

Demystifying Artificial Intelligence: An Interview with Rob May



Artificial Intelligence Insights

Entrepreneur and angel investor Rob May discusses the technology that underpins recent advances in artificial intelligence (AI) and offers his view on how AI will continue to mature and affect the investing landscape

In a very short period of time, artificial intelligence (AI) went from a seemingly novel technology to a revolutionary advancement that will forever alter major industries and the economy at large. Given AI's potential impact, however, it's important to distinguish between fact and fiction.

Rob May is the co-founder of Talla, an AI-powered platform that automates HR and IT functions. As a serial entrepreneur and angel investor, May has a unique and comprehensive perspective on the continuing evolution of these technologies and how AI's maturing capabilities can be utilized, both today and in the future. The following is an edited conversation.

FTC: Over the past 12 months, there have been quite a few notable developments around AI, to the point that the technology has entered the mainstream conversation and often evokes more questions than answers. Starting from the top and given all of the disparate perceptions around the technology, how do you define AI?

Rob May: From a high level, I think of AI as any software program that can learn, change and adapt to its environment based on its interactions with the world once deployed. That's the strict definition, but I think of artificial intelligence as anything that is built using a neural-network model or a genetic algorithm that can evolve and change over time.



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Traditional software, for instance, has primarily been written to perform a very explicit task or function and generally follows a series of rules. The difference between traditional software and AI is that the rules for artificial intelligence are designed to learn from the environment and improve performance over time.

FTC: So what are some examples of how AI is being used today?

May: Well, self-driving cars are probably the most visible example, or perhaps the most discussed, because of the potential impact this would have on the economy and in our daily lives. But many of the “recommendation” engines that you find on the Internet — whether it’s advertisements, shopping-cart suggestions, or movie recommendations — are all being driven by AI models.

One area where AI has really advanced recently is in neural-machine translation. The machine doesn’t even have to understand German or Japanese necessarily. But users can feed millions of German sentences into an AI model and then do the same thing with Japanese phrases, and the machine can learn and understand enough of the rules and structure of the two languages to translate a German phrase into Japanese and vice versa. These systems are becoming so efficient and, at this point, are nearly as effective as human translators in terms of processing literal translations. It may not necessarily be as effective with poetry or conveying metaphors but AI has become very, very good with pragmatic tasks.

FTC: In 2016, before leaving office, the Obama administration issued a report saying it would be unlikely that machines would be able to exhibit broadly applicable intelligence comparable to humans for at least the next 20 years. Given Moore’s Law and the pace of innovation you just discussed, what would be your estimated timeline in terms AI replacing human labor?

May: I think AI probably runs more things than people realize today, but a lot of it is under the covers. In most industries, the early applications of AI generally have one of three primary functions: to provide predictive capabilities, to automate a process, or to classify something. And for the most part, the early use cases have gravitated toward the prediction and automation functions.

In terms of people’s awareness, there are quite a few applications that aren’t receiving much press but have already changed the way certain industries operate. For instance, machine vision has been fantastic for the agriculture industry. AI can help analyze crop yields, diagnose problems such as pest infestations, and just help farmers get more out of their crops. And while everyone is focusing on the prospect of driverless cars, if you’ve ever taken the monorail from the San Francisco airport that whole system operates without drivers. As consumers, it’s probably easier to see some of the predictive capabilities that AI enables as we shop online, but you may not recognize how effective these tools are in actually shaping consumer behaviors.

So as it relates to a timeline, I think in the next five years you’re going to see an explosion in AI, particularly around how the technology amplifies the effectiveness and efficiency of how humans do their work. If you think about how a construction worker utilizing a robotic exoskeleton can now lift 400 pounds instead of 100 pounds, AI will be able to provide the cognitive equivalent for knowledge workers.

Information will be available at our fingertips; we'll have "push-button" analysis capabilities that ultimately will take the cognitive grunt work out of our jobs. This will allow us to focus on the things that we humans are really good at: the strategic element and creative pieces of our jobs and tying things together across domains. And these skillsets — the emotional components of our work today — aren't going to be replaceable in either the short or medium term. In fact, I think AI is going to be really positive for the economy and will drive GDP for the foreseeable future.

FTC: Can you talk a little bit more about how AI will benefit the economy, particularly given the underlying threat that automation poses to certain job categories?

May: If you look at the last few technology waves to come out of Silicon Valley, all of the innovation was being directed toward either the "distraction" trade or to make the demand side of the economy more efficient through shared consumption. Think about it: Facebook, Twitter, Snapchat — basically all of the social media and app developers — are focused on delivering technology that actually makes us less productive or distracts us. Alternatively, things that are built around distributed-application architecture, like Airbnb, Uber, or other peer-to-peer technologies, are premised on serving bigger populations with fewer houses, cars, et cetera. For the past 20 years, technology innovation has been focused on the consumption side of the business, which is really a new phenomenon. AI, however, goes back to the production-oriented roots of technology, and is about creating new capabilities to make things better, faster, and cheaper.

I think this shift is going to drive dramatic improvements in productivity, which will be reflected in the country's economic growth. So, I'm really bullish on the next seven to 10 years as it relates to economic expansion in the United States. Beyond that, there's a larger question around the extent to which AI takes away people's jobs. That's definitely one of the unknowns, but in the short term, I think AI is going to be fantastic for the economy.

FTC: You mentioned the impact of AI on employment. Where do you see jobs displaced or dramatically changed by AI, and in what time frame?

May: Well, there will certainly be some shifts. You might lose more bookkeeper roles, for instance, but you may have more CFOs. That's just one example, but I think it speaks to the point that by eliminating the cognitive grunt work there will be more opportunities to apply AI-driven analysis as part of a general strategy.

Overall, I think you will ultimately see a lot of people resettle into the services industry, and that would likely have long-term ramifications that would need to be addressed. For example, most services sectors [such as retail] don't offer the opportunity for wage and productivity growth to the same extent as jobs in the knowledge industry. This is obviously looking much further into the future, but how we deal with this will be a challenging problem for society to solve. I also think the current idea to provide a universal basic income comes with its own challenges.

On the other side of the coin, however, these artificial intelligence systems will need to be trained, monitored and potentially retrained, so AI will create new classes

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of jobs. It might be something such as building out labeled data sets. I'm active as an angel investor, and I think you'll also see AI move gradually across different industries. As that occurs, it will fall on the shoulders of humans to identify the ways that AI can help drive efficiencies or improve outcomes and then structure the data in such a way that it can be used to train the machines. So I do think the long-term employment picture isn't necessarily as bleak as some might imagine it to be.

FTC: There has been some discussion recently from the likes of Elon Musk and even Stephen Hawking that reflects more of an existential threat should AI ever become sentient. What are some of the unforeseen risks?

May: I'm actually less worried about the existential crisis of having a smart machine that suddenly becomes malevolent. Of course, there are other ethical considerations that will play out. In the EU, for instance, the European General Data Protection Regulation imposes strict rules on how companies will be able to handle personal data. The law, which is set to go into effect in 2018, is designed around the four pillars of: requiring explicit consent, the right to be forgotten, data portability, and algorithm transparency.

The last principle around transparency is about counteracting the potential for bias in AI-driven analysis. If you're a bank using a neural network to aid underwriting, for instance, the law will dictate that consumers have a right to obtain an explanation around AI-driven decisions and can even opt out if they choose to. But it speaks to the ethical questions that will arise as more and more AI applications are adopted. It will be interesting too, because AI will probably tell us something about ourselves that we don't like or want to hear, so what happens when that occurs?

I think the biggest risk is that we get so tied to AI that we become paralyzed when systems fail or when the wrong signal yields an unexpected result. Remember the flash crash when the high-frequency trading systems all jumped at the same time? So what happens when all of the self-driving cars, which are connected to the same traffic grid, respond to a false signal that creates a similar kind of chaos? That's where I think the most significant risk resides.

FTC: You mentioned that you're an angel investor. Can you discuss some of the themes that are driving the venture capital activity around AI?

May: Machine vision, as I've alluded to, is becoming very mature. As a result, we're seeing a lot of applications that are being developed around machine vision, which are attracting even later-stage VC interest. Natural language processing is another area that, while not quite as mature, continues to grow and scale, so VC dollars are gravitating there as well. AI-driven cybersecurity is another neural network-driven area that has begun to attract earlier-stage venture capital.

There is budding interest in other types of AI, too, that are not neural network driven. Genetic algorithms, for instance, refer to a method for solving optimization problems based on a natural-selection process that imitates biological evolution. And Bayesian statistical processes basically seek to automate the scientific method. So there's VC interest in all of these different AI models.

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One thing that's pretty significant, at least locally, is that AI marks Boston's return to the tech scene. Boston, as an ecosystem, was probably a little weak during this last wave of innovation around social media and consumer-driven apps. But Boston is very strong in AI. You have the MIT and Harvard influence, of course, but UMass and Worcester Polytech also have very good programs. There are also a lot of companies here whose roots are in hard-core engineering, infrastructure and communication technologies. AI is not as visual as say, designing an app; it's based around complex mathematical topics and engineering skillsets, so Boston's talent base lends itself to this industry.

FTC: Is there anything else that you think observers should understand as AI capabilities continue to evolve and mature?

May: The only thing I would watch out for relates to the hype surrounding AI, and I would caution people to be very skeptical when reading the headlines. A lot of the stuff that you hear about has only been reproduced in a research environment using highly cleansed or synthetic data. The results can be far different using messy, real-world data. This is why there will be a lag before these headlines — driven by academic research — translate into applications that are safe, secure and scalable.

But from a practical perspective, I do think we're entering a new era for technology, and that AI will continue to advance in terms of both its adoption and the capabilities available. More simple decisions will be made for people based on their known preferences; more devices will communicate with users directly; and you'll be able to talk to the devices in your life, which will be different than what we're used to and will initially seem unusual. But it will all have a tremendous impact on the world around us, which will ultimately increase our productivity and improve our cognitive skillsets and abilities.

Rob May is the co-founder and CEO of Talla, an AI-powered platform that automates HR and IT business tasks, such as new-hire onboarding, ticket requests, and other functions to help companies work smarter and keep employees engaged. He previously co-founded Backupify, which is the world's first cloud-to-cloud back up company. ■

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