

Skynet is not here yet

Written by Harris Georgiou

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Well, the date has come and passed without any "incident", of any sort, from any renegade AI war machine - at least not something so big that would hit the media all around the world. In case you missed it, the 21st of April was the critical date, the "Judgment Day", according to [James Cameron's blockbuster movie series "Terminator"](#).

Despite the 27-year gap between the script and today's world, the heart of the story remains alive throughout the decades: Will we eventually build conscious machines and, if so, how will they feel about their creators? It is one of the most popular and intriguing subjects of all times in sci-fi movies, from the cult dystopian classic ["Bladerunner"](#) (1982) to the more recent ["The Matrix" \(1999-2003\) blockbuster sequels](#).

In the original 1984 "Terminator" movie script, the [Skynet](#), an advanced AI-based global defense military network of USAF, was supposed to become operational on August 4th, 1997 and subsequently, due to its capability to "...learn in geometric rates", become self-aware 25 days later, on August 29th 1997. When humans realized that a self-conscious machine was now in control of the world's most powerful nuclear arsenal, they tried to pull the plug, in a desperate attempt to shut it down. The Skynet decided that humans were a threat, so it launched its nuclear weapons to the "other side" (Russia), initiating World War III.

{rokbox thumb=|../images/terminator-423.jpg| thumbsize=|425 239| title=|The Terminator (T2) endoskeleton...| }../images/terminator-full.jpg{/rokbox}

The 19-21 April 2011 dates come from the alternate timeline of the [corresponding TV series](#) (2008), but the overall concept is of course the same. As the target time gets closer and soon passes by, without any major breakthrough in AI and, of course, no machine-initiated nuclear war, the screenwriters have to readjust their expectations and prolong our fears. Since the original story is already three decades old, the latest movie of the series adopts the post-attack viewpoint, showing that we are indeed at war with the machines, as always.

Despite all that, Cameron himself seemed preoccupied with other things right now, in a message he posted in his Twitter account that night:

"Skynet was supposed to go operational tonight. Instead of machines taking over, we have the very real threat of global warming."

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Many articles emerged during the past week about this, most of them noticing the vast difference between the Hollywood's perception of near-future AI and the real-world state-of-the-art in this research field, always behind our best expectations or out worst fears.

["Artificial intelligence a long way off from Skynet" \(CBC, 21-Apr-2011\)](#)

In the article above, professor Geoffrey Hinton of University of Toronto, gives an exceptional answer to the obvious question:

- *When will the machines take over?*
- *I don't know. Ask Google.*

Where is Skynet?



On the other hand, we are not completely sure that nothing has happened. As someone said to me, maybe we actually managed to pull the plug in time, and nothing happened. Afterall, it seems that if any such thing as Skynet really exists, it is not what we may think of:

[The Tianhe-1A supercomputer](#)

Yes, it is Chinese. And it is fast, really fast. A typical home PC yields about 1-2 GigaFLOPS with 2-4 GB of main memory. This machine actually exhibited 2.5 PetaFLOPS (its theoretical limit is just above 4) with 262 TB of main memory. In other words, imagine what you can do with a machine that is 2 million times faster and with 65500 times more memory than your best PC today.

However, it should be noted that these extraordinary computational resources can be easily achieved right now, using massively distributed computing over the Internet. Voluntary projects like [Folding@Home](#) is now measured at around the same cumulative processing power as Tianhe-1A, exploiting almost every ordinary piece of computer hardware, from average-power

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CPUs to specialized DSP vector processing in modern 3D graphics adapters.

- *When will the machines take over?*
 - *I don't know. Ask Google.*
- (prof. Geoffrey Hinton, Univ. of Toronto)

Of course, if someone back at 1984 looked at the ways modern wars are fought, he/she would probably be convinced we are already halfway there to fully autonomous Skynet-like armies. [Unmanned Combat Air Vehicles \(UCAV\)](#) are now a standard weapons system in many armies, flying hundreds of missions every day or night, not only as observation and on-demand attack platforms but actually monitoring an area and taking autonomous decisions on where and when to attack. This seems extremely close to the flying robots in "Terminator", not only because of the technological aspect but primarily on the psychological factor. The "trigger effect" is completely removed, no human can be held accountable for a missed attack or a bad decision. As the US Congress recently stated, this drastically changes modern warfare in many ways.

Can we hack Skynet?

Recent revelations indicate that [at least video feeds from UAVs have been indeed hacked successfully](#). It is not clear if the control itself was compromised, but this shows that severe design and implementation faults will always be there. The [Stuxnet](#) and, a few days ago, the [Star S](#) trojans that were discovered in SCADA systems in Iranian nuclear power plants show that we are indeed extremely close to catastrophic physical disasters from deliberate or unintentional software failures.

On the other hand, the top-10 supercomputers list shows clearly one thing: all of them run variations of Linux. So, we can be sure that no script-kiddie trojan or rootkit virus will help us to bring down Skynet. We can probably safely say goodbye to any hopes of Windows-running alien spacecrafts too, as in the ["Independence Day"](#) (1996) movie.

{rokbox thumb=|../images/robotplane-423.jpg| title=|UCAV bomber (USAF)|
../images/robotplane-full.jpg{/rokbox}

A final note: Skynet **does exist**. It is a series of UK military satellites that first came to service in 1969. The first satellite Skynet-1 was a failure, since it was decommissioned only a year after its

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launch. Skynet-2 was also a disaster, placed in unusable orbit after a rocket failure during the launch. In early 1999, Reuters reported that the Skynet system was breached by a group of hackers who issued blackmail threats against the Ministry of Defense (UK), a claim which was later refuted by a reporter. Today, Skynet 3 and 4 satellites are the bulk of UK Armed Forces strategic communications.



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