# Forensic Examiner: Testbed for Benchmarking Digital Audio Forensic Algorithms

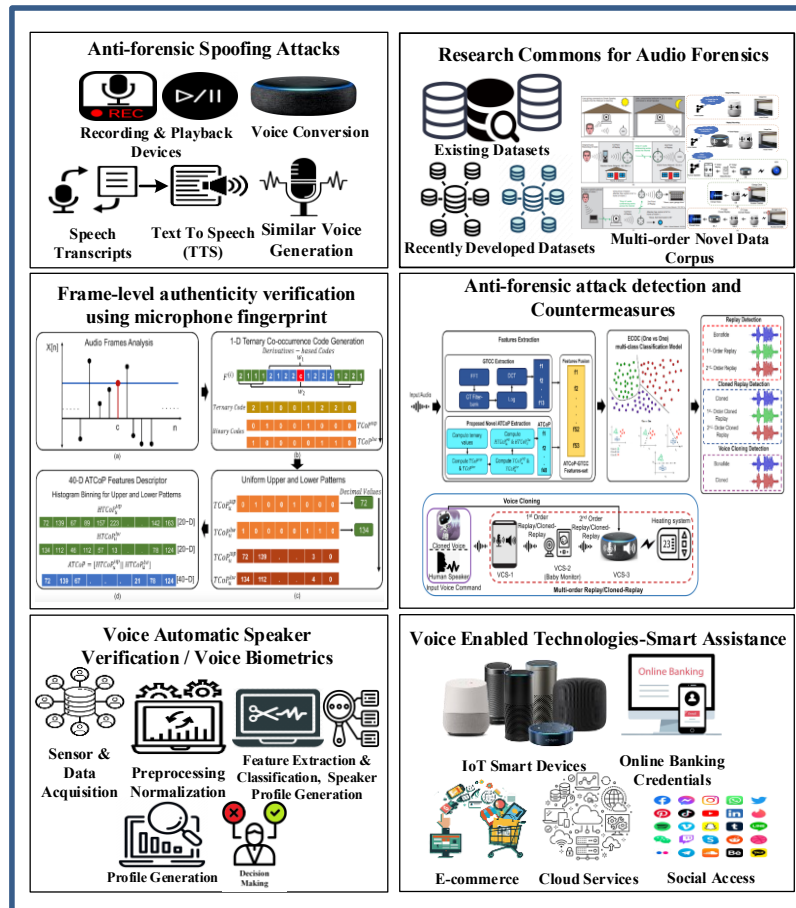**OAKLAND UNIVERSITY**

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## Challenge:

- Authenticity and integrity verification for digital audio.
- Powerful and sophisticated digital editing and manipulation tools (e.g., Audacity, and Audition, etc.) have made authentication and integrity verification more difficult.

## Solution:

- Development of attack-aware forgery detectors to mitigate the impact of voice attacks.
- Frame-level authenticity and integrity verification using microphonic Signatures and anti-forensic attack modeling, detection and counter measuring.



Anti-forensic Spoofing Attacks — Recording & Playback Devices, Voice Conversion, Speech Transcripts, Text To Speech (TTS), Similar Voice Generation

Research Commons for Audio Forensics — Existing Datasets, Recently Developed Datasets, Multi-order Novel Data Corpus

Frame-level authenticity verification using microphone fingerprint

Anti-forensic attack detection and Countermeasures

Voice Automatic Speaker Verification / Voice Biometrics — Sensor & Data Acquisition, Preprocessing Normalization, Feature Extraction & Classification, Speaker Profile Generation, Profile Generation, Decision Making

Voice Enabled Technologies-Smart Assistance — IoT Smart Devices, Online Banking Credentials, E-commerce, Cloud Services, Social Access

## Scientific Impact:

- This project provides a forum for the integrated study of theoretical and practical aspects of the next generation of digital technologies, with a focus on electrical and computer engineering, data analytics, mathematics, game theory, acoustics, and physics.

## Broader Impact and Broader Participation:

- The proposed research are envisioned in several areas including digital forensics, national security, law enforcement, cyberspace, and the entertainment industry.

## Project Info.

- **Award # CNS- 1816019 & CNS-1815724**
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