Drone sighting temporarily shuts down runways at New York airport, **ABC News,** December 2024

4,500 Seconds: Small Data Training Approaches for Deep UAV Audio Classification
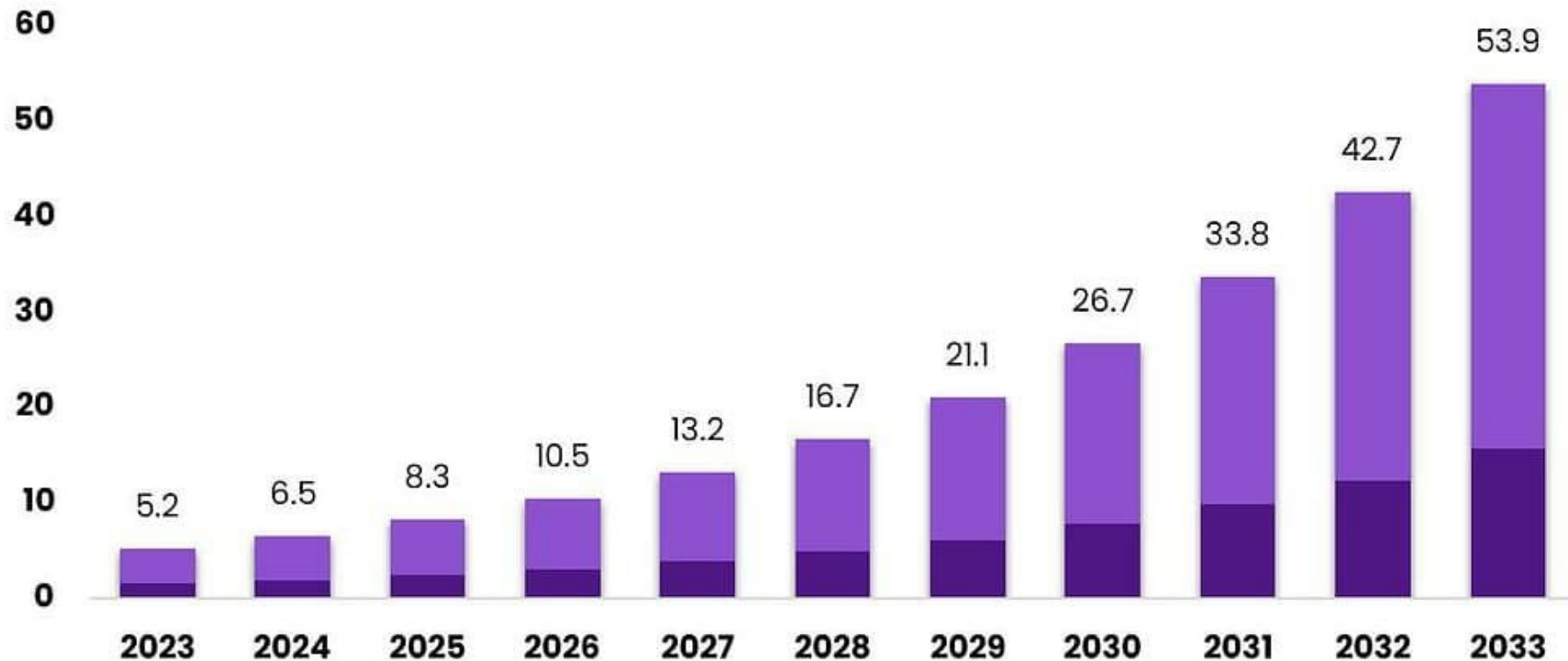
Andrew P. Berg
Dr. Qian Zhang
Dr. Mia Y. Wang

Outline

1. **Motivation**

2. **Methods**

3. **Dataset**

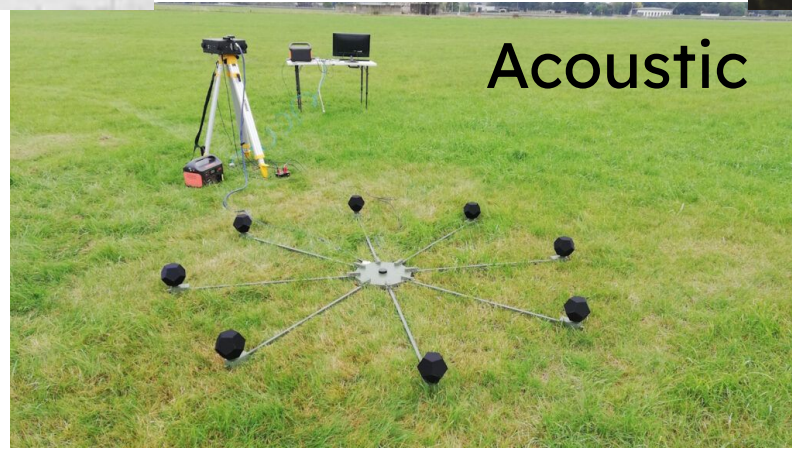4. **Proposed System**

Size, by Component, 2024-2033 (USD Billion)

Year	Value
2023	5.2
2024	6.5
2025	8.3
2026	10.5
2027	13.2
2028	16.7
2029	21.1
2030	26.7
2031	33.8
2032	42.7
2033	53.9

Drone Analytics Statistics 2024, Tajammul Pangarkar, market.us

Vision

Radar

Drone Threat

Acoustic

Key Terms

Waveform

Original
Augmented
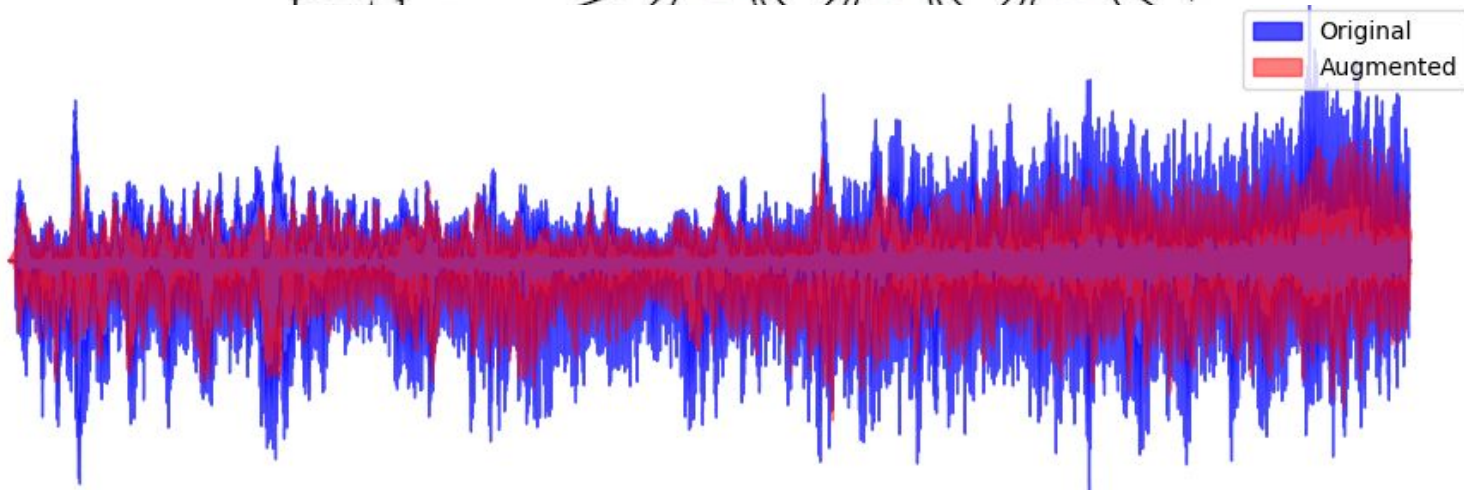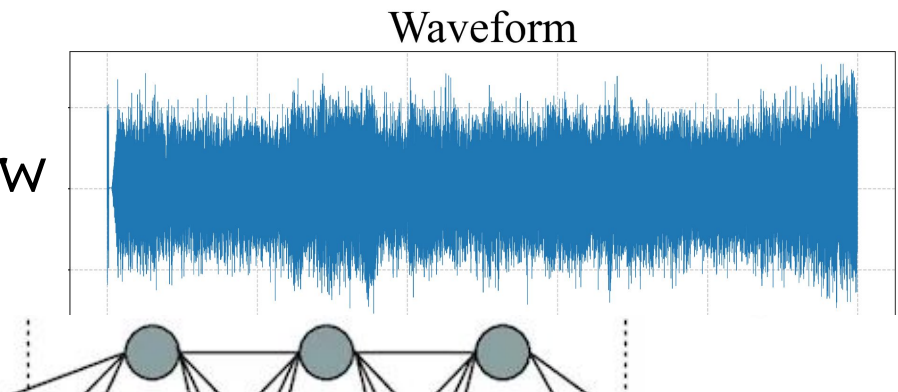
Number	Brand	Model
1	Autel	Evo 2
2	Self-Built	David Tricopter
3	DJI	Avata
4	DJI	FPV
5	DJI	Matrice 200
6	DJI	Mavic Air 2
7	DJI	Mavic Mini 1
8	DJI	Mavic Mini 2
9	DJI	Mavic 2 Pro

4,500 Seconds

- Data scarcity
- Noisy data
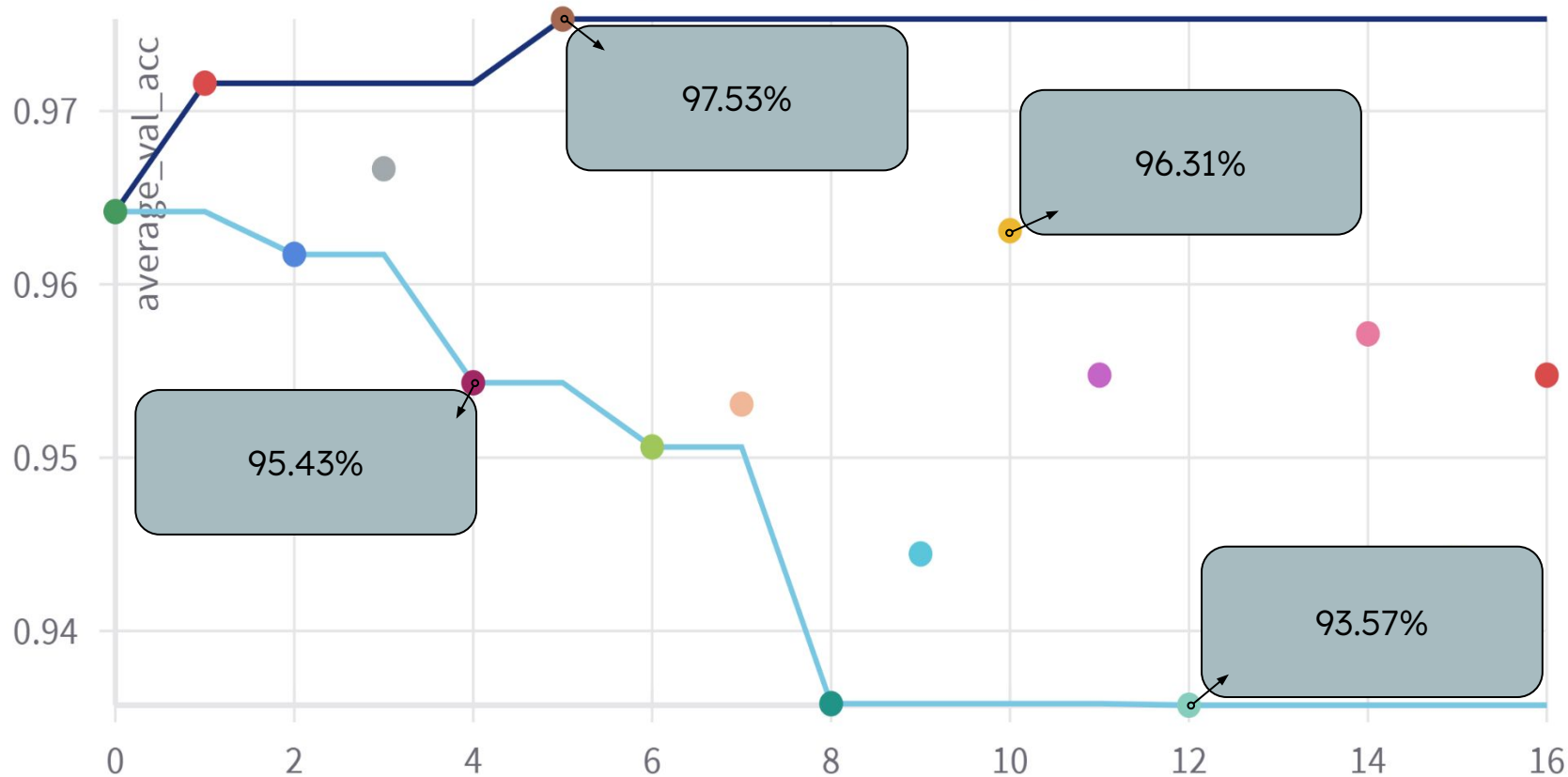- Includes custom drone

Proposed System

Feature Extraction	→	Model Training

Waveform

Original

Input layer
i

Hidden layers
h_1 h_2 h_n

Output layer
o

Input 1

Input 2

Input n

Output 1

Output n
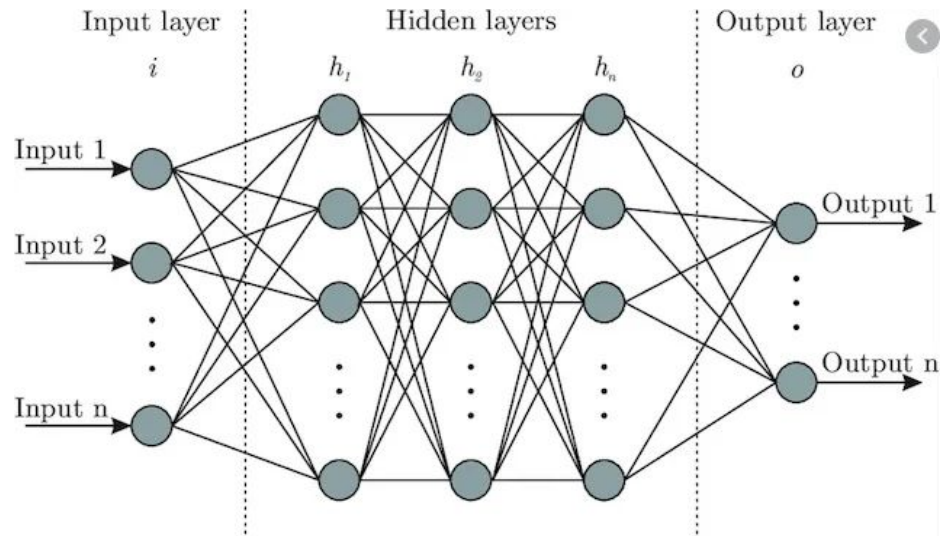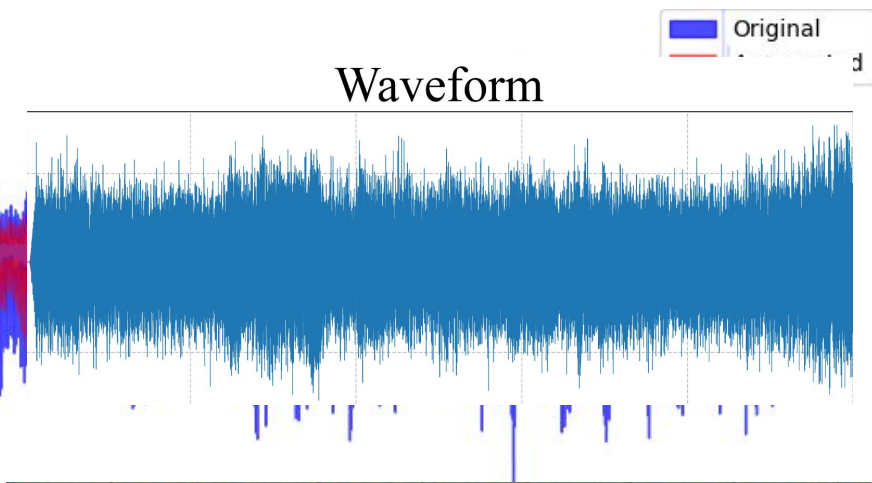
Initial Results

Conclusion

Motivation

Methods

Dataset

Proposed System

https://github.com/AndrewPBerg/UAV_Classification