

ERIC NIELER BUSINESS 03.25.19 07:00 AM

CAN AI BE A FAIR JUDGE IN COURT? ESTONIA THINKS SO



WIRED STAFF; GETTY IMAGES

GOVERNMENT USUALLY ISN'T the place to look for innovation in IT or new technologies like artificial intelligence. But Ott Velsberg might change your mind. As Estonia's chief data officer, the 28-year-old graduate student is overseeing the tiny Baltic nation's push to insert artificial intelligence and machine learning into services provided to its 1.3 million citizens.

"We want the government to be as lean as possible," says the wiry, bespectacled Velsberg, an Estonian who is writing his PhD thesis at Sweden's Umeå University on using the Internet of Things and sensor data in government services. Estonia's government hired Velsberg last August to run a new project to introduce AI into various ministries to streamline services offered to residents.

Deploying AI is crucial, he says. "Some people worry that if we lower the number of civil employees, the quality of service will suffer. But the AI agent will help us." About 22 percent of Estonians work for the government; that's about average for European countries, but higher than the 18 percent rate in the US.

Siim Sikkut, Estonia's chief information officer, began piloting several AI-based projects at agencies in 2017, before hiring Velsberg last year. Velsberg says Estonia has deployed AI or machine learning in 13 places where an algorithm has replaced government workers.

For example, inspectors no longer check on farmers who receive government subsidies to cut their hay fields each summer. Satellite images taken by the European Space Agency each week from May to October are fed into a deep-learning algorithm originally developed by the Tartu Observatory. The images are overlaid onto a map of fields where farmers receive the hay-cutting subsidies to prevent them from turning forests over time.

The algorithm assesses each pixel in the images, determining if the patch of the field has been cut or not. Cattle grazing or partial cutting can throw off the image processing; in those cases, an inspector still drives out to check. Two weeks before the mowing deadline, the automated system notifies farmers via text or email that includes a link to the satellite image of their field. The system saved €665,000 (\$755,000) in its first year because inspectors made fewer site visits and focused on other enforcement actions, according to Velsberg.

In another application, resumes of laid-off workers are fed into a machine learning system that matches their skills with employers. About 72 percent of workers who gain a new job through the system are still on the job after six months, up from 58 percent before the computer-matching system was deployed. In a third case, children born in Estonia are automatically enrolled in local schools at birth, so parents don't have to sign up on waiting lists or call school administrators. That's because hospital records are automatically shared with local schools. The system doesn't truly require AI, but it shows how automated services are expanding.

In the most ambitious project to date, the Estonian Ministry of Justice has asked Velsberg and his team to design a "robot judge" that could adjudicate small claims disputes of less than €7,000 (about \$8,000). Officials hope the system can clear a backlog of cases for judges and court clerks.

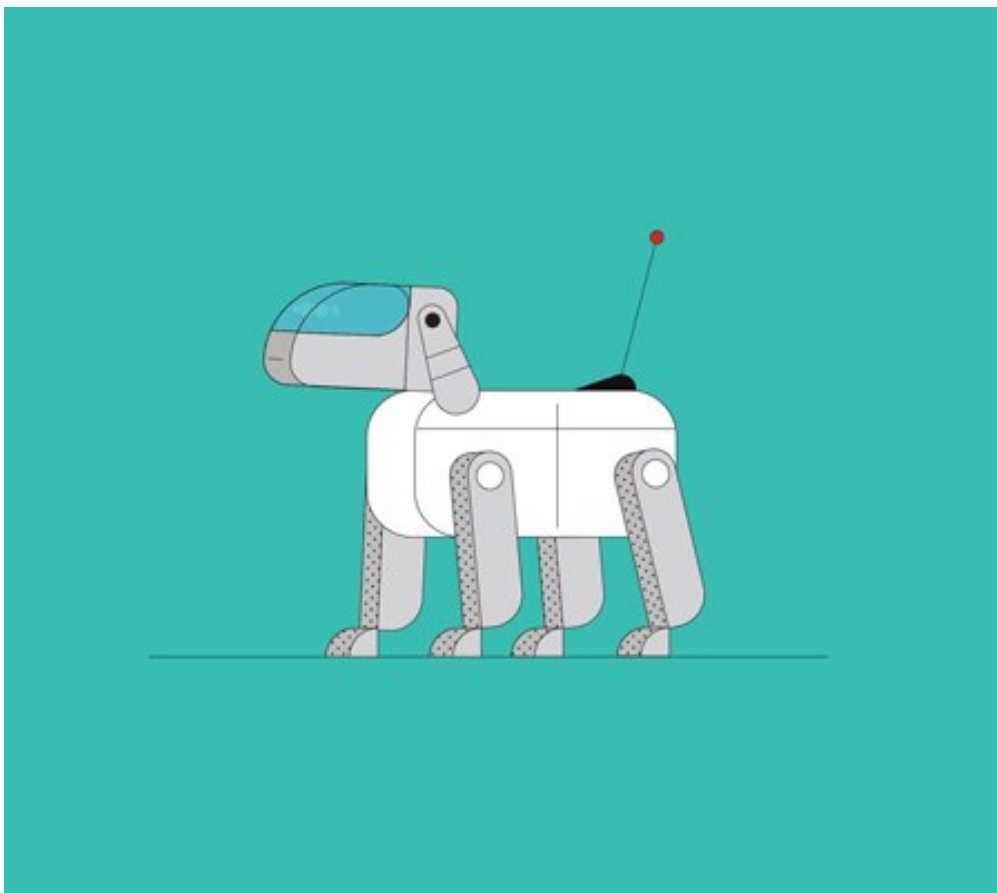
The project is in its early phases and will likely start later this year with a pilot focusing on contract disputes. In concept, the two parties will upload documents and other relevant information, and the AI will issue a decision

that can be appealed to a human judge. Many details are still to be worked out. Velsberg says the system might have to be adjusted after feedback from lawyers and judges.

Estonia's effort isn't the first to mix AI and the law, though it may be the first to give an algorithm decision-making authority. In the US, algorithms help recommend [criminal sentences](#) in some states. The UK-based [DoNotPay](#) AI-driven chatbot overturned 160,000 parking tickets in London and New York a few years ago. A Tallinn-based law firm, [Eesti Oigusbüroo](#), provides free legal aid through a chatbot and generates simple legal documents to send to collection agencies. It plans to expand its "Hugo-AI" legal aid service matching clients and lawyers to Warsaw and Los Angeles by the end of the year, said CEO Artur Fjodorov.

The idea of a robot judge might work in Estonia partly because its 1.3 million residents already use a national ID card and are used to an [online menu of services](#) such as e-voting and digital tax filing.

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Government databases connect with each other through something called the X-road, a digital infrastructure that makes data sharing easier. Estonian residents can also check who has been accessing their information by logging into a [government digital portal](#).

Estonia's well-documented move to digital government services hasn't been without at least one glitch. Outside experts revealed a [vulnerability](#) in Estonia's ID system in 2017 that led to some embarrassment; it was fixed and the ID cards replaced. But government officials say the country hasn't had a major data breach or theft since it began its digital drive in the early 2000s. In 2016, [more than two-thirds](#) of Estonian adults filed government forms on the internet, almost twice the European average.

"The really private and confidential things are not in the hands of government, but banks and telecoms," says Tanel Tammet, a professor of computer science at Tallinn University of Technology. Tammet is a member of an Estonian government AI task force that will report its findings in May and suggest an additional 35 AI-related demonstration projects by 2020.

Stanford University's [David Engstrom](#), an expert in digital governance, says Estonian citizens might trust the government's use of their digital data today, but things might change if one of the new AI-based decision-making systems goes awry.

In the US, agencies such as the Social Security Administration are using AI and machine learning algorithms to speed sorting and processing, while the EPA is using AI to determine which factories should be checked for pollution violations. But a coordinated AI effort across the federal government has gone slowly, Engstrom says, mainly because federal databases in each agency are different and aren't easily shared with other agencies. "We're not there yet," he said.

Engstrom and a team of law school and computer science students at Stanford are [studying](#) how AI can be better used in US government agencies. They will soon report their findings to the Administrative Conference of the United States, an independent federal agency charged with recommending improvements to administrative processes.

He doesn't see a AI-driven robo-judge coming to US courtrooms anytime soon. The US has no national ID system and many Americans have an innate fear of Big Government. "We have due process in the Constitution and that has something to say about fully automated decision making by a government agency," Engstrom said. "Even with a human appeal, there could be a constraint."

Still, Engstrom foresees a time when AI-driven legal assistants might be presenting judges with case law, precedents, and the background needed to make a decision. "The promise of an AI approach is you get more consistency than we currently have," he said. "And maybe an AI driven system that is more accurate than human decision making system."

The flip side is that an AI is only as good as the programming that goes into it. The sentencing algorithms, for example, have been criticized as biased against blacks.

"You also worry about automation bias," Engstrom says. As the machines make more decisions, humans are less likely to inject their own expertise into a system, he says. "That's one of these creeping things that privacy advocates

and good government advocates worry about when the government digitizes in this way.”

For now, though, Estonian officials like the idea of an AI robot solving simple disputes, leaving more time for human judges and lawyers to solve tougher problems. Deploying more AI in government services “will allow us to specialize in something the machines can never do,” President [Kersti Kaljulaid](#) noted at the recent North Star AI conference in Tallinn. “I want to specialize in being a warm compassionate human being. For that we need the AI to be safe, and demonstrably safe.”

Corrected, 3-26-19, 1:50 pm: An earlier version of this article incorrectly described the subject of Ott Velsberg’s PhD thesis and the amount of money saved in the first year of using satellite images to monitor the cutting of hayfields.

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