ADVANCED CONTEMPORARY & EMERGING TECHNOLOGIES

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ACE

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INSIDE THIS ISSUE

"Drones are poised to take over the delivery world."

PRACTICAL DRONE DELIVERY

In recent years, there have been significant advances in a variety of technologies designed to deliver cargo by drone, primarily driven by industrial efforts. These drones may be aerial, marine, or terrestrial. Some are fully controlled by a remote human operator, while others are fully or partially autonomous. Drones range in parcel size, from a few kilograms to container ships.

A successful deployment of delivery drones at scale could radically transform the industry, replacing thousands of drivers, fossil fuel-powered delivery trucks, road traffic, and centralized delivery hubs with drone operators, small aircraft, air traffic, mobile hubs, and point-to-point delivery. This broad transformation could result in reduced congestion in existing road infrastructure, increased road safety, and improved accessibility to areas with poor road infrastructure.

Merchandise Delivery
Merchandise delivery, one of the best-known use cases for drone delivery, has the potential to significantly reduce the cost and carbon footprint of this enormous industry.

Humanitarian aid
Humanitarian aid, that is, providing essential supplies to otherwise inaccessible people in war or disaster areas, is another useful application of delivery drone. Similarly, medical delivery of organs and blood is another time-critical, life-saving application that has previously seen field trials.

APPLYING ARTIFICAL INTELLIGENCE AND MACHINE LEARNING TO CYBERSECURITY

Cybersecurity is a key concern for nearly every business today. The number of cybersecurity threats is increasing on a daily basis and compromising our private, professional, and national existence. The time required to address threats is increasing, and human capital is under-resourced.

The growing attack surfaces includes amateur threats, such as phishing, sophisticated distributed denial of service attacks, and skilled nation-state actors. Prevention is nearly impossible.

For cybersecurity to advance, AI and machine learning (ML) must be used to automate mundane tasks, thus effectively enabling cybersecurity analysts to scale and respond to more events in real time. Unfortunately, cybersecurity is not a static game but one that evolves constantly over time, which means that AI must continuously capture analyst behavior, strategies, successes, and failures to learn new tactics and techniques as they are invented. AI and ML will first assist and then eventually automate lengthy efforts to identify threats and act upon them.

VIRTUAL REALITY AND AUGUMENTED REALITY IN EDUCATION

We keep claiming that technology will transform education. We said it when computers hit the market in a real way in the 1980s. We said it when artificial intelligence began reaching Siri levels. And we're saying it now, when spatial computing is taking its strongest steps forward since, we began seriously working on it in the 80s. But while those early technologies have certainly impacted schooling, they haven't transformed it the way we hoped they might.

Google lets students explore the world using cell phones and a piece of cardboard. It's great because it doesn't need an expensive computer, but it still requires a lot of funding from Google to make it happen. They rent out the phones, provide the cardboards for free, and even give training for teachers on how to lead the expedition.

The augmented reality sandbox, is being used around the world to help students learn about topography and geography. All it requires is a projector, a single computer, and a few sensors. With that students can leap into a fully responsive experience that reacts to their input. Following that line has the potential to get a whole classroom involved in AR with realistic resource requirements.

Virtual reality has been getting a lot of well-deserved ink for its potential to transform education, but the infrastructure necessary to bring in a program that every kid can engage with is a stopper even more significant than it was with computers.

"Computers have been relegated to something you learn about rather than something you learn from, and there are a lot of opportunities we've missed because of that."