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Navy seeks to teach robots how to behave

By **SETH ROBSON**

Stars and Stripes

The rise of artificial intelligence has long stoked fears of killer robots like the “Terminator,” and early versions of military automatons are already on the battlefield. Now, the Navy is looking into how it can teach machines to do the right thing.

“We’ve been looking at different ways that we can have people interact with autonomous systems,” Marc Steinberg, an Office of Naval Research manager, said in a phone interview this month.

The Navy is funding a slew of projects at universities and institutes that look at how to train such systems, including stopping robots from harming people.

In 1979, a Ford autoworker in Michigan became the first person killed by a robot when he was struck in the head by the arm of a 1-ton production-line machine, according to Guinness World Records. More recently, police in Dallas used a robot to deliver a bomb that killed the shooter who opened fire on officers at a Black Lives Matter protest.

Science fiction author Isaac Asimov’s 1950 book of short stories, “I, Robot,” is credited with creating the three laws of robotics, including a “robot may not injure a human being or, through inaction, allow a human being to come to harm.”

Rather than try to control machines with Asimov’s laws, Navy researchers are taking other approaches. They’re showing robots what to do, putting them through their paces and then critiquing them and telling them what not to do, Steinberg said.

“We’re trying to develop systems that don’t have to be told exactly what to do,” he said. “You can give them high-level mission guidance, and they can work out the steps involved to

carry out a task.”

That could be important as the Navy fields more unmanned systems. It’s already flying drones, driving unmanned speedboats and sending robotic submersibles to collect data beneath the waves.

The Navy has no plans to create robots that attack enemy forces without oversight. Humans would always be in command of a machine ordered to attack, Steinberg said. However, there are situations where a military robot might have to weigh risks to humans and make appropriate decisions, he said.

“Think of an unmanned surface vessel following the rules of the road,” Steinberg said. “If you have another boat getting too close, it could be an adversary or it could be someone who is just curious who you don’t want to put at risk.”

The robot research is in its early stages and likely will take decades to mature, he said.

Human values

A Navy-funded project at the Georgia Institute of Technology involves an artificial intelligence software program named Quixote that uses stories to teach robots acceptable behavior.

Quixote could serve as a “human user manual” by teaching robots values through simple stories that reflect shared cultural knowledge, social mores and protocols, said Mark Riedl, director of Georgia Tech’s Entertainment Intelligence Lab.

For their research, Riedl and his team have searched online for stories that highlight daily social interactions — going to a pharmacy or restaurant, for example — as well as socially appropriate behaviors like paying for meals.

The team plugged the data into Quixote to create a virtual agent — in this case, a video game character placed in game-

like scenarios mirroring the stories. As the virtual agent completed a game, it earned points and positive reinforcement for emulating the actions of people in the stories.

Riedl’s team ran the agent through 500,000 simulations, and it displayed proper social interactions more than 90 percent of the time, a Navy statement said.

“Social norms are designed to keep us out of conflict with each other, and we want robots to be aware of the way humans work with each other,” Riedl said, adding that smartphone applications such as Siri and Cortana are programmed not to say hurtful or insulting things to users. “We want Quixote to be able to read literature off the internet and reverse-engineer social conventions from those stories.”

Quixote could help train soldiers by simulating foreign cultures that have different social norms, he said.

“A robot with a real soldier needs to have an idea of how people do things,” he said. “It shouldn’t respond in an inappropriate way just because people behave differently overseas.”

The goal is to build a tool that lets people without computer science or artificial intelligence backgrounds train robots, Riedl said.

It’s an approach that backfired recently with Microsoft’s Tay chatbot. Engineered to convey the persona of a teenage girl, Tay learned through conversations with online users but was switched off after evolving into a sex-crazed Nazi — tweeting, for example, that “Hitler did nothing wrong” and asking her followers for sex.

“Right now, it’s not something we need to worry about because artificial intelligence bots are very simplistic,” Riedl said. “It’s hard to get them to do anything, period, but you can imagine a

day in the future where robots have much more capabilities.”

Normal behavior

There’s always a risk that people will use a tool to do harm; however, Quixote should be relatively tamper-proof because it will tap into a vast trove of online literature to discern appropriate values, Riedl said.

“There is subversive literature out there, but the vast majority of what it is going to read will be about ... normal human behavior, so in the long term, Quixote will be kind of resistant to tampering,” he said.

Humans are hard-wired through social conventions to avoid conflict, Riedl said, although mankind has engaged in near-constant warfare for millennia. That hasn’t deterred the researchers, but it may concern groups campaigning for a ban on autonomous military robots.

A recent Human Rights Watch and Harvard Law School report calls for humans to retain control over all weapons systems. Last year, a group of technology experts warned that autonomous weapons could be developed within years, not decades.

Peter Asaro, vice chairman of the International Committee for Robot Arms Control — which is campaigning for a treaty to ban “killer robots” — questions whether a machine can be programmed to make the sort of moral and ethical choices that a human does before taking someone’s life.

Soldiers must consider whether their actions are justified and the risks that they take are proportionate to a threat, he said.

“I don’t know that it’s a role that we can give to a machine,” he said. “I don’t know that looking at a bunch of different examples is going to teach it what it needs to know. Who is responsible if something goes wrong?”

Growler noise test conducted at Iwakuni

BY JAMES KIMBER
AND HANA KUSUMOTO
Stars and Stripes

YOKOTA AIR BASE, Japan — A Navy EA-18G Growler electronic warfare plane tested its noise levels Thursday at Marine Corps Air Station Iwakuni in Japan before a carrier air wing moves there next year.

The Growler, from Electronic Attack Squadron 141 out of Naval Air Facility Atsugi near Tokyo, flew over the base and the surrounding city of Iwakuni, 25 miles south of Hiroshima.

The plane, a modified F/A-18F Super Hornet with electronic warfare capability to jam and suppress enemy aircraft

signals, is one of the new types of aircraft that will arrive with the wing.

Officials recorded noise levels as high as 97 decibels about a half-mile from the base and 105.5 decibels on base, according to data provided by the Japanese government. A subway train produces roughly 100 decibels.

Iwakuni Mayor Yoshihiko Fukuda had asked for the flight and was among those present during noise tests. The levels were “not much different from the noise from the conventional Hornets already assigned to Marine Corps Air Station Iwakuni,” he said in a statement.

It was regrettable that officials couldn’t compare noise produced by the Navy’s Super Hornet to the Marines’ version, Fukuda said. The city will use the data to ensure “noise and safety precautions involving the relocation of the carrier air wing” are in place before the move, he said.

The base’s population will double to approximately 10,000 with the arrival of nine squadrons making up Carrier Air Wing Five, which flies off the Yokosuka-based USS Ronald Reagan aircraft carrier during deployments.

The air wing’s move is part of a 2006 agreement reached

by the U.S. and Japan to realign forces. New facilities being built at Iwakuni include a new airfield and support facilities, a modernized exchange and commissary and a 270-unit officer housing area.

Workers also are building a recreation complex complete with a cultural center, tea room, baseball and soccer fields and indoor volleyball and basketball courts a few miles from the base atop Mount Atago.

Iwakuni City has yet to take a position on the relocation, although Fukuda soundly defeated a candidate opposed to moving the air wing in an election earlier this year.

Work at N. Korean nuke site continuing

BY AARON KIDD
Stars and Stripes

Work is continuing at North Korea’s Punggye-ri underground nuclear test site, particularly at the north portal where the communist nation claimed to have exploded a hydrogen bomb in January, a Washington-based think tank said.

Satellite images taken Aug. 4 show a large canopy has been erected south of a support building near the test tunnel’s entrance, according to an anal-

ysis by 38 North, a website run by Johns Hopkins University’s School of Advanced International Studies that monitors North Korean activities.

The canopy is not camouflaged but does prevent accurate observation of the area it covers, the website said. Supplies, equipment and vehicles spotted near the portal in images from July were no longer present.

“The purpose of the activity as well as of an object located on the tailings pile to the east of the North Portal is unclear,” the

analysis said. It may be a small vehicle or a group of smaller objects such as mine-ore carts.

The images also show activity at other areas of the site, including large trucks in the main support area and at the command center; supplies or crates stacked in front of an active greenhouse; a small vehicle at a building near the west portal; and the external completion of a building, thought to be for security forces, being constructed east of the command center.

Helo collision in South Korea hurts 4 soldiers

BY KIM GAMEL
Stars and Stripes

SEOUL, South Korea — Two Apache helicopters collided Friday at Camp Humphreys, South Korea, injuring four U.S. soldiers, a spokesman said.

The AH-64 helicopters were getting ready to take off when the collision occurred at the base south of Seoul, said Lt. Col. Richard Hyde, the 2nd Infantry Division spokesman.

The four soldiers were taken to nearby hospitals with minor injuries, but all have been released, he said Sunday.

The military did not give a cause, saying an investigation is underway.

Last November, two pilots were killed when an Apache attack helicopter crashed during a routine training mission 50 miles east of Camp Humphreys.

About 28,500 U.S. service-members are stationed in South Korea, which remains technically at war with the North after the 1950-53 conflict ended with an armistice instead of a peace treaty.

Calm urged in Milwaukee after unrest over shooting

Associated Press

MILWAUKEE — Simmering anger over the fatal shooting of a man by police erupted in violence on Milwaukee’s predominantly black north side, with protesters skirmishing with officers over several hours and setting fire to at least four businesses in an outburst the mayor says was fed by social media.

The uprising that broke out Saturday evening didn’t subside until after midnight, after Mayor Tom Barrett and other

city leaders appeared at a news conference to plead for calm. Police said three people were arrested and one officer was hurt by a brick thrown into a squad car.

The triggering event came Saturday afternoon, when a man fleeing police after a traffic stop was shot and killed. Police said the man was armed, but it wasn’t clear whether he was pointing the gun or aiming it at officers. Barrett said the man was hit twice, in the chest and arm.

Neither his race nor the officer’s was immediately released.

The protesters were largely black, and Alderman Khalif Rainey — who represents the district — said early Sunday morning that the city’s black residents are “tired of living under this oppression.”

“This entire community has sat back and witnessed how Milwaukee, Wisconsin, has become the worst place to live for African-Americans in the entire country,” Rainey said at the end of a news conference.

Dodgers' 17 hits sink the Pirates

Associated Press

LOS ANGELES — Nobody wanted to be left out Saturday, as the first seven hitters in the Los Angeles Dodgers' lineup had multihit games, with Joc Pederson leading the way with a home run, double and single.

The Dodgers, who lead the majors in batting average and slugging percentage since the All-Star break, combined 17 hits and a pair of successful challenges for an 8-4 victory over the Pittsburgh Pirates.

The Dodgers hit five doubles and used three Pittsburgh errors to win a game that did not see a 1-2-3 inning until the bottom of the eighth.

Relievers Josh Fields, Julio Urias (3-2), Joe Blanton, Pedro Baez, Josh Ravin and Kenley Jansen combined to hold Pittsburgh to one run over 7¹/₃ innings. Jansen got his 35th save.

Mariners 4, Athletics 3: Hisashi Iwakuma pitched into

the sixth inning for his 14th win and Seattle beat host Oakland for its seventh victory in eight games.

Cardinals 8, Cubs 4: Randal Grichuk hit a grand slam to cap a six-run burst in the eighth inning and visiting St. Louis stopped Chicago's 11-game winning streak.

Giants 6, Orioles 2: Madison Bumgarner snapped a five-start winless streak with seven shutout innings, Denard Span had four RBIs and host San Francisco beat Baltimore.

Yankees 8, Rays 4: Tyler Austin and Aaron Judge became the first teammates to hit home runs in the first at-bats of their major league debuts in the same game, sparking host New York past Tampa Bay.

Indians 5, Angels 1: Rookie Mike Clevinger took a no-hitter into the sixth inning to get his first major league win and Cleveland one-hit visiting Los Angeles.

Mets 3, Padres 2 (11): Wilmer Flores drove in the winning run when rookie second baseman Ryan Schimpf made a wild throw to plate in the 11th inning, and host New York beat San Diego.

Blue Jays 4, Astros 2: Russell Martin hit a go-ahead three-run homer in the sixth inning, Aaron Sanchez pitched seven innings to help Toronto end visiting Houston's winning streak at four.

Nationals 7, Braves 6: Daniel Murphy hit a two-run homer and drove in four runs, rookie Reynaldo Lopez pitched seven innings for his first major league win and host Washington beat Atlanta.

Twins 5, Royals 3: Brian Dozier hit his 25th home run of the season and the 100th of his career, leading Tyler Duffey and Minnesota past visiting Kansas City.

Phillies 6, Rockies 3: Maikel Franco hit a three-run homer,

then was in the middle of a testy exchange that led to the benches clearing and a pair of ejections in host Philadelphia's victory over Colorado.

White Sox 8, Marlins 7: Dioner Navarro scored the go-ahead run on a strikeout, capping a bizarre eighth-inning comeback in visiting Chicago's victory over Miami.

Tigers 2, Rangers 0: Casey McGehee had four of Detroit's 14 hits against Cole Hamels, Matt Boyd pitched seven scoreless innings and the Tigers beat AL-leading host Texas to snap a five-game losing streak.

Red Sox 6, Diamondbacks 3: Brock Holt hit a two-run homer, Sandy Leon had a solo shot and Boston beat visiting Arizona.

Reds 11, Brewers 5: Eugenio Suarez hit a three-run home run during an eight-run sixth inning in Cincinnati's victory over host Milwaukee.

Marks gets first Xfinity win at rainy Mid-Ohio

Associated Press

LEXINGTON, Ohio — Justin Marks splashed through the rain at Mid-Ohio Sports Car Course on Saturday for his first NASCAR Xfinity Series victory.

The 35-year-old Marks pulled away on a restart with two left to go in the 75-lap race on the 2.085-mile, 13-turn road course, finishing 3.7 seconds ahead of pole-sitter Sam Hornish Jr.

Marks started 16th in the second of the series' three road-course races. He took the lead from Ty Dillon with 10 laps left, and had a big lead with four left to go when T.J. Bell went off the track and brought out the eighth and final caution.

With the rain falling harder, Marks cautiously negotiated the slippery final laps.

Ryan Blaney was third, followed by Dillon, Justin Allgaier, Eric Jones, Andy Lally,

Brendan Gaughan, series points leader Elliott Sadler and Brennan Poole.

Russian track athlete appeals ban

RIO DE JANEIRO — Darya Klishina, the only Russian athlete at the Rio Olympics for track and field, attended a hearing Sunday to determine whether she can compete, as her country's sports minister said the allegations against her were part of a campaign to tarnish Russia's reputation.

Klishina's lawyer Paul Greene told The Associated Press before the hearing that the long jumper was to testify in person before the Court of Arbitration for Sport after track's world governing body, the IAAF, retracted her eligibility for the Olympics.

The hearing is behind held two days before Klishina's event, the long jump, begins.

Lochte, 3 others robbed in Rio

RIO DE JANEIRO — The U.S. Olympic Committee said Ryan Lochte and three other American swimmers were robbed by armed men who stopped their taxi.

USOC spokesman Patrick Sandusky said Lochte and the others left the French Olympic team's hospitality house early Sunday in a taxi headed for the athletes village, hours after the last night of Olympic swimming.

He said "the taxi was stopped by individuals posing as armed police officers who demanded the athletes' money and other personal belongings."

USA Today and Fox Sports Australia first reported the news, citing Lochte's mother, Ileana Lochte.



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Phelps ends with 23rd gold

BY PAUL NEWBERRY
Associated Press

RIO DE JANEIRO — Standing atop the medal podium for the 23rd time, Michael Phelps teared up, bit his lip and gave a little nod.

This was how he really wanted to go out.

On top of his game in the water.

Totally content away from the pool.

"It turned out pretty cool," Phelps said, another gold medal around his neck. "It's just a perfect way to finish."

Phelps put the United States ahead to stay on the butterfly leg of the 4x100-meter medley relay, giving the most decorated athlete in Olympic history his 23rd career gold medal Saturday night.

If that was the end, and Phelps insists it is, the numbers are simply astonishing.

No other Olympian has more than nine gold medals.

With 28 medals in all, he's 10 clear of anyone else.

"It's not even once in a generation," said his coach, Bob Bowman. "It might be once in 10 generations that someone like Michael Phelps comes along."

As Nathan Adrian touched the wall to finish off the victory, Phelps gathered the other relay swimmers, Ryan Murphy and Cody Miller, in his arms. One night after his only setback of the Games, an upset loss to Joseph Schooling in the 100 fly, Phelps was back on top.

At age 31, he leaves Rio with five golds and a silver.

"I wouldn't change anything," he said. "This is the best place I've ever been in my life."

In the stands, his fiancée, Nicole Johnson, bounced along to the music with their son, 3-month-old Boomer, cradled in her arms.

Phelps is eager to spend a lot more time with them. He plans to marry Johnson after the Olympics and said he wants to watch his son grow, maybe even dole out a swimming lesson or two.

And what if Boomer wants to

take all those medals to show-and-tell someday?

"I might let him take one," Phelps said with a grin.

"Maybe a bronze," Bowman chimed in.

Most of the U.S. swim team was in the stands to watch Phelps' finale, including the biggest female star at the pool, Katie Ledecky.

The 19-year-old Ledecky joked that she was proud to be part of Phelps' final Olympics — twice. He initially retired after the 2012 London Olympics, only to decide about a year later to return.

The comeback endured a huge setback with his second drunken-driving arrest in 2014, which led to Phelps being banned from the world championships last year. But it also sparked a turnaround in his personal life. He entered six weeks of inpatient therapy, where he got in touch with some of the issues that seemed to lead him astray.

He quit drinking, reconnected with his estranged father, got engaged, moved to Arizona along with Bowman, and became a father for the first time.

Phelps sounds much more adamant when he says his swimming career really is over.

"These Games really showed his growth," teammate Anthony Ervin said. "That human spirit, that capacity to heal. I think it showed in his swimming, it showed in his demeanor, and it certainly showed in his leadership on the team."

Phelps was elected a team captain for the first time in his fifth Olympics and truly seemed to enjoy being around his fellow swimmers. He was still the same ruthless competitor, but he was also willing to join in when some of his younger teammates made a carpool karaoke video at their final training camp in Atlanta.

On a victory stroll around the pool, Phelps and his teammates grabbed a sign that said, "Thank You Rio."

"No matter what country you swim for, you're indebted

to Michael Phelps for bringing a lot of exposure to the sport and making it a little more mainstream," Murphy said. "If this is the end, that was a great way to cap off an incredible career."

Murphy, who won two backstroke golds in Rio, put the Americans out front with a world-record split — it counts since he was leading off — before Britain surged ahead on the breaststroke with its own world-record holder, Adam Peaty.

Phelps dove into the pool in second place.

He wouldn't be for long.

On the return lap, Phelps powered through the water with his windmill of a stroke, surging ahead of James Guy to pass off a lead to the anchor Adrian.

It wasn't in doubt after that. Adrian pulled away on the freestyle to win in an Olympic-record time of 3 minutes, 27.95 seconds. Britain held on for silver, with Australia nabbing bronze.

The victory came just minutes after the women's medley relay gave the United States its 1,000th Olympic gold medal at the Summer Games.

"A thousandth gold for team USA," said Simone Manuel, who swam the anchor leg for her second gold of the Games and second medal of the night. "It's a nice number."

Kathleen Baker, Lilly King and Dana Vollmer joined Manuel in the historic victory, which came with a time of 3:53.13. Australia earned silver, while Denmark took bronze.

Earlier in the night, Manuel took silver in the 50 free. She already became the first African-American woman to win an Olympic swimming title with her win in the 100 free.

Connor Jaeger gave the U.S. another silver in the 1,500 free.

The night, though, belonged to Phelps, who walked out of the arena for the final time carrying an American flag and a gold medal around his neck.

The only way imaginable.

Jamaica's Thompson wins 100m

BY EDDIE PELLIS
Associated Press

RIO DE JANEIRO — The new Olympic champion caught her country's flag from out of the stands, unfurled it and fumbled a bit as she tried to drape it over her shoulders.

She knew exactly where to turn for help.

Jamaica's newest sprint champion is Elaine Thompson, and she was more than happy to let Shelly-Ann Fraser-Pryce place that green-and-yellow Jamaican flag over her shoulders after denying her friend and training partner a record third straight title in the 100 meters on Saturday.

"When I crossed the line and glanced around to see I was clear, I didn't quite know how to celebrate," Thompson said after she routed the field in 10.71 seconds, with Fraser-Pryce taking bronze.

The nation that produced the once-in-a-lifetime sprinter in Usain Bolt has more of a production line going on the women's side. Thompson joins the likes of Merlene Ottey, Veronica Campbell-Brown and, of course, Fraser-Pryce in the island country's long line of sprinting luminaries.

"Jamaica has so many talented sprinters," Thompson said. "To be the second champion (at 100 meters), I'm really happy."

What was billed as one of the most competitive finals in the history of the event turned into something of a non-race. Thompson made it that way.

Running about level halfway through the 100 meters, she pulled away from American Tori Bowie for a 0.12-second victory — a gap big enough to scoot a bookcase between her and the American.

Thompson's 10.71 was only 0.01 off the time she ran at Jamaica's national championships last month.

"I'm just happy that Jamaica gets to keep the gold medal," Fraser-Pryce said.