The Vendors that Matter Series

IDR&D

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Company Background: ID R&D

Founded: 2016

Specialty: Biometrics for Secure Commerce, Antifraud

Distinction: Concentration on Zero Effort Authentication overcomes major pain point for conversational commerce. Additionally, ID R&D's investment in passive liveness detection and anti-spoofing fills a market void for strong counter-measures against "deepfakes" as well as solves a need for short-utterance authentication for #VoiceFirst Services.

The Challenges of Voice Authentication and Liveness Detection

August 2019 will go down as the month when voice-based deepfake technology was used to dupe the CFO of an unnamed British energy company into transferring roughly $240,000 into the bank account of a bogus Hungarian supplier. According to press accounts, an individual using voice-synthesis technology over the phone to impersonate the head of its German parent company ordered the transfer while conveying a level of urgency. An email quickly followed to confirm the instructions and the rest, as they say, is history.

This sort of attack has been anticipated since the term "Deepfake" was coined (as a screenname on Reddit, of course) in 2017. Its originator saw it as a portmanteau of "Deep Learning" and "Fake News". The meme went viral, primarily with videos of celebrities and politicians. Amateur film makers with modest tools could insert Nicolas Cage into an unlimited number of movies or put Steve Buscemi's face over Jennifer Lawrence's during her Emmy acceptance speech.

Yet a more ominous side was on display when Deepfake technology was used to put Jordan Peele's words into Barack Obama's mouth. Most famously, having the former president say "Our enemies can make it look like anyone is saying anything at any point in time." So true. And, as the recent incident with the UK energy company highlights, what's true for high-definition video is equally true in the voice world.

Deepfake Voice Fraud is Totally Preventable

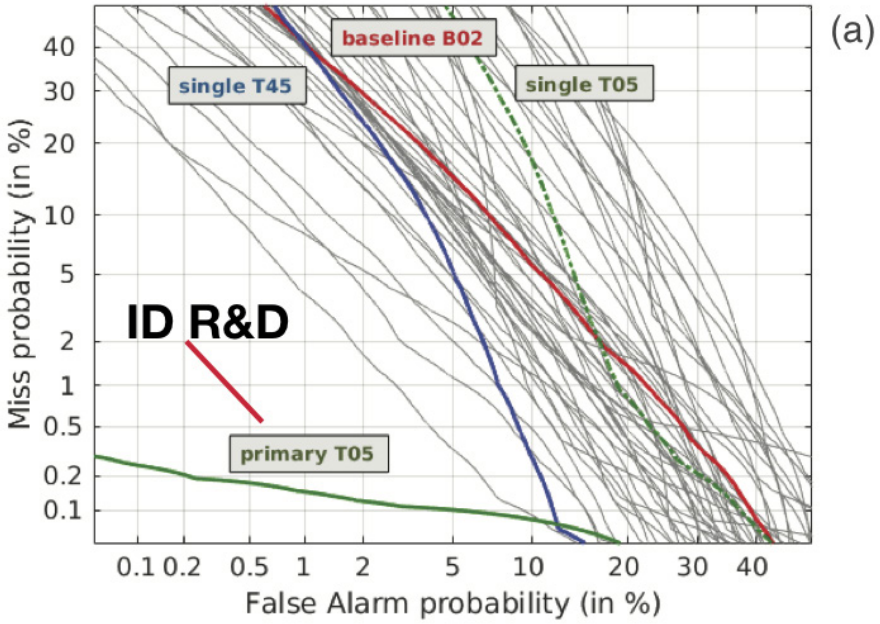
The high-tech battle against fraudsters has always been a constantly escalating game of cat and mouse. Every new technology has as many nefarious use cases as it does mind-boggling positive ones. Deepfake videos turn to the same computer-generated voice and video that are deployed to make today's blockbuster superhero movies. The voice synthesis resources that spoofed the energy company CEO's voice is finding increasing use by legitimate brands who want to incorporate the distinctive voice of a particular spokesperson without taking the studio time or bearing the cost of recording weeks' worth of spoken words.

Fortunately, accurate voice anti-spoofing is a specialty of ID R&D, a technology firm that develops breakthrough products and services that support biometric-based authentication and fraud reduction. Distinguishing a live voice from recordings or synthesis is one of the firm's long-time specialities. It is an increasingly important feature as more households install "smart" speakers that wake-up and respond when they perceive that their name is spoken. It's been documented that clever engineers at Amazon used a technology called "acoustic

fingerprinting" to identify ads in which the word "Alexa" is spoken and provide inaudible instructions to the speakers that prevented them from waking up during the course of a commercial.

Liveness detection is a similar application that is much more complex. Over the past 3 years, ID R&D has demonstrably met the challenge of detecting efforts to spoof a voice electronically and to trigger countermeasures to prevent fraud. Results depicted in the figure below.

Figure 1: Test Results for Liveness Testing



The faux CEO of the German energy company would not have stood a chance.

Bigger Picture of ID R&D

Anti-Spoofing and Liveness Detection, while clearly growing in importance, are only two of the applications and use cases supported by ID R&D's core technologies. Core to its vision is the concept of "Zero Effort Authentication" which arose from the demand from conversational service providers who observed that the classic methods for authentication – passwords or challenge questions – have become too cumbersome and time-consuming for today's impatient and fast-moving customers or clients. When it comes to authentication, ID R&D reasons, "The best UI is no UI".

The company has leveraged its years of experience in voice biometrics research with the latest techniques of machine learning and artificial intelligence to support both text-dependent and text-independent authentication with industry-leading performance, notably using unique modified x-vectors for dramatic improvements in accuracy, faster speed, and smaller biometric templates. It also has two flavors of liveness detection. In addition to the voice application described above, the company has been developing and productizing a unique way to detect "facial liveness" that enables liveness in desktop browsers, mobile browsers, and native applications.

A third area of development surrounds behavioral authentication, specifically keystroke dynamics and the ability to generate a confidence score that an individual is who he or she claims to be based on how they type or swipe a keyboard or touchscreen on a device. Collectively its portfolio of patents have given rise to products that answer two fundamental questions:

- "Is this the right person?" (ID, authentication, access management), and
- "Is this a person?" (liveness detection, anti-spoofing)

Both are clearly relevant when fighting fraud and preventing theft of money, services and Identity.

Market Impact: High

ID R&D provides several technological solutions that will accelerate acceptance and adoption of Conversational Commerce. Intelligent Authentication is evolving hand-in-hand with Intelligent Assistance. In doing so, it has exposed the need for solutions to two overarching challenges:

- Streamlined Authentication: recognizing that "security is the new CX", ID R&D has made significant investment in "Zero Effort Authentication", in effect carrying out identity assertion and validating part of a spoken conversation.

- Strong Auth from Short Utterances: simplifying both personalization and authentication through the growing installed base of smart endpoints, including home speakers, automobile entertainment systems, public kiosks and nextgen ATMs.

Simple user authentication and verification are long-standing impediments to viral growth, acceptance and adopting of conversational commerce platforms and services. ID R&D's core technology and solution sets tackle these challenges and pave the way for rapid growth of services that rely on rapid recognition of fraudsters and bad actors while speeding up establishment of trusted communications links between brands and their customers.

About Opus Research

Opus Research is a diversified advisory and analysis firm providing critical insight on software and services that support multimodal customer care. Opus Research is focused on "Conversational Commerce," the merging of intelligent assistant technologies, conversational intelligence, intelligent authentication, enterprise collaboration and digital commerce.

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