INTRODUCTION INTO FORENSIC AUDIO

Nowadays law enforcement and security other widely use open and covert sound recordings of speech communications for crime investigation or other security purposes. The records received by law enforcement agencies turns into court evidences. A branch of forensic science called Audio Forensics (Audio Phonetics, Audio Acoustics) processes such audio evidences.
Forensic audio is audio services for legal applications. Forensic audio breaks down into four main categories.

SPEECH ENHANCEMENT: Digital and analog processing to restore verbal clarity and make tapes easier to understand in a courtroom situation.

SPEECH DECODING: Methods that can be used to decode noisy speech and convert it to a reasonably accurate and complete written copy or transcript.

AUTHENTICITY: Aural, electronic and physical examination of an audio files to prove that it has not been tampered with, altered, or otherwise changed from its original state. Another common authenticity challenge is to determine whether a given recording was indeed made on a given machine.

VOICE IDENTIFICATION: Voice ID is the science that attempts to determine whether the recorded voice belongs to the suspicious speaker or not. Voice ID is based on the theory that voice of each person is as unique as fingerprintsor DNA and depends on the individual features of speech production organs, the shape of vocal tract, mouth cavity, pronunciation skills, regional accent etc.

COMPANY OVERVIEW

Speech Technology Center (STC) is the world's leading manufacturer of Audio Forensic Products.

STC employs 250 staff with more than 10% having a PhD, 5 audio forensic experts with more than 5 years of practical experience.

STC Audio Forensic Achievements include:

- 2001-2002 Submarine "Kursk" tapes investigation, restoration of more than 120 hours of information.
- 2003 participation in the investigation of the terrorist phone recordings at the Moscow Trade Center.
- Over 100 identification cases for different languages.
- Forensic Audio examinations for USA, Great Britain, Belgium, India, Columbia, Philippines and others.
- The first prize in audio enhancement contest organized by AES (Audio Engineering Society)

STC experts are members of Scientific Council of the Federal Forensic Expert Center of Russia, Russian Federation Justice Department Expert Group, Audio Engineering Society (AES), International Society of Air Safety Investigators (ISASI), International Speech Communication Association (ISCA), Institute of Electrical and Electronics Engineers (IEEE).

Conferences and Exhibitions European Network of Forensic Science Institutes Expert Working Group Forensic Speech and Audio Analysis (ENFSI FSAAWG), International Association for Forensic Phonetics and Acoustics (IAFPA), Intelligence Support Systems (ISS), Audio Engineering Society (AES), CeBIT, SpeechTek, Milipol, Interspeech, DSA, NATIA, Safety&Security Asia.

Expert audio analysis tool kit

IKAR Lab

Professional hardware and software set for advanced audio/speech signal analysis

The unique software and hardware set for comprehensive forensic analysis of analog and digital records.

Application

Analysis of audio information in specialized laboratories and forensic centers, research and educational institutions and companies.

Tasks solved with IKAR Lab:

- Speaker identification
- Authenticity analysis of analog or digital audio recordings
- Audio equipment testing and identification
- Analysis of noises, diagnosis of the acoustic environment and recording conditions
- Speech enhancement and audio restoration
- Text transcription of low quality recordings

IKAR-Lab includes:

- SIS 7.x - sound analysis and editing software application
- Sound Cleaner Premium - professional real-time noise suppression and speech enhancement software
- EdiTracker - software module for authenticity analysis of audio recording
- Transcriber Caesar - software for fast and convenient speech transcription
- STC-H246 - external measuring input/output device
- Professional microphone and headphones