT: Human Motion as Foreign Language

The advancement of **Large Language Models** poses a challenge in developing a unified model that integrates language with other multimodal data, such as human motion, which has connections with body language and human communication. To address this, **MotionGPT** is introduced as a versatile and user-friendly motion-language model, designed to handle various motion-related tasks. **Human motion is represented using discrete vector quantization, similar to word tokens in language**, enabling language modeling on both motion and text in a unified manner.

MotionGPT: Human Motion as Foreign Language

Text-to-Motion

Can you show me a person is practicing karate kicks?



Source: Jiang et al., 2023

MotionGPT is pre-trained using a combination of motion-language data and fine-tuned on question-and-answer tasks through prompt learning; Extensive experiments demonstrate MotionGPT's exceptional performance across multiple motion tasks, including text-driven motion generation, motion captioning, prediction, and intermediate motion. For additional information, please refer to the following **GitHub repository**: github.com/OpenMotionLab/MotionGPT.

Deep Learning Book: deeplearningbook.org

The Deep Learning textbook is designed to assist students and professionals in entering the world of machine learning, specifically focusing on deep learning. The website of the book is deeplearningbook.org

State of AI Report 2022

You can find the AI 2022 report on the **stateof.ai** website and has been reviewed by top AI experts. It covers important areas in five dimensions: **Research**, looking at technology advancements; **Industry**, studying AI's impact on business; **Politics**, dealing with regulations and economics effects of AI; **Safety**, identifying risks from advanced AI systems; and **Predictions**, offering insights into the future and reviewing performance. The 2022 Report highlights significant themes. Smaller research labs are sharing more work, affecting AI research. Safety in AI is receiving more attention for making it safer. China leads in AI research, particularly in security and geopolitics.



Image source: Digital Nirvana website

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