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Audio Forensics: Practices and Challenges

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WORKSHOP 1

Frontiers of Forensic Audio Investigation

Chair: *Gordon Reid, CEDAR Audio Ltd., UK; Panelists:* *Anil Alexander, Griff Comm Ltd., Oxford, UK; Alan French, FTS, UK; Phil Manchester, West Midlands Police, UK*

Session 1: Phil Manchester, “Critical Listening and Region Specific Filtering”

Session 2: Anil Alexander, “Audio Windowing: Finding Whom or What You Want to Hear from a Recording”

Session 3: Alan French, “Time, Tide, and Technological Changes Wait for No Person”

Session 4: Phil Manchester, “It Can All Go Wrong, Even After Successful Speech Enhancement”

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University, Canberra, Australia; School of Electrical Engineering and Telecommunications, University of New South Wales, Sydney, Australia

This tutorial provides an introduction to the forensic comparison of audio recordings in the likelihood-ratio framework. Examples are drawn from audio recordings of human voices, but the principles and techniques can be applied to audio recordings of any source. The tutorial covers the topics essential for an understanding of the likelihood-ratio framework and its application to the forensic comparison of audio recordings including: What is a forensic likelihood ratio? Why is the likelihood-ratio framework the logically correct way to evaluate forensic evidence? How is a forensic likelihood ratio calculated? How is the validity and reliability of the likelihood-ratio output of a forensic-comparison system evaluated? What factors affect the validity and reliability of a forensic-comparison system and how might validity and reliability be improved?

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This session will emphasize some of the latest developments in forensic authentication of digital recordings, such as Electric Network Frequency (ENF) and lossy compression analysis. It will also present the most common source or errors, the present technological limits, and the need for quality assurance. The presentation will be interactive, in a lecture-discussion format with images, case studies, and relevant research results.

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Presenters: Daid Hallimore, Houston Police Department, Houston, TX, USA, Scientific Working Group for Digital Evidence, USA; Michael Piper, U.S. Secret Service, Washington, D.C., USA, Scientific Working Group for Digital Evidence, USA; John Powell, Los Angeles Sheriff's Department, CA, USA, Scientific Working Group for Digital Evidence, USA

The Scientific Working Group on Digital Evidence (SWGDE) recently published a position paper on the U.S. National Research Council's February 18, 2009 report to Congress entitled "Strengthening Forensic Science in the United States: A Path Forward" in which the Council set forth a broad overview of the state of forensic science in the United States along with several recommendations for improvement. An overview of The Report, SWGDE's response, and its Audio Committee's current projects will be presented. In each of the topics we intend to touch on (forensic audio best practices, minimum standards, accreditation/certification, training, ENF, etc.), there will be many points suitable for audience input and discussion. One of the key purposes of this presentation is to solicit input from the forensic audio community for the work we are undertaking at SWGDE.

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