

IT Matters

AI powered security robots promise rapid response

-: Trinity Mirror Online Team :-

Artificial Intelligence is transforming physical security, with companies like Knightscope, Inc. leading the way in developing security robots. According to an article by Charvi Arora in SPAN, Edition 2, 2025, Knightscope's Autonomous Data Robots (ADRs) are equipped with advanced sensors and self-driving technology to monitor public spaces, including malls, parking lots, and neighborhoods.

These robots are designed to detect potential threats, such as weapons, and identify suspicious activities, providing real-time alerts to law enforcement and security teams. Knightscope aims to enhance safety in the United States.

Knightscope was founded in 2013, its founders stated that they were motivated to create autonomous security robots following the Sandy Hook School Shooting in 2012

Knightscope's robots are designed to analyze



data, detect anomalies, and provide timely notifications, potentially reducing the need for human security guards and police officers. The company also utilizes Generative AI to proactively counter digital threats, including hacking attempts, phishing attacks, and unauthorized access, to protect both companies and individuals.

Besides being autonomous, robot features include the ability to read license plates, run thermal scans, detect hidden weapons, and identify the faces of wanted people.

A security official from Pechanga Resort Casino, which has deployed

Knightscope robots, stated that he was unsure if the robots have reduced crime at the casino, but that they have been useful in identifying people the casino has blacklisted, and that footage the robots provided prevented a civil lawsuit against the casino

Other Knightscope innovations include the K1 Hemisphere, a stationary security device with versatile mounting options, and Automated Gunshot Detection (AGD), which instantly detects gunshots and facilitates rapid response.

One of Knightscope's key products is the K5 Autonomous Security Ro-

bot, an AI-driven, self-driving robot that patrols properties and public areas. These robots can be monitored via software or by Knightscope's team, offering 24/7 surveillance and potentially lowering the cost of physical security.

While the deployment of Knightscope robots has been associated with decreased crime rates in monitored areas, the technology has faced criticism regarding privacy and potential job displacement. The article notes that while AI is a powerful tool, it's crucial to use it judiciously.

Ping pong bot returns shots with high-speed precision

MIT engineers are getting in on the robotic ping pong game with a powerful, lightweight design that returns shots with high-speed precision.

The new table tennis bot comprises a multi-jointed robotic arm that is fixed to one end of a ping pong table and wields a standard ping pong paddle. Aided by several high-speed cameras and a high-bandwidth predictive control system, the robot quickly estimates the speed and trajectory of an incoming ball and executes one of several swing types - loop, drive or chop - to precisely hit the ball to a desired location on the table with various types of spin.

In tests, the engineers threw 150 balls at the robot, one after the other, from across the ping pong table. The bot successfully returned the balls with a hit rate of about 88 percent across all three swing types. The robot's strike speed approaches the top return speeds of human players and is faster than that of

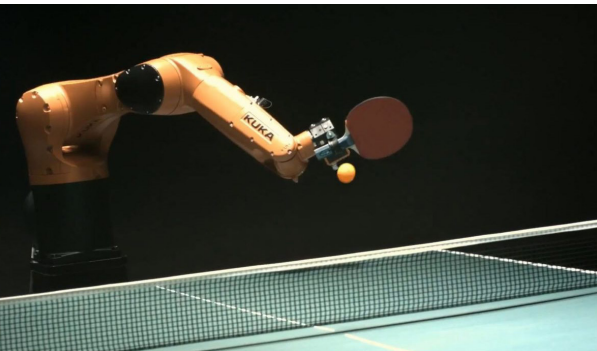
other robotic table tennis designs.

Now, the team is looking to increase the robot's playing radius so that it can return a wider variety of shots. Then, they envision the setup could be a viable competitor in the growing field of smart robotic training systems.

Beyond the game, the team says the table tennis tech could be adapted to improve the speed and responsiveness of humanoid robots, particularly for search-and-rescue scenarios, and situations in a which a robot would need to quickly react or anticipate.

"The problems that we're solving, specifically related to intercepting objects really quickly and precisely, could potentially be useful in scenarios where a robot has to carry out dynamic maneuvers and plan where its end effector will meet an object, in real-time," says MIT graduate student David Nguyen.

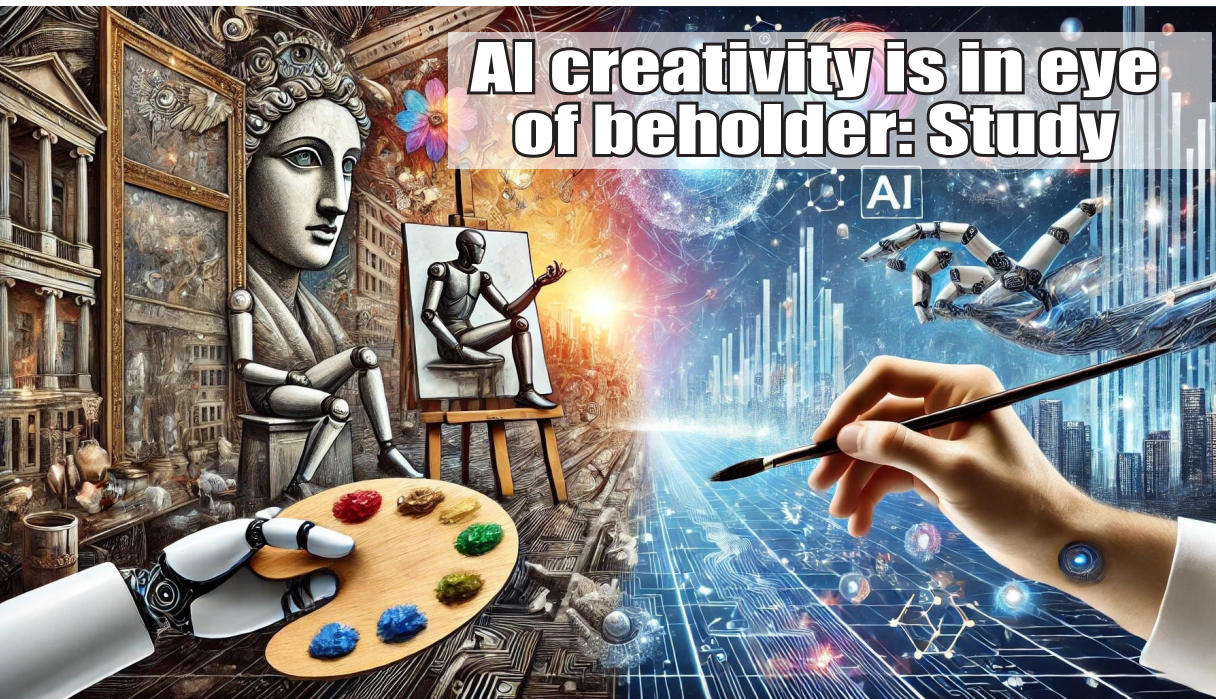
Nguyen is a co-author of the new study, along with MIT graduate student Kendrick Cancio and



Sangbae Kim, associate professor of mechanical engineering and head of the MIT Biomimetics Robotics Lab. The researchers will present the results of those experiments in a paper at the IEEE International Conference on Robotics and Automation (ICRA) this month.

Building robots to play ping pong is a challenge that researchers have taken up since the 1980s. The problem requires a unique combination of technologies, including high-speed machine vision, fast and nimble motors and actuators, precise manipulator control, and accurate, real-time prediction, as well as higher-level planning of game

strategy. "If you think of the spectrum of control problems in robotics, we have on one end manipulation, which is usually slow and very precise, such as picking up an object and making sure you're grasping it well. On the other end, you have locomotion, which is about being dynamic and adapting to perturbations in your system. Ping pong sits in between those. You're still doing manipulation, in that you have to be precise in hitting the ball, but you have to hit it within 300 milliseconds. So, it balances similar problems of dynamic locomotion and precise manipulation," Nguyen explains.



What makes people think an AI system is creative? New research shows that it depends on how much they see of the creative act. The findings have implications for how we research and design creative AI systems, and they also raise fundamental questions about how we perceive creativity in other people.

"AI is playing an increasingly large role in creative practice. Whether that means we should call it creative or not is a different question," says Niki Pennanen, the study's lead author. Pennanen is researching AI systems at Aalto University and has a background in psychology. Together with other researchers at Aalto and the University of Helsinki, he did experiments to find out whether people think a robot is more creative if they see more of the creative act. In the study, participants

were initially asked to evaluate the creativity of robots based only on still life drawings they had made. They were told the robots were driven by AI, but in fact it had been programmed to reproduce drawings that the researchers had commissioned from an artist. This deception made it possible to measure people's perception of creativity without requiring the robot to be creative, which would have introduced too much variability between the drawings.

Next, the study participants evaluated how creative the drawings were when they saw not only the final product but also a video of the drawing process -- the lines appearing on the page, but not the robot creating them. In the final stage, participants scored the drawings when they could see all three elements: the final product, the process,

and the robot making the drawing.

The findings showed that the drawings were seen as more creative as more elements of the creative act were revealed. "The more people saw, the more creative they judged it to be. As far as I'm aware, we're the first to study the effects of perceiving product, process and producer in a separate and controlled manner, not only in the context of AI but also more generally," says Christian Guckelsberger, assistant professor of creative technologies at Aalto and the study's senior author.

Understanding how people assess the creativity of robots or other artificial systems is important in thinking about how to design them - but it's not entirely clear what the appropriate design choices would be. "The study suggests that re-

vealing more about the process and producer can be conducive to people's perception of the systems' creativity. But if we added elements to make AI systems seem more creative even though the system is in fact performing the same way, we could question whether that's actually a good thing.' In some cases, that could be helpful - for example, it might be a way to help people stay engaged with a co-creative system. But in other contexts, it could give people a deceptive impression of how creative an artificial system really is," says Guckelsberger.

In addition to these social and design implications, the findings also have significance for research on creative AI systems. If our judgment of creativity depends on how a system is presented, then future studies should control for that factor.

Skia transforms computing efficiency of data centres

What happens when trailblazing engineers and industry professionals team up? The answer may transform the future of computing efficiency for modern data centres.

Data centers house and use large computers to run massive amounts of data. Often times, the processors can't keep up with this workload because it's taxing to predict and prepare instructions to carry out. This slows the flow of data. Thus, when you type a question into a search engine, the answer generates more slowly or doesn't provide the information you need.

To remedy this issue, researchers at Texas A&M University developed a new technique called Skia in collaboration with Intel, AheadComputing, and Princeton to help computer processors better predict future instructions and improve computing performance.

The team includes Dr. Paul V. Gratz, a professor in the Department of Electrical and Computer Engineering, Dr. Daniel A. Jiménez, a professor in the Department of Computer Science and Engineering, and Chrysanthos Pepi, a graduate student in the Department of Electrical and Computer Engineering.

"Processing instructions has become a major bottleneck in modern processor design," Gratz said. "We developed a new technique, Skia, to better predict what's coming next and alleviate that bottleneck."

A common problem for modern data center workloads is that the instruction stream - the steps a computer must take for processing - can be too large or difficult to process. Skia, a Greek word for shadow, can not only help better predict future instructions, but based

upon that information, it can improve the throughput of instructions on the

system. Throughput refers to units of completed processing per units of time.

"Think of throughput in terms of being a server in a restaurant," Gratz said.

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Registered Office: Indian Rayon Compound, Veraval, Gujarat - 362266.

Corporate Office : 12th Floor, R Teck Park, Nirl