OSAC RESEARCH NEEDS ASSESSMENT FORM

Title of research need: Audio enhancement effects on Speaker Recognition

Describe the need: Study the effect of audio enhancement techniques on the current generation of automated speaker recognition techniques

Keyword(s): automated speaker recognition, ASR, "audio enhancement"

Submitting subcommittee(s): Speaker Recognition **Date Approved:** September 11, 2024

Background Information:

1. Does this research need address a gap(s) in a current or planned standard? (ex.: Field identification system for on scene opioid detection and confirmation)

Yes - this addresses multiple current and planned SR standards/guidelines, including our Audio Collection Standard, since it will study the effects of audio enhancement performed on speech both during collection by recording devices and post-recording.

2. Are you aware of any ongoing research that may address this research need that has not yet been published (e.g., research presented in conference proceedings, studies that you or a colleague have participated in but have yet to be published)?

No.

3. Key bibliographic references relating to this research need: (ex.: Toll, L., Standifer, K. M., Massotte, D., eds. (2019). Current Topics in Opioid Research. Lausanne: Frontiers Media SA. doi: 10.3389/978-2-88963-180-3)

4. Review the annual operational/research needs published by the National Institute of Justice (NIJ) at https://nij.ojp.gov/topics/articles/forensic-science-research-and-development-technology-working-group-operational#latest? Is your research need identified by NIJ?

No.

5. In what ways would the research results improve current laboratory capabilities?

This research would show how existing audio enhancement techniques (including machine learning-based ones) affect the results – positively, negatively, or negligibly - of the newest generation of speaker recognition algorithms (which are also machine learning-based).

6. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

This research would indicate whether or not audio enhancement techniques, which generally are designed to make audio more acceptable to human hearing, positively, negatively, or negligibly affect the results from modern speaker recognition systems.

7. In what ways would the research results improve services to the criminal justice system?

This research would inform labs on the use or rejection of audio enhancement during SR analyses, providing more defensible SR results for court.

8. Status assessment (I, II, III, or IV):   I

	Major gap in current knowledge	Minor gap in current knowledge
No or limited current research is being conducted	I	III
Existing current research is being conducted	II	IV

This research need has been identified by one or more subcommittees of OSAC and is being provided as an informational resource to the community.