

# Technology to detect Alzheimer's takes SXSW prize

March 13 2013, by Robert Macpherson

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File photo shows a woman suffering from Alzheimer's disease holding the hand of a relative at a retirement home in France. Technology capable of diagnosing Alzheimer's disease before its symptoms appear won a coveted honor for innovation at the South by Southwest festival.

Technology capable of diagnosing Alzheimer's disease long before its symptoms appear won a coveted honor for innovation at the South by Southwest (SXSW) festival.

Neurotrack, which uses eye tracking to achieve a claimed 100 percent success rate, clinched the health technologies category in the SXSW Accelerator competition Tuesday as the festival's interactive segment drew to a close.

"It's a computer-based visual [cognitive test](#) that is able to diagnose Alzheimer's disease six years before symptoms appear," said Elli Kaplan, [chief executive officer](#) of the Richmond, Virginia-based upstart.

"Today the only way to diagnose Alzheimer's is once full symptoms are in existence," Kaplan told AFP, "but that's years after [irreparable damage](#) has already taken place."

Initial users of Neurotrack will be pharmaceutical manufacturers to help them develop drugs to prevent, or at least slow the progression of, the most common form of dementia, she said.


But in time, Kaplan added, it will be rolled out to doctor's offices and research hospitals—and potentially, a smartphone and tablet app that individuals can use as well.

## Alzheimer's disease

- Causes memory loss, problems with thinking and behaviour
- Develops slowly, but ultimately it is fatal and there is no cure
- Accounts for some two thirds of dementia cases

**Alzheimer's brain**

- The disease disrupts the electrical signals and the activity of neurotransmitters
- Neurons and synapses are destroyed, the brain shrinks



The cortex shrivels up  
Fluid-filled spaces grow

**Stages**

**EARLY**  
Mild effects on learning and memory, changes may begin 20 years or more before diagnosis

**MIDDLE**  
Moderate impairment of memory, thinking and planning, can last 2 - 10 years

**LATE**  
Severe impairment of speaking and understanding, may not recognise family and friends, can last 1- 5 years


Naturally-occurring **beta-amyloids** clump together and form into abnormal **plaques**

Twisted strands of protein called **tangles** appear

*Scientists disagree about the role of plaques and tangles*

- Tangles disrupt a neuron's transport system that shifts nutrients, cell parts and other supplies
- Plaques may block cell-to-cell signaling at synapses
- Plaques may also activate immune system cells that trigger inflammation and devour disabled cells

Source: World Alzheimer Report 2011/Alz.org



Graphic on Alzheimer's disease. Technology capable of diagnosing the disease long before its symptoms appear has won a coveted honor for innovation at theSXSW festival in the US.

SXSW Accelerator is a showcase for up-and-coming news, social, mobile, web, entertainment, health and music technologies. One of its 2010 winners, the voice recognition software Siri, now is standard equipment in Apple iPhones.

Other winners Tuesday included the mobile advocacy app Phone2Action; Plotter, a social network for maps; mobile typing assistant Syntellia; Wanderu, a website for young budget travellers; and MakieLab, a [3D printing](#) toy and game service.

The Accelerator winner for music technologies will be announced later this week, as the music portion of SXSW—with more than 1,000 bands playing live around the Texas state capital—kicks off and the film segment continues.

Kaplan, a Harvard Business School alumna and mother-of-two who lost two grandparents to Alzheimer's, said Neurotrack was developed in collaboration with Emory University in Atlanta, Georgia and a crack team of neuroscientists.

It comes in two versions, one using an infrared camera and the other a simple computer mouse, and challenges the subject to compare images—some new, some not—that appear briefly on a screen.

"By monitoring the way a person moves their eyes, and watching how they view novel images versus familiar images, we're able to detect perturbations that exist on the hippocampus," Kaplan said, referring to the part of the brain that handles memory.

"Every human being has an instinctive preference for novelty and that's one of the things that we are testing," she added.



Mayer Hawthorne performs at the SXSW festival in Austin, Texas on March 12, 2013. The music portion of SXSW—with more than 1,000 bands playing live around the Texas state capital—kicked off on Tuesday.

The hippocampus is also the first to be impacted by Alzheimer's, which is thought to affect as many as 5.1 million people in the United States alone.

Neurotrack was incorporated as a company last year, but work on the project dates back at least 20 years.

Kaplan said the claim of 100 percent accuracy is based on a large study, based at Emory University, that followed the progress of participants—some of whom developed the disease—over an extended period.

The study was supported by the National Institutes of Health, a US

government agency.

Neurotrack's intention is to market a version for physicians that would cost somewhere between \$300 and \$1,000, which compares favorably to non-medical productivity software.

As for a version for home use, Kaplan said: "We're actually working on this."

"We are not very far away from a technology that will work on your (mobile) phone or on your tablet," with the results going directly to a doctor who would be best placed to reveal them face-to-face.

Kaplan added: "In 10 years, our hope is that there will be a pill that you can take (to combat Alzheimer's). You'd simply go in for an annual screening test—and if you get the news that you are on a trajectory for Alzheimer's, you'd be able to do something about it."

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Citation: Technology to detect Alzheimer's takes SXSW prize (2013, March 13) retrieved 23 April 2024 from <https://medicalxpress.com/news/2013-03-technology-alzheimer-sxsw-prize.html>

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