



Association for the Advancement of Artificial Intelligence

**Tuomas Sandholm of Carnegie Mellon University wins
2023 AAAI Award for Artificial Intelligence for the Benefit of Humanity**

Since 2021, the AAAI Award for Artificial Intelligence for the Benefit of Humanity has recognized the positive impacts of artificial intelligence to protect, enhance, and improve human life in meaningful ways with long-lived effects.

This year, the AAAI Awards Committee is pleased to announce that the 2023 recipient of the award and \$25,000 prize is Tuomas Sandholm, for outstanding scientific and software contributions to the design and implementation of organ exchanges, and their direct impact on both practice and policy.

Sandholm is one of AI's most prolific and impactful scientists, whose work spans many topics. Several of these themes come together in his long-standing research on kidney exchanges (KEs). When a loved one is in need of a transplant, healthy live donors offer one of their kidneys—this increases both quality and supply relative to cadaverous donations—but are frequently a poor match due to blood/tissue-type incompatibility. KEs allow swaps among donor/patient pairs, increasing the odds of finding compatible live donors.

Sandholm is one of the pioneers in devising powerful computational methods to extract the full benefit of KEs, using cutting-edge AI and optimization techniques to improve the scalability and flexibility of donor/patient matching. Since 2010, his algorithms have been continuously running the national kidney exchange for the United Network for Organ Sharing (UNOS), a non-profit that manages the United States organ donor transplant system. It is not a recommendation engine, it actually makes these life-and-death decisions. 80% of the US transplant centers are now part of this exchange. Sandholm has licensed his software to UNOS for free to make the world a better place.

He also co-invented never-ending altruist-donor-initiated (NEAD) chains, and his algorithms created the first such chain in 2006. After this work was published in the *New England Journal of Medicine*, NEAD chains were adopted rapidly and broadly. Such chains have become the main modality of kidney exchange worldwide and have led to around 10,000 life-saving transplants.

Kidney transplants are more prevalent than all other solid organ transplants combined, but Sandholm showed that additional life-saving benefits could be obtained by moving beyond

kidney exchanges. He introduced liver lobe exchanges and multi-organ (aka. cross-organ) exchanges in 2010. Based on his research contributions, the world's first liver-kidney swap occurred in 2019. UNOS started the first multi-center liver lobe exchange in January 2023.

Sandholm has been a leader in conceptual innovations and is involved in policy around this life-saving work. By blending cutting-edge science and software with tireless efforts to see these methods put into practice, his impact on individual lives, families, and society is inspiring.

The award will be presented at the conference for the Annual Association for the Advancement of Artificial Intelligence (AAAI) in February and is accompanied by a prize of \$25,000 plus travel expenses to the conference. Squirrel AI provides financial support for the award.

Many sponsors support the AAAI-23 Conference, including Diamond Sponsor Sony, Platinum Sponsors Amazon Science and IBM, and Gold Sponsors Bloomberg Engineering and Colossal-AI.

For a complete view of the conference program, agenda, and full list of sponsors, please refer to <https://aaai.org/Conferences/AAAI-23>.

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About the Association for the Advancement of Artificial Intelligence

Founded in 1979, the Association for the Advancement of Artificial Intelligence (AAAI) is a nonprofit scientific society devoted to advancing the scientific understanding of the mechanisms underlying thought and intelligent behavior and their embodiment in machines. AAAI aims to promote research in and responsible use of artificial intelligence and increase public understanding of the field. For more information, see www.aaai.org.

AAAI Media Contact
(for press inquiries only)
Meredith Ellison
AAAI
aaai-exec-director@aaai.org