2020
北京

多媒体开启新视界
MULTIMEDIA BRIDGE
TO A WORLD OF VISION

LiveVideoStackCon2020北京

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Commercialization of the AI-based audio algorithm in RTC

RTC中AI音频算法的产品化

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PART 1

RTC中AI音频的现状

WHERE WE ARE (AI-Audio in RTC)

The Power of AI in Audio Processing

音频处理中AI的力量

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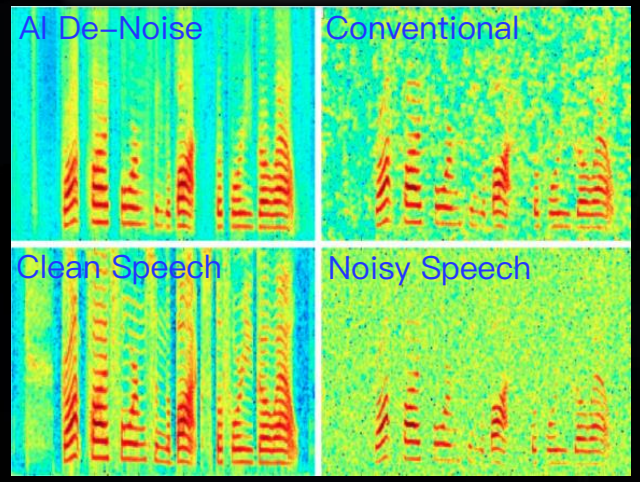
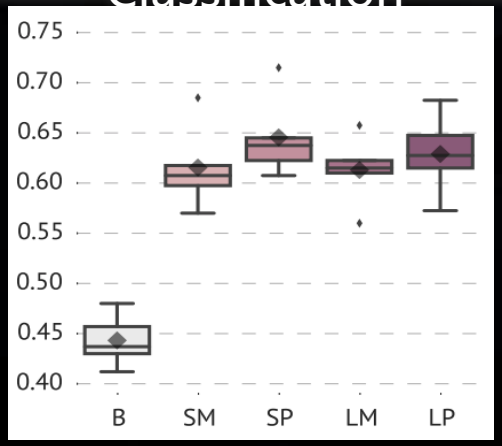
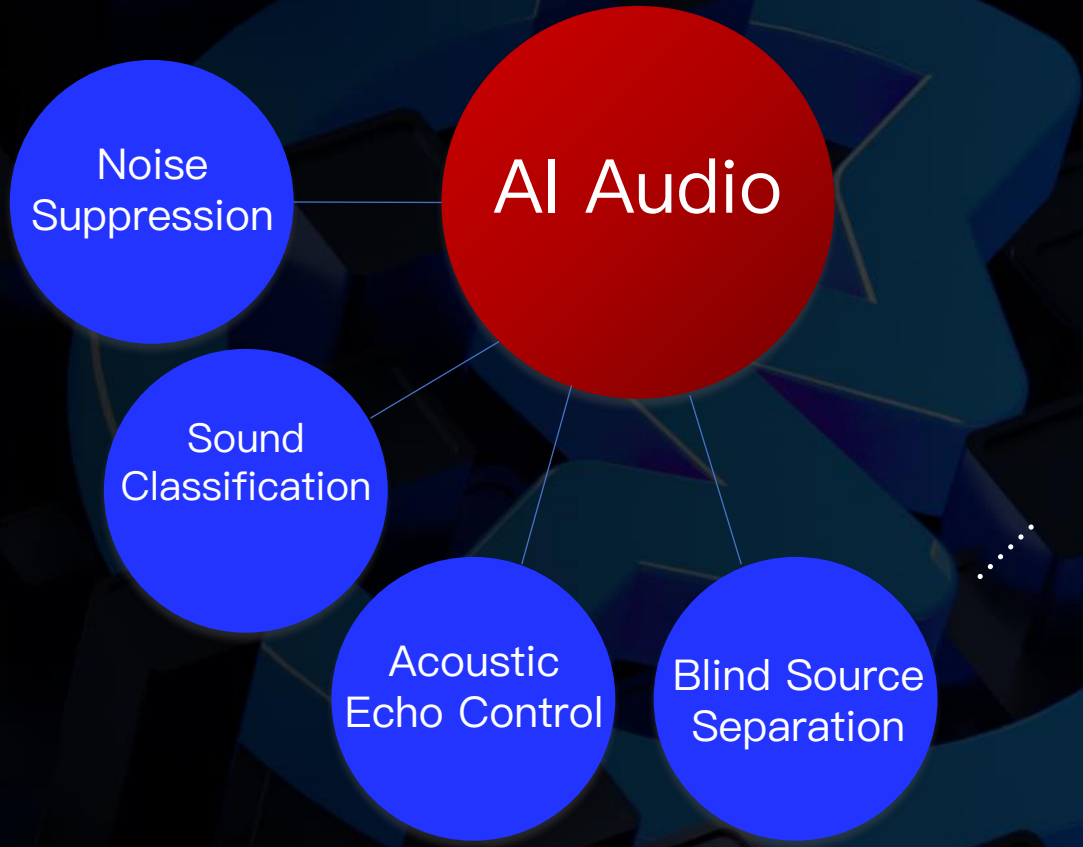
AI De-Noise



AI Sound Classification

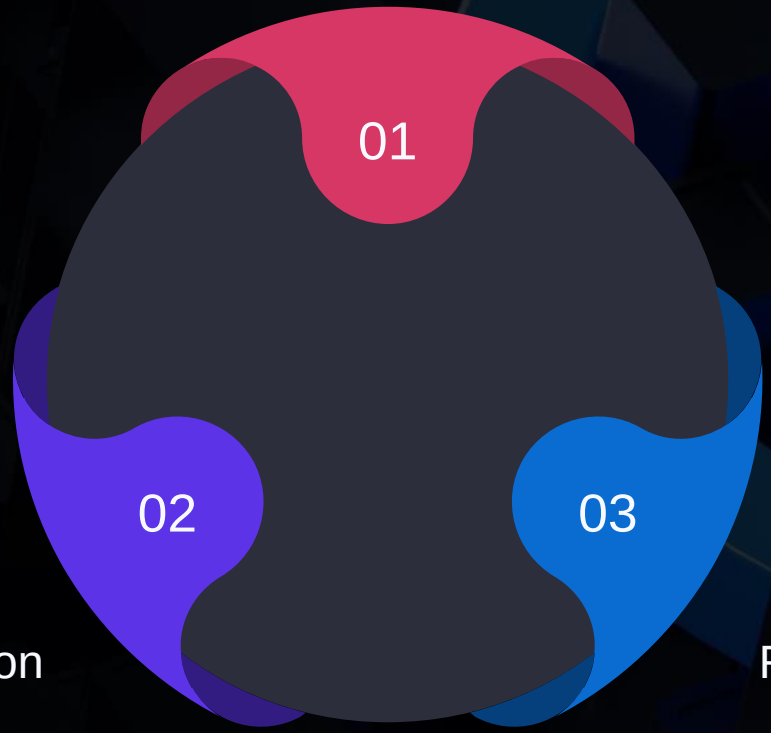




[1] Piczak, Karol J. "Environmental sound classification with convolutional neural networks." 2015 IEEE 25th International Workshop on Machine Learning for Signal Processing (MLSP). IEEE, 2015.
[2] Xu, Yong, et al. "An experimental study on speech enhancement based on deep neural networks." IEEE Signal processing letters 21.1 (2013): 65-68.

The Challenges and Limits of AI in Audio Processing

音频处理中AI的挑战与局限



计算复杂度

Complexity

泛化能力

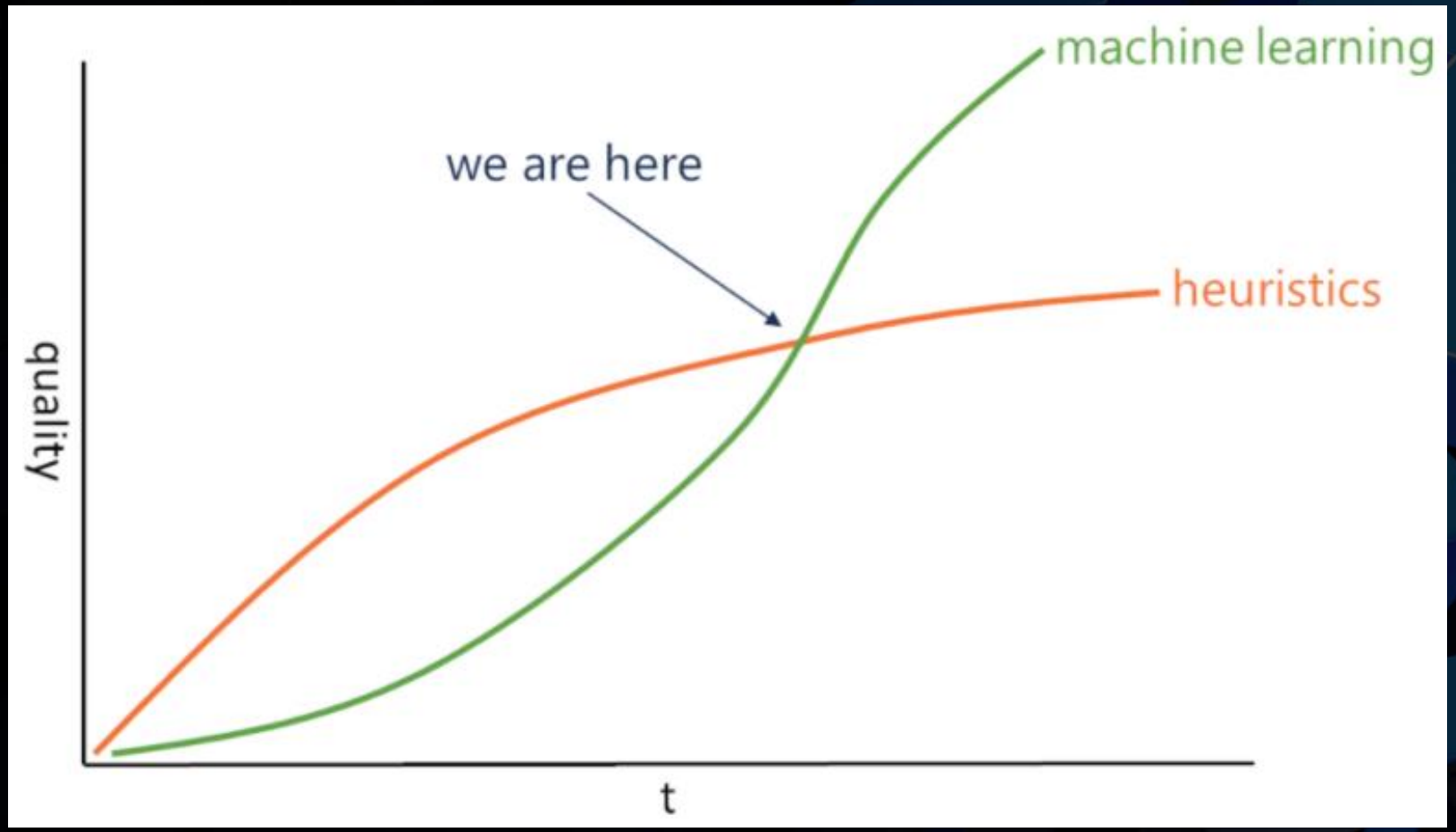
Generalization

鲁棒性

Robustness

WHERE WE ARE (AI-Audio in RTC)

RTC中AI音频的现状



by Tsahi Levent-Levi

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PART 2

“模块化”

“*Sub-Modularizing*”

AI Approaches in Audio Noise Suppression

音频降噪中的AI算法

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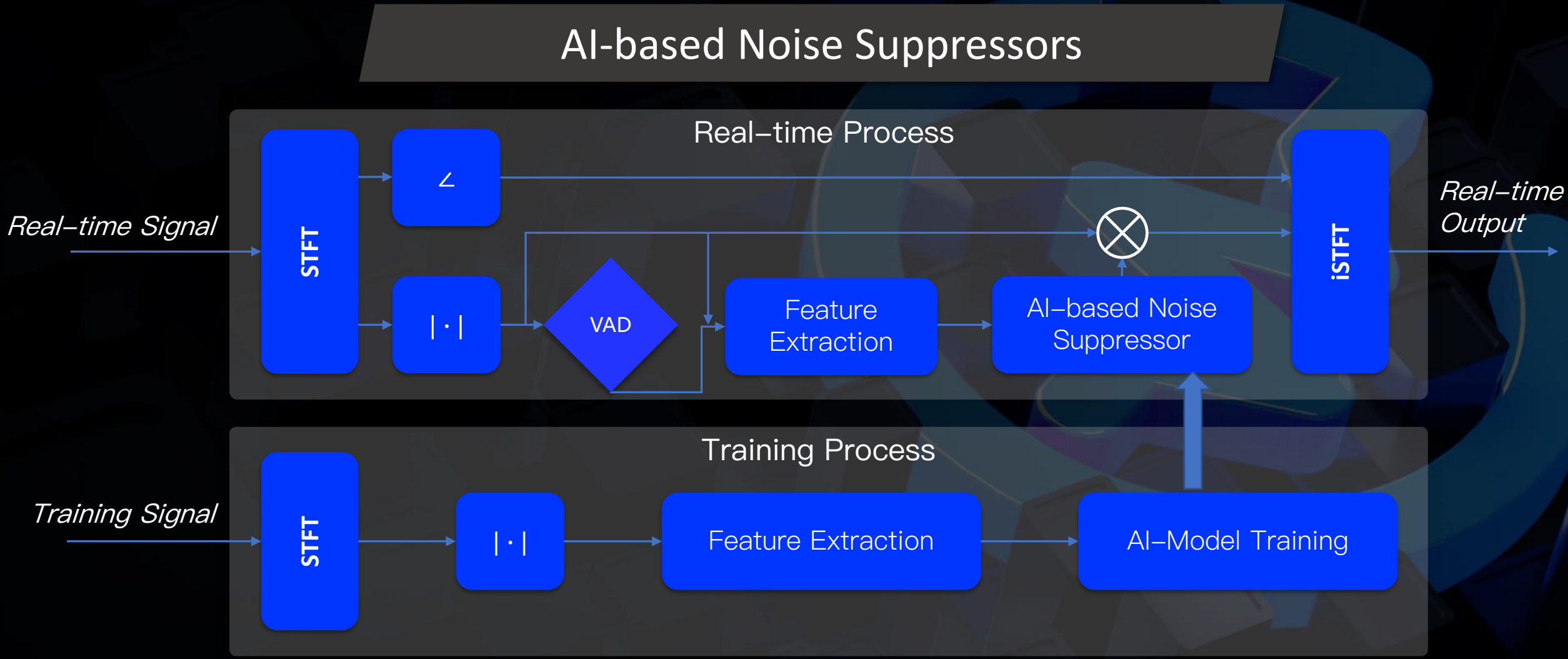

AI Approaches in Audio Noise Suppression

音频降噪中的AI算法

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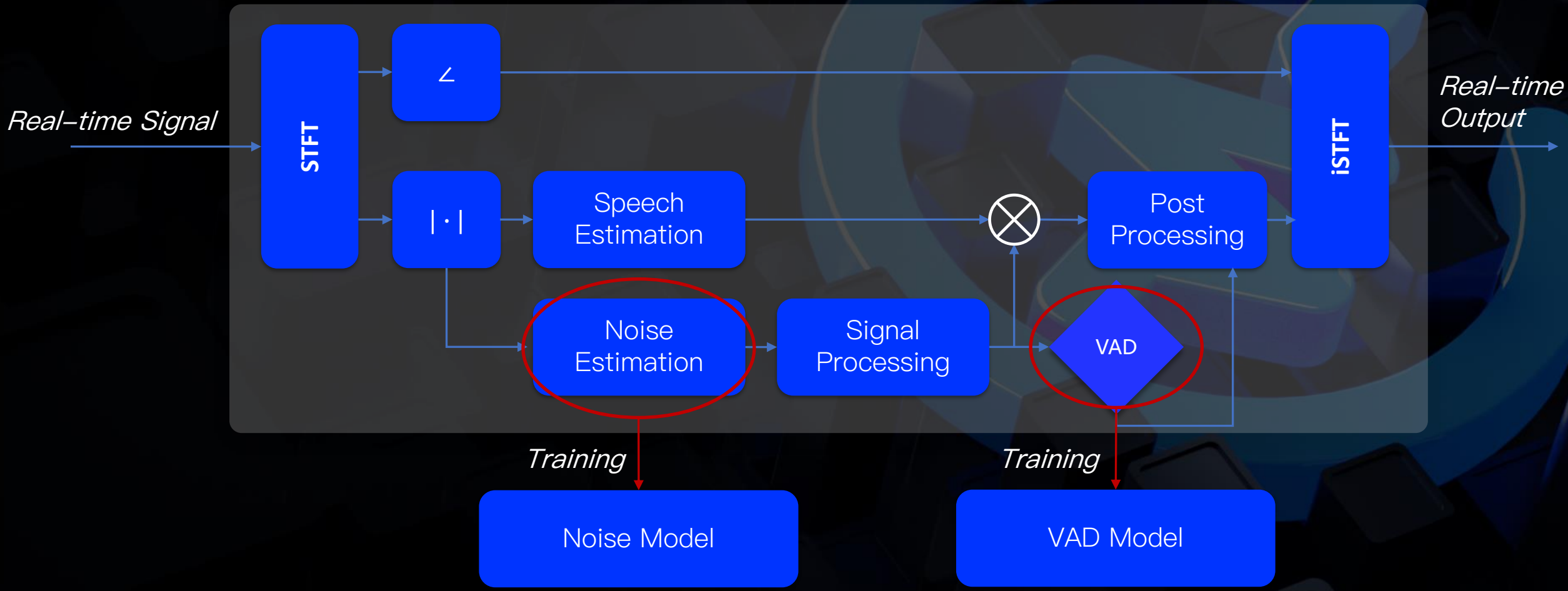
Conventional Noise Suppression



“SUB-MODULARIZING”
“模块化”

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计算复杂度
Complexity

鲁棒性
Robustness

泛化能力
Generalization

模块化
Sub-Modularizing

轻量级模型
Light-Net

简单的训练目标
Simple Training Target

更适合DNN模型
Fits DNN-model more

“SUB-MODULARIZING”
“模块化”

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例子II-声音场景检测
Example II-Sound Classification

- **Music Detection**
  - 增强音乐质量
  - Enhance the quality of music
- **Noise Classification**
  - 针对不同的噪音选择不同的Noise Model
  - Pick corresponding noise model for different noise
- **Noise Floor Estimation**
  - 通过对底噪的检测来估计底噪大小
  - Estimate the noise floor level via noise detection

“SUB-MODULING”
“模块化”

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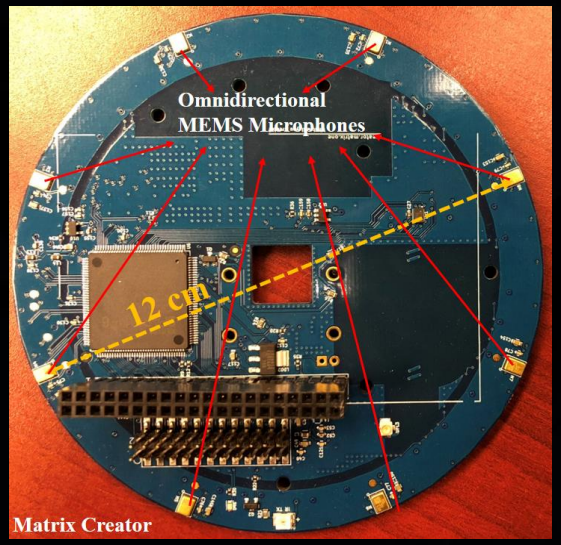
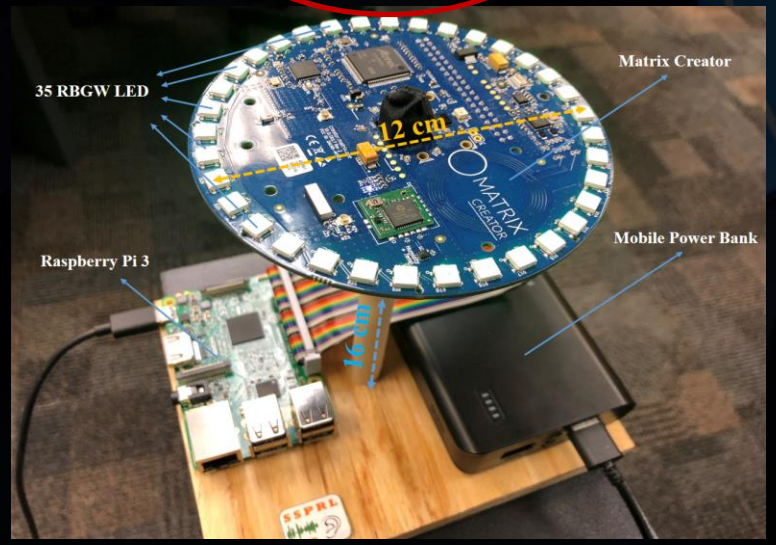
例子III-波到达方向估计
Example III-Direction of Arrival (DOA)

Microphone Array Beamforming + DOA





会议室场景
Meeting Room

Beam Selection (Classification Problem)

- Conventional Methods
- AI Approaches

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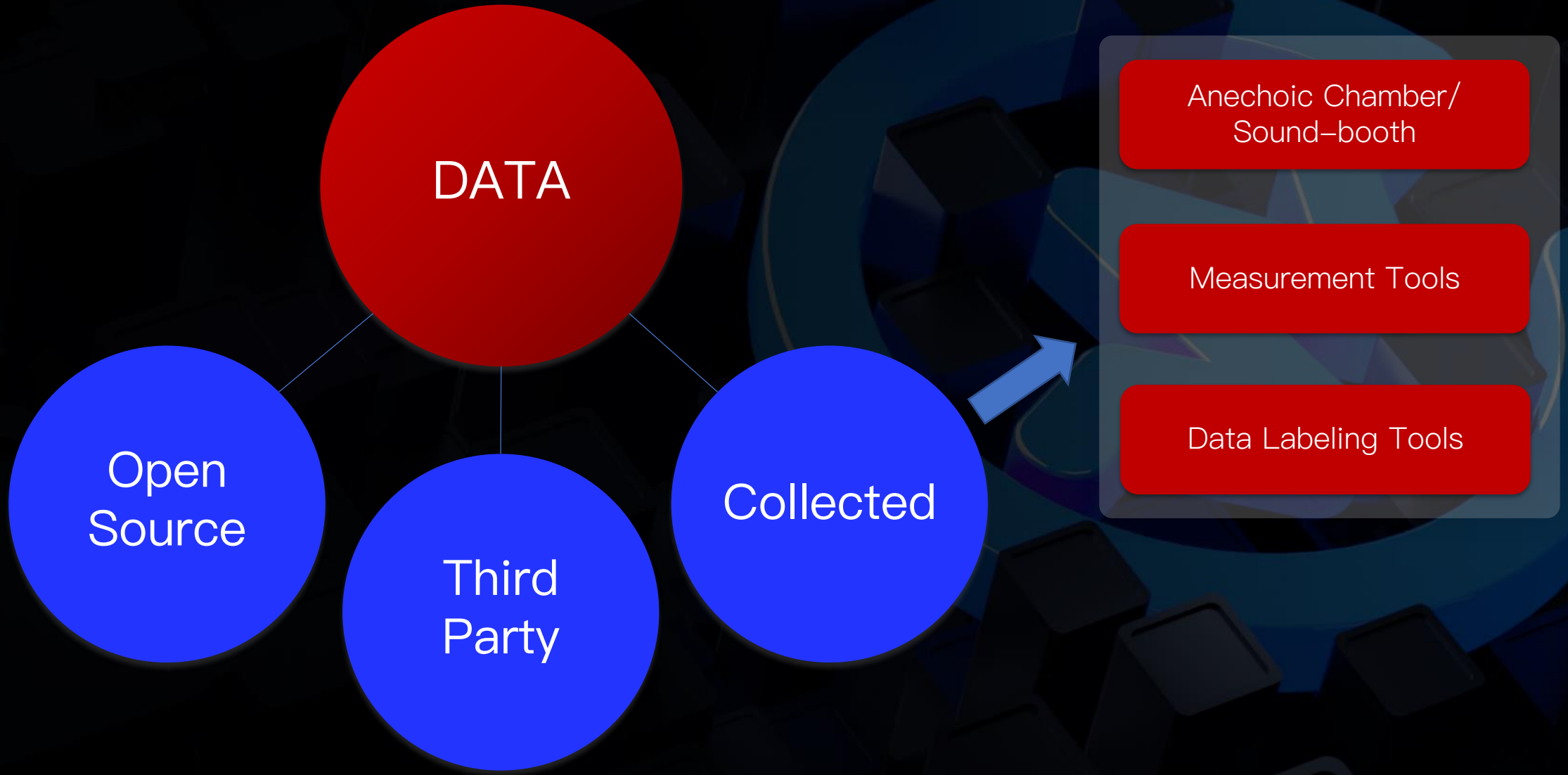
PART 3

未来

The Up-Comings

It’s all about DATA

DATA的重要性



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音频降噪
Noise Suppression

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视频超分
Video super resolution

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