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EyesOnALZ

A Citizen Science project to fight Alzheimer's

What

EyesOnALZ* is a citizen science project, which is crowdsourcing Alzheimer's disease research for the Schaffer – Nishimura Lab at Cornell University. In October 2016 EyesOnALZ released its first citizen science game – Stall Catchers – which helps to open up Alzheimer's research to the public.

* formerly known as WeCureALZ

How

Our citizen science games are being built on two existing platforms, stardust@home and EyeWire. We are using data acquired by researchers at the Schaffer – Nishimura Lab and feeding them into the game platforms for crowdsourcing.

This work is supported by the BrightFocus Foundation and its generous donors.

Who

EyesOnALZ project is led by the Human Computation Institute, and includes collaborators from The Schaffer-Nishimura Lab at Cornell University, Sebastian Seung's Laboratory at Princeton University, the stardust@home team at U.C. Berkeley, SciStarter.com, and WiredDifferently.

The Stall Catchers game

Stall Catchers is the first of two online games being developed at EyesOnALZ. The game will allow participants to look at movies of real blood vessels in mouse brains, and search for "stalls" – clogged capillaries where blood is no longer flowing. By "catching stalls" participants will be able to build up their score, level up, compete in the game leaderboard, and receive digital badges for their various achievements.

Everyone who participates will contribute to Alzheimer's research at the Schaffer-Nishimura Laboratory (Cornell Dept. of Biomedical Engineering), and help speed up the search for an Alzheimer's cure by orders of magnitude.

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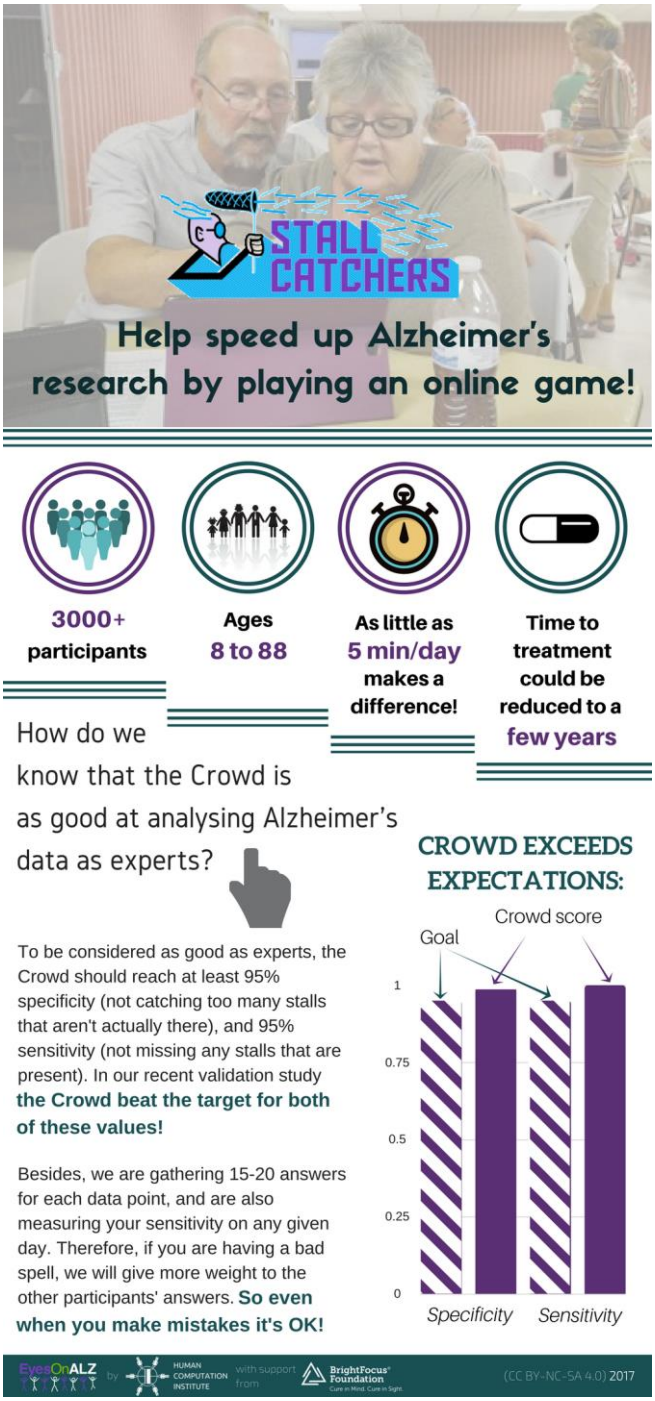
Stall Catchers – quick facts



- Stall Catchers is **the first citizen science game** where the public is directly engaged in analyzing Alzheimer's disease research data

- Stall Catchers was built on one of the first volunteer thinking platforms – [stardust@home]

- In the first 5 months since Stall Catchers went live, **over 3000 participants** joined the game

- Stall Catchers players range from **8 to 88 years old**

- In Stall Catchers, participants look at movies of **real blood vessels in mouse brains**, and search for "stalls" – clogged capillaries where blood is no longer flowing

- The research focus of Stall Catchers – the role of reduced blood flow in the brain – has **shown promise in reducing and preventing Alzheimer's symptoms**

- By engaging citizen scientists in this important research, we could **reduce the time to discover Alzheimer's treatment targets from decades to just a few years**

- It currently takes **15-20 annotations per vessel** to determine a reliable crowd score

- The crowd answers exceed the minimum required accuracy (95%) for discriminating flowing and stalled vessels, suggesting the **answers of Stall Catchers players are as reliable as those of experts**

- Stall Catchers can be **played by anyone,** and any contribution, big or small, can make a difference

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EyesOnALZ Team

Name	Organization	EyesOnALZ Role
Claire Baert	*Human Computation Institute*	Project Coordinator / Gaming Expert
Pietro Michelucci	*Human Computation Institute*	Project Leader
Egle M. Ramanauskaitė	*Human Computation Institute*	Citizen Science Coordinator
Alice Sheppard	*Human Computation Institute*	Forum Manager
Ieva Vaišnoraitė	*Human Computation Institute*	Software Engineer / Machine Learning Researcher
Mohammad Haft-Javaherian	*Cornell University*	Machine Learning Researcher
Victorine Muse	*Cornell University*	Vessel Expert
Nozomi Nishimura	*Cornell University*	Biomedical Collaborator
Chris Schaffer	*Cornell University*	Biomedical Collaborator
Jennifer Fee	*Cornell Lab of Ornithology*	Curriculum Advisor
Darlene Cavalier	*Science for Citizens*	Citizen Science Advisor
Andrew Westphal	*UC Berkeley*	Citizen Science Advisor
Anne Bowser	*Woodrow Wilson International Center for Scholars*	Privacy & Ethics Advisor
Meryl Comer	*Geoffrey Beene Foundation*	Alzheimer's Community Advisor
Michael Pacheco	*Pacheco Design Lab*	Graphics Designer

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In the press

Discover — http://discovermagazine.com/search?q=ramanauskaite

Mail Online — http://www.dailymail.co.uk/sciencetech/article-3380709/Superintellingence-AI-humans-working-solve-climate-change-end-wars-researchers-claim.html - ixzz3w1INn0D5

FAST COMPANY — http://www.fastcompany.com/3055277/how-the-global-hive-mind-is-teaming-up-to-find-a-cure-for-alzheimers

GEN — http://www.genengnews.com/gen-news-highlights/the-crowd-sourced-supercomputer-speeds-research-results/81252164/

WIRED — https://www.wired.de/collection/latest/ein-forscherteam-aus-den-usa-will-die-internet-crowd-gegen-alzheimer-nutzen

(in German)

EL ESPAÑOL — http://www.elespanol.com/ciencia/20160104/91990818_0.html

(in Spanish)

TECHNOLOGY.ORG — http://www.technology.org/2016/02/02/wecurealz-crowdsourcing-a-cure-for-alzheimers/

nature biotechnology — http://hcjournal.org/wecurealz/wp-content/uploads/2016/06/nature-biotech-citsci.pdf

USA SCIENCE & ENGINEERING FESTIVAL — https://www.facebook.com/crowdandcloudTV/videos/1792171584350704/

(scitech)now — http://www.scitechnow.org/videos/can-crowdsource-scientific-research/

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Press quotes

This gives an opportunity for anyone, including the tech-savvy generation of caregivers and early stage AD patients, to take the matter into their own hands.

At HCI, crowd input is also being used to make research more efficient. Cornell-based Alzheimer's research on WeCureAlz.com is produced through an interactive tool, in which users play a game to help analyse data.

By enabling members of the general public to play some simple online game, we expect to reduce the time to treatment discovery from the decades to just a few years,' says HCI director and lead author, Dr. Pietro Michelucci.

'Superintellingence' of AI and humans working together could solve climate change and end wars, researchers claim, Cheyenne Macdonald, Dailymail.Com (31 December 2015)

This kind of crowdsourcing methodology is already being conducted in a wide variety of human computation/online machine combination platforms.

Two of which will be used to launch the WeCureALZ initiative: Stardust@Home out of the University of California-Berkeley, where, since 2006, a crowd of more than 30,000 citizen scientists, called "dusters," have been analyzing data and images to find pristine interstellar dust particles that were brought back to Earth from a space probe conducted by NASA, and EyeWire, an MIT-originated online 3-D puzzle game in which hundreds of thousands of players are helping to map the human brain through a human-based computation platform that challenges players to map 3-D neurons in a retina.

How The Global Hive Mind Is Teaming Up To Find A Cure For Alzheimer's, George Lorenzo, The Fast Company (1 January 2016)

"By unleashing the power of the crowd, we can remove the analytic bottleneck and dramatically accelerate the Alzheimer's research." says Dr. Michelucci, who realized that the virtual microscope from stardust@home could be repurposed to help locate stalled blood vessels, and that the EyeWire puzzle game could be used to build a map of brain blood vessels. Combining the two would allow Alzheimer's researchers to see a 3D map of exactly where blood is and isn't flowing in the brain and speed up the research by a factor of 30.

The Rightful Place of Science: Citizen Science (2016), book by Darlene Cavalier and Eric B. Kennedy