

ASVspoof: World-leading Research Institutes and IT Companies are Joining Forces to Combat Voice Spoofs

Fake data is a key concern in today's society, and one that is continually evolving in unpredictable ways. Besides fake news, multimedia data such as video, image and voice data has become increasingly easier to generate or manipulate, opening up potential for its misuse, especially in fields of information security and user privacy. In 2018, so-called DeepFakes - realistic-looking, yet fake videos portraying celebrities - drew particular attention. This work showed how deep learning technologies can be used to generate illicit videos or audio recordings of specific target persons. The threat is not confined to the media, however. Anyone who uses biometrics technology of any kind, including voice, should also be concerned.

The Automatic Speaker Verification Spoofing and Countermeasures (ASVspoof) initiative was formed following the first special session on spoofing and countermeasures held at the community's flagship INTERSPEECH 2013 conference in Lyon, France. Pooling efforts and expertise, the latest edition of the now bi-annual challenge, **ASVspoof 2019** (www.asvspoof.org), is currently underway, representing the largest and most comprehensive evaluation of spoofing and countermeasures to date.

The initiative's overriding objectives are to promote the development of reliable countermeasures that are able to distinguish between bona fide/genuine and spoofed speech. It aims specifically to encourage the design of generalized countermeasures, i.e., countermeasures that perform well when faced with spoofing attacks of unpredictable nature. As with the preceding 2015 and 2017 editions, the 2019 challenge dataset contains training/development and evaluation partitions generated with different technologies, i.e. text-to-speech (TTS) and voice conversion (VC) algorithms, and replay scenarios.

It is important to understand that, in future, we may no longer be able to judge by ourselves whether what we are watching or what we are listening to is genuine or not. Society is in urgent need of new tools, perhaps similar to today's anti-virus systems, that will alert us to fake media, i.e. artificially generated or manipulated video or voice data.

Used in smart home assistants, audio books, healthcare, public announcement systems and a plethora of other applications, artificial intelligence and machine learning technology is intended to facilitate many routine tasks of daily life. Google's 2016 introduction of 'WaveNet' technology showed the ease by which speech synthesis solutions can generate natural-sounding speech - the widely reported case of [Google's hair salon appointment booking](#) is probably still fresh in everyone's mind. But most of us are unable to distinguish fake speech from genuine speech produced by a human. Apart from the very real risk of mass manipulation via fake videos featuring politicians or celebrities, this also presents major security risks, for instance if someone's voice and speech pattern are imitated to fool a telephone banking service into believing the caller is the bank account holder. The ability of TTS and VC to put words in someone else's mouth or to clone someone's voice, raises obvious concerns.

The ASVspooF initiative is today one of the most successful of all anti-spoofing initiatives within the entire biometrics community. Almost 150 registrations from around the world have been received at the time of writing, including both academic and industrial participation from every corner of the globe.

Planning for ASVspooF 2019 started almost one year ago. While ASVspooF remains **mostly an academically-led initiative**, co-organised by EURECOM and INRIA in France, the National Institute of Informatics (NII) and NEC in Japan, the University of Eastern Finland and the University of Edinburgh in the UK, **the 2019 edition involves substantial data contributions from an impressive array of external partners from both academia and industry**: Aalto University (Finland), Academia Sinica (Taiwan), the Adapt Centre (Ireland), DFKI (Germany), HOYA (Japan), iFlytek (China), Google (UK), Nagoya University (Japan), Saarland University (Germany), Trinity College Dublin (Ireland), NTT Communication Science Laboratories (Japan), the Laboratoire Informatique d'Avignon (France) and the University of Science and Technology of China.

What the 2019 evaluation will tell us, we do not know - the results of ASVspooF 2019 will be made public at this year's INTERSPEECH conference being held in Graz, Austria in September.

Organising committee

Junichi Yamagishi, National Institute of Informatics, JAPAN / University of Edinburgh, UK

Massimiliano Todisco, EURECOM, FRANCE

Md Sahidullah, Inria, FRANCE

Héctor Delgado, EURECOM, FRANCE

Xin Wang, National Institute of Informatics, JAPAN

Nicholas Evans, EURECOM, FRANCE

Tomi Kinnunen, University of Eastern Finland, FINLAND

Kong Aik Lee, NEC Corporation, JAPAN

Ville Vestman, University of Eastern Finland, FINLAND

The initiative is supported by the Academy of Finland, the French national research funding agency (ANR) and the Japan Science and Technology Agency.

For further information, contact the ASVspooF 2019 organising committee at info@asvspooF.org.

In the press:

Press alerts from the organising committee:

ASVspoof - world-leading research institutes and IT companies are joining forces to combat voice spoofs

<https://www.uef.fi/-/tutkimuslaitokset-suuret-it-alan-yritykset-ja-tutkijat-yhdistavat-voimansa-seuraavan-sukupolven-puhehuijausten-tunnistamiseksi>

<https://www.eurecom.fr/sites/www.eurecom.fr/files/documents/1-Eurecom/Media/Communiqu%E9%20de%20presse/ASVSpooF2019%20Final.pdf>

Press alerts from data contributors:

Advancing research on fake audio detection

<https://blog.google/outreach-initiatives/google-news-initiative/advancing-research-fake-audio-detection/>

Others:

Google releases synthetic speech database to help 'deep fake' audio detection research

<https://9to5google.com/2019/01/31/google-deep-fake-audio-detection/>

Google leads fight against fake audio

<https://www.abc.org/tech-advances/google-leads-fight-against-fake-audio/3560.article>

Google Launches Database to Prevent AI Manipulation by Fake Audio

<https://www.digitalinformationworld.com/2019/02/google-is-working-to-help-ai-systems-determine-if-an-audio-recording-is-real.html>

Google releases dataset to help AI systems spot fake audio recordings

<https://venturebeat.com/2019/01/31/google-releases-dataset-to-help-ai-systems-determine-if-an-audio-recording-is-real/>

Google News Initiative partners with Google AI to help 'deep fake' audio detection research

<https://hub.packtpub.com/google-news-initiative-partners-with-google-ai-to-help-deep-fake-audio-detection-research/>

GOOGLE LAUNCHES DATABASE TO PREVENT AI MANIPULATION BY FAKE AUDIO

<https://insighttwist.com/google-launches-database-to-prevent-ai-manipulation-by-fake-audio/>

Google Touts Progress in Detecting Fake Audio

<https://www.theinformation.com/briefings/873a7d>

Google releases dataset to assist AI techniques spot pretend audio recordings

<http://www.financesmarket.com/google-releases-dataset-to-assist-ai-techniques-spot-pretend-audio-recordings.html>

Google is committed to research for the detection of fake speech (translated)

<https://androidworld.nl/nieuws/google-detectie-nepstemgeluid/>

Google wants to fight audio "deepfakes" (translated)

<https://www.nextinpact.com/brief/google-veut-lutter-contre-des---deepfakes---audio-7588.htm>

Google released dataset that teaches AI to recognize fake audio recordings (translated)

<https://dev.by/news/google-vypustila-dataset-dlya-trenirovki-ii-raspoznavat-falshivye-audiozapisi>

Google adds efforts in the effective detection of false audios (translated)

<http://eju.tv/2019/02/google-suma-esfuerzos-en-la-deteccion-eficaz-de-los-audios-falsos/>

Threat of deepfakes draws legislator and biometrics industry attention

<https://www.biometricupdate.com/201902/threat-of-deepfakes-draws-legislator-and-biometrics-industry-attention>

Google collected datasets of synthesized voices for the speaker verification contest (translated)

<https://neurohive.io/ru/novosti/asvspoof2019-google/>

Google wants to fight against fake or diverted audio

<https://blog.internet-formation.fr/2019/02/google-veut-lutter-contre-laudio-factice-ou-detourne/>