ARTIFICIAL INTELLIGENCE EXPERT MASSIMILIANO VERSACE ADDRESSES OUR PERSISTENT — YET MOSTLY UNFOUNDED — FEAR OF A ROBOT REVOLUTION.

ONEDGE ABOUT AI?

By Matt M. Casey
FROM HAL TO THE TERMINATOR TO THE MATRIX, American pop culture possesses an enduring fear that robots will one day overthrow the human race. But could it really happen? Geek talked to professor Massimiliano Versace, head of Boston University’s Neurocomputing Lab to gauge the odds.

Versace and his team operate at the leading edge of artificial intelligence, designing computer brains that learn from their environments and use subroutines that resemble emotions. He is currently working on two separate projects with NASA: one is to create autonomous drone aircraft and the other could be part of the next Mars mission.

His explanation of the robot-human paradigm offered some assurance that we should be safe from our increasingly complex devices. Should.

GEEK: Why do you think our culture has an obsession with robots or computers overthrowing the human race?

Dr. Massimiliano Versace: The main reason people are afraid of robots is because they’re afraid of themselves. Think about The Matrix. Morpheus explains that humans are grown to harvest energy from them. But think of what humans do to animals. They grow animals. They slaughter them. And they eat them. And on a massive scale. So why are we afraid that robots are going to do this to us? Because we are doing it constantly, systematically, on a daily basis.

Why don’t you think it would happen?

For a couple of reasons. The first is that we currently are, from the robot’s perspective, “god.” We’re able to build in safety mechanisms that could prevent these robots from turning against us. For instance, you can give military robots only non-lethal weapons. The second reason is a bit more subtle. Humans turn against each other mostly because they’re competing for resources. You kill because of food or because you want somebody’s property. That’s why people hurt other people and
why wars are fought. What are robotic organisms competing for with respect to human? We can’t really extract the same sort of energy. A robot can be powered by electricity, but a human, directly, can’t.

Do you think something like Isaac Asimov’s Three Laws of Robotics would be appropriate?

Yes, though Asimov’s Laws are tricky. Let’s imagine that you send robots to war. You cannot always have a human in the loop because there are going to be too many robots. You have to have many automatic systems. If you have, say, a fighter jet off in the Pacific and it’s attacked by another thing—which the robot doesn’t know if it’s human or it’s a drone—would the drone fight back? My assumption is that, yes, it would fight back. The Laws of Robotics are nice, but in practice, they’re difficult to follow.

Could a robot be programmed to kill humans?

Like any technology, robots could be used for good or evil. You can have robots as kind of the nuclear deterrent, where everybody has lethal technology in the form of robots so nobody uses them, or you can go in the way of everybody has robots and everybody uses them.

The consequences are difficult to grasp, given the de-personalizing nature of wars fought by machines.

Your initial rejection of the idea of a Terminator-like scenario was that human beings are very cruel, and robots have a long way to catch up. Can you elaborate on that?

If you look at the history of humankind, you find countless examples of cruelty, genocides, murders. In order to develop the need to destroy something, like in humans, there has to be a motivation. What would be the drive for a robot to destroy all humans? As we build this creature, it’s not that the first thing they do is they start to kill people around their environment. As you develop things, such as competition, then that’s another story. If the robot is competing with another robot for resources then, potentially, you can see it hurting the other robot or “killing” the other robot or moving the other robot away from the source of food and support.

So in terms of fictional scenarios, you think HAL kicking Dave out of the ship in 2001 is more likely than Skynet in The Terminator?

It certainly is a simpler task. To achieve something at the level of Skynet, it requires a lot of abstract thinking and sequencing. What Skynet did is very complex. It has to develop a long-term plan and then it has to develop strategies, step-by-step, sequence it correctly (and) hide it from humans. I mean, the intelligence that’s actually required to carry out the plan like Skynet, I think it’s 30 years away from our capabilities now.

You’ve also worked on emotions in computers. How does that play into this discussion?

I was running in Italy two years ago and I saw this thing coming out of the bushes and I jumped instantly, instinctively. I looked back. Sure enough, it was a black snake. What struck me was my ability to make a decision in, say, 200 milliseconds and do a jump without even knowing what I was jumping for—because I didn’t recognize the thing right away. Using emotions as shortcuts to your brain is useful. That’s why it makes me laugh when people say you shouldn’t program emotions in robots. That’s not true. You should.

What about other emotions, like envy or anger?

Envy would be a crucial engine for a robot that wants to succeed with respect to other robots. If the robot has a strong drive to, say, accumulate more energy, the robot which will develop the equivalent of “envy” will probably have an evolutionary advantage, because it would try to get things from other robots.

Being on the cutting edge of artificial intelligence, have you seen anything that resembles the machines from The Matrix or The Terminator?

I’ve seen Terminator-like features emerging. Not in the terms of “evil,” but in terms of what are machines going to look like. If you come to our lab, you can see the visual system we are developing. That red eye that moves around in zooms in and zooms out. But our robot is much kiner, like its creators.

More Human Than Human?

Is Blade Runner the best depiction of our future doom at the hands of traitorous robots?

TWO OF A KIND: Roy Batty and Pris—poster children for our demise?
YES, IT'S THE MOST HUMBLING PHOTOGRAPH IN THE WORLD.

(THANKS, NASA.)

BACK IN THE MID-1990S, NASA decided to take a risk, possibly wasting 10 days of expensive telescope time, by pointing the Hubble at a tiny region of black space that appeared to contain absolutely nothing. The region of sky they looked at was so small that it's been compared to what you'd see looking at the sky through an 8'-soda straw. What they found when the long exposures were done was a complete surprise: Photons traveling for billions of years slammed one by one into Hubble's detector to reveal something unbelievable: that minuscule black dot in the heavens contained an entire island universe with thousands of galaxies. This image was called the "Hubble Deep Field" and, over the years, NASA has continued to image this region of space. They've recently released the deepest, most detailed, multi-color image ever taken of the cosmos, called "eXtreme Deep Field." (The name alone makes you want to feed-the-rush, slam-a-stack and blast Mountain Dew from a wide-mouth slam-can!) This image is a composite of over 2,000 separate pictures and comprises a total exposure time of two million seconds. Almost everything you see in a galaxy — 5,500 of them. Every dot, every smudge and each blur is a spinning collection of at least 100 billion stars. There are just a few individual stars from our own galaxy wandering through the frame. The most distant galaxies are more than 13 billion light-years away and we're seeing them as they were at the young age of 500 million years, just 200 million years after the Big Bang.

The knowledge we are gaining from images like this is tremendous. But the impact on human consciousness is even greater. Everything we know — the Earth, our solar system, even our galaxy — is so insignificant as to be incomprehensible when described on this scale. Go out on some clear night and look at your pinky nail held out to the sky at arm's length in any direction. That region of sky, that sliver of nothing, contains on the order of 1,000,000,000,000,000,000,000,000,000,000 suns. Our little, primordial minds can’t possibly comprehend.

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ASK SIRI ABOUT BLADE RUNNER AND THE IPHONE'S DIGITAL ASSISTANT will tell you that Ridley Scott's 1982 sci-fi classic is about "intelligent assistants that want to live beyond their termination dates."

"Is that too much to ask?" she'll add.

Expect a similar response when you ask world-class artificial intelligence researcher Max Milmiliano Versace about his favorite "robot-overthrow" movie. He named Blade Runner because the rage displayed by android Roy Batty, as played by Rutger Hauer, would "probably be the pinnacle of what somebody in my field would want to achieve."

"The basic idea of the robot developing feelings, an awareness of his own destiny and rage with respect to his own creator," Versace says, "I would say that's the most desirable outcome that you could want from a robot."

He added that the desirable outcome was the human-like emotions, not the rage itself.

Versace laughs when people say that researchers like him shouldn't program feelings into robots — especially as NASA has called for his help on two projects that include robot emotions. In one project, he's using something that resembles fear to get autonomous flying drones to steer away from danger before wasting time analyzing what that danger might be. In the other, he's designing a hierarchy of needs for small drones that could eventually land on Mars. The machines, whose intelligence matches that of a rat, would follow their curiosity, hunger and desire to fulfill their mission — as supported by their battery levels.

Should artificial intelligences ever reach the point when they feel as strongly as the Nexus-6 models in Blade Runner, Versace says that it would only complete the circle. The android named Rachel managed to feel something like love toward human bounty hunter Rick Deckard, but humans already feel emotional bonds toward their machines.

Versace pointed to the example of soldiers in Iraq who named their bomb disposal robot "Scoby-Doo." The troops later crowned Scooby's "death" after an IED exploded while Scooby worked on it. The resulting blast damaged the "but beyond repair. Closer to home, you can find videos on YouTube of people (and animals) who clearly see their Roomba as something more than a well-programmed appliance. The Roomba and Scooby, meanwhile, feel precisely nothing.

While Versace admires the emotional angle to Blade Runner, he also notes that the film runs counter to its gene by failing to feature humanity's downfall at the hands of its creations à la Skynet in the Terminator films. Instead, Versace noted, the movie follows "one very pissed-off robot" with a beef toward its creator.

The scenario may be far from paradise, but at least humans wouldn't need to rally around the radio-scratching voice of a John Connor figure just to survive for another generation.

— Matt M. Casey