

OSAC RESEARCH NEEDS ASSESSMENT FORM



Title of research need: Synthetic Speech Detection

Describe the need: Development of reliable detectors for synthetic/deepfake speech in forensically realistic scenarios.

Keyword(s): Forensic speaker recognition synthetic deepfake GANS DNN

Submitting subcommittee(s): Speaker Recognition **Date Approved:** February 26, 2021

(If SAC review identifies additional subcommittees, add them to the box above.)

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 – The results of realistic and targeted (i.e. reproducing a specific speaker) synthetic speech generation techniques (a.k.a. deepfakes) can be used to undermine the believability of forensic speaker recognition (FSR) analysis results, possibly endangering the development and acceptance of future standards. The development of reliable detectors for synthetic/deepfake speech in forensically realistic scenarios will help overcome this danger.

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)?

Research is currently ongoing in this area, most notably the DARPA SemaFor program. This program is early in its research cycle and any current results have not yet been published.

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)

TBD

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?

Development of a reliable deepfake detection capability would allow FSR analysts to identify fake speech before spending additional time and resources analyzing it.

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

This research would help determine identifiable technical differences between deepfake speech and real speech in forensically realistic scenarios.

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

The research would help verify whether evidentiary speech samples were real or synthetic and identify situations when this cannot be reliably determined.

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

II

	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.