DHS
SUCCESS STORIES

Illuma Labs

TOTAL DHS SBIR INVESTMENT
$1.9M

IMPACT
Millions of dollars saved in operating costs; heightened security against fraudsters

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Each year, Americans lose an estimated $10 billion through phone scams, as reported in research from TrueCaller. Whether scammers claim they are from the Internal Revenue Service, a credit card company, or a host of other hypothetical entities, nearly one in six Americans reported losing money to phone scams in 2017, an almost 70% increase over the previous year. Scammers target individual consumers as well as large financial institutions, who have a growing problem with criminals stealing identities to take over legitimate customers' accounts and commit fraud. With help from the Department of Homeland Security (DHS) Small Business Innovation Research (SBIR) program, Illuma Labs has developed a tool to outmaneuver these fraudsters.

Dr. Milind Borkar, Founder and CEO of Illuma labs, walks through a common scam scenario, "Let's look at the normal process a person goes through when calling a bank or other financial services institution. The customer service representative generally asks a series of security questions to ensure the caller confirms their identity, a process that typically takes anywhere between 30 and 90 seconds.

"When a customer service representative asks these questions, also known as Knowledge Based Authentication, a scammer has a 60 percent chance of getting them right." Borkar explains, "Personal records can be purchased cheaply on the dark web, and a determined attacker is very likely to have all your personal information printed out and ready for an account takeover. On the contrary, one out of three legitimate customers forget answers to their personal questions, causing them to fail authentication and suffer denial of service. Over $12 billion a year are spent on call center operating costs. The Knowledge Based Authentication process sets a low bar for security and even lower customer satisfaction.

Factor in the ubiquity of Voice over Internet Protocol phones and smartphone apps that allow anyone to custom-tailor caller ID numbers, and scammers have powerful tools at their fingertips to mastermind elaborate scams."

Illuma Labs developed an innovative solution to authenticate callers called Illuma Shield™, an audio authentication technology that secures voice communications by verifying the identities of inbound callers in real-time. The technology leverages state-of-the-art signal processing, machine learning and artificial intelligence technologies to analyze the unique audio characteristics exhibited by the caller's voice and calling device. This results in much higher authentication accuracy achieved in a fraction of the time required by the traditional Q&A with a customer service representative, and the frictionless process improves customer satisfaction dramatically. For the institution deploying Illuma Shield™, this equates to millions of dollars in savings in operating costs, heightened security against fraudsters and social engineers, and a smooth user experience for customers as well as the customer service representative.

Through the DHS SBIR program, administered by the DHS Science and Technology (S&T) Directorate, Illuma Labs received a Phase I contract to develop the intellectual property. During this time, Borkar met with his current business partner and Co-Founder, Jeremy Whittington. A subsequent Phase II SBIR contract funded the recruitment of a small team of highly skilled software developers whom Whittington led towards the development of a pilotable prototype. Soon, pilots were launched with multiple customers, including a large Fortune 100 company. Initial deployments have been focused on inbound caller authentication for call centers, particularly in banking, insurance, benefits, telephone companies, and government call centers. Looking to the future, Borkar sees broader applicability with Illuma Shield™ for user identification across a variety of voice-enabled applications such as smart home products, digital assistants and vehicle infotainment.

"I can't express how fundamentally valuable it has been to work with the DHS SBIR program," he said. "By receiving funding so quickly, and faster than a traditional government contracting method, we have been able to put our prototype into the hands of customers, which would never have happened without support from the program."

As well as providing funding to develop the core technology, DHS S&T has supported Illuma Labs in multiple ways to help maximize the commercialization potential of Illuma Shield™, including customer discovery and market validation programs like the DHS-National Science Foundation I-Corps, the Commercialization Assistance Program, the Commercialization Workshops, and opportunities to pitch the technology at prestigious cybersecurity events like the RSA conference and the S&T Cybersecurity and Innovation Showcase.

"I encourage other small businesses to learn more about the DHS SBIR program, which has been instrumental in helping us develop this technology and growing our company. Illuma Labs would not be where we are today if not for the support from DHS S&T," said Borkar.