Beyond the Hype: Six Trends in Artificial Intelligence

INTOUCH GROUP™

Executive Summary

There's been a lot of hype around artificial intelligence (AI) the past few years. After all, AI is powering self-driving cars, appearing on late night talk shows, and beating humans at their own games.

AI has come to be a catch-all term that can apply to any technical idea we have conceived but not yet implemented. To some, AI is an unknown, scary concept powered by sci-fi or magic. For some, AI equals chatbots — but it's so much more. In fact, AI is already disrupting industries and driving real business impact.

Google CEO Sundar Pichai views AI as "probably the most important thing humanity has ever worked on" and "more profound than electricity or fire."

AI, like electricity, has enabled us to create innumerable new technologies and changed our way of thinking.

At Intouch, we've been developing AI and machine learning applications for more than a decade. Every year, we see new opportunities for AI that didn't exist even five years prior. We expect this movement to grow exponentially.

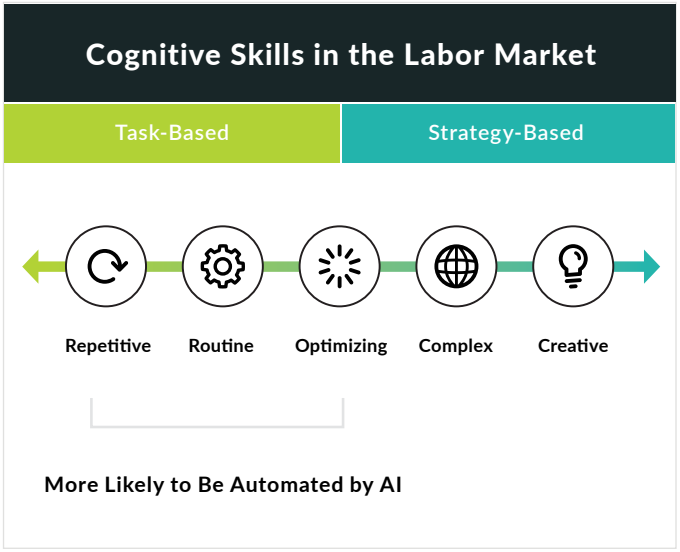
Still not convinced of AI's power and potential? We've put together six trends below that will be important for AI in the next year and beyond.

01. Humans are here to stay

AI IS NOT THE JOB-STEALING BOOGEYMAN

For years, people have been concerned that AI will enable robots to take all of our jobs and leave everyone unemployed. This concern is overblown (for now). While it is true that AI is able to accomplish some tasks more efficiently than humans, machines aren't quite able to match human creativity and strategic thought.

Jobs with more repetitive tasks such as telemarketing and bookkeeping are more likely to have an AI automate the position than fields requiring more complex or creative analysis such as psychiatry, design, and healthcare.



HEALTHCARE IMPACT

In radiology, deep learning and computer vision allow machines to analyze radiology reports with extreme efficiency and accuracy. This does not mean that physicians will be completely replaced by AI any time soon.

In this context, the term "AI" should be thought of more as augmented intelligence than artificial intelligence in the near future. Humans will always be needed to validate, guide, and train these systems to ensure that they are being used correctly, especially when lives are at stake in fields like healthcare.

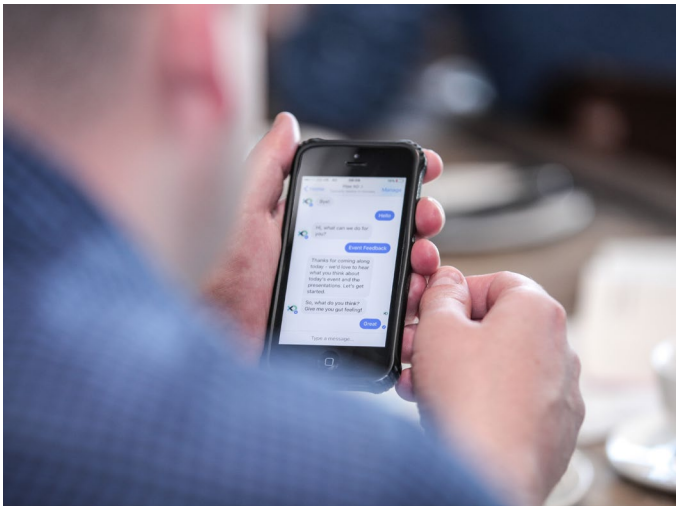
Instead of replacing humans, these tools will provide specialists the ability to do their jobs better, faster, and more safely and efficiently.

02. Conversational AI is expected and will change user experience

WHAT IS CONVERSATIONAL AI?

Conversational AI allows people to communicate with apps, websites, and devices in everyday natural language through text, voice, touch, or other inputs. It offers a relatively easy user experience for consumers while allowing companies to offer quick, effective interactions that build relationships with users.

Gartner predicts that "conversational AI-first" will be the most important strategic imperative in the next ten years.



THE PARADIGM IS SHIFTING

Our daily interactions with conversational AI interfaces — Alexa, Siri, Google Assistant, phone bots, mobile websites — have changed the way we think in a very fundamental way. Children talk to Google Home and Amazon Echo naturally because it is now normalized.

Conversational AI interfaces will ultimately become one of the primary ways information is provided to consumers. These interfaces provide not just search results, but also allow for a seamless and natural shopping experience, voice-friendly content for users, and the provision of healthcare resources for patients and caregivers.

As internet and web-based platforms were the paradigm of the early 2000s, and mobile and cloud-based solutions were the paradigm of the 2010s, conversational AI is poised to become the paradigm of the 2020s.

03. Having fair, ethical, and diverse AI models is extremely important

AI has already shown it can match some of the greatest human abilities: understanding language, driving cars, and identifying complex patterns. However, when AI models are built carelessly, they can also magnify human traits such as implicit bias.

Even when not intentional, when developers use incomplete or exclusive data sets, AI models can "learn" how to reflect bias. AI systems are only as good as the data we use to train them. Bad data can have implicit racial, gender, or ideological biases.

The consequences of bias in AI can have a huge impact on peoples' lives and livelihoods. Imagine these scenarios:

1. **Insurance:** a person is asked to pay a higher premium based on predictions made by an AI model that considered attributes like race or gender.

2. **Employment:** an AI may screen candidates' resumes based on attributes similar to those of previous candidates in order to hire. In other words, if human bias generated the first data set, then the model is trained using bad data.

3. **Government:** in benefits and welfare programs, using a biased AI to help determine which citizens receive support from these programs may result in eligible people being disqualified (false negatives) or ineligible people receiving benefits (false positives).

Developers are responsible for employing diverse groups of people to ensure the AI models are created with differing perspectives and use diverse datasets.

Ethics and diversity were a significant focus at this year's AI Summit. We expect this emphasis to continue moving forward. It's unlikely that a single organization will solve for all biases in AI, but as more organizations become aware of potential impact and commit to mitigating bias, developers can create more inclusive and representative models that benefit larger communities.

04. AI developers must find a way to bridge the trust gap

WHY SHOULD WE TRUST MACHINES?

While some people are scared about AI machines becoming sentient and ruling the world through Terminators, we're

likely safe for the time being. Instead, there are more practical concerns about how developers are using personal data to train AI models. Eighty-eight percent of U.S. internet users are concerned about the privacy and security of their personal information on the web, and companies must work to solve these concerns if they hope to use some of this information to train AI models.

Businesses have access to millions of data points today; it's up to them to be ethical about how they use that data to prevent another Cambridge Analytica-type scandal.

We expect more regulations related to AI and data privacy in the future, which may help hold unethical businesses accountable. The European Union's General Data Protection Regulation (GDPR) provides consumers some "ownership" of their data. California's data privacy law, the California Consumer Privacy Act (CCPA), will be the most comprehensive of its kind in the United States when it goes into effect in 2020.

Data collection and consent are key components to developing AI, so the concepts are intertwined in these laws. Having consumers consent to using their data and having businesses use it in a responsible way is a win-win for consumers and businesses alike. Businesses gain access to better AI models, and consumers gain more relevant and accurate experiences from those models.

05. The Internet of Things will use AI to connect our environments

The interconnected environment will tie together all the technologies discussed thus far and more. Every electronic device that we currently own will be able to send and receive data to other online devices. Already, Google Home and Amazon Echo devices can interact with thermostats to change temperatures, with lights to change colors by voice, and with door locks to lock or unlock remotely.

Soon, everyday things that we don't currently consider to be electronic devices such as pillows, faucets, and bathtubs will have embedded electronics that will be connected to other devices. The ultimate usefulness will emerge as these devices are able to make smart decisions based on AI engines that will be part of a central hub for homes. Healthcare and general well-being will be a primary focus of these smart decisions.

At trade shows like this year's CES, nearly every booth with an Internet of Things-connected device had a "Works with Alexa" or "Hey Google" sticker. AI alone does not provide much value. Pairing AI with devices in our homes will have a much greater impact on improving lifestyles.

06. Healthcare remains a top opportunity for AI integration

The market for healthcare AI tools is expected to grow to more than $34 billion by the mid-2020s. This market will consist of software, hardware, and services powered by AI.

The AI use cases in healthcare are almost endless:

- Sales rep training/engagement
- Medical, legal, and regulatory process efficiencies
- Predicting patient retention and adherence
- Patient assistance via chat support
- Resource management for pharma medical information teams
- Testing treatments from R&D in virtual environments before human trials
- Providing emotional support through patient support programs

When paired with hardware, AI provides other exciting health applications as well.

1. **Wearables with AI:** Wearables have a major role to play in health and wellness and go beyond just fitness tracking. The most common health-related sensors are the accelerometer and heartbeat rate. Higher-end devices have sensors for electrocardiography (ECG), electromyography (EMG), oxygen, body temperature, and barometric pressure. The fourth-generation Apple Watch comes with an ECG built in. Other sensors like a continuous blood pressure monitor and a UV light sensor may require bulkier hardware. As the sensors become smaller, cheaper, and more accurate, we will continue to see them being used with more wearables.

2. **Brain scans:** Using a common type of brain scan, researchers have used deep learning to create an algorithm capable of detecting Alzheimer's disease about six years before official diagnosis. While this algorithm and others like it are still being tested, these types of diagnostic breakthroughs are only possible using advanced AI.

This trends list is not exhaustive. AI is going to play a part in every industry and technology, much in the same way electricity and the internet were world-changing platforms. AI will soon power amazing consumer-facing products and behind-the-scenes infrastructure. The potential for the technology to improve our lives for the better is incredible.

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