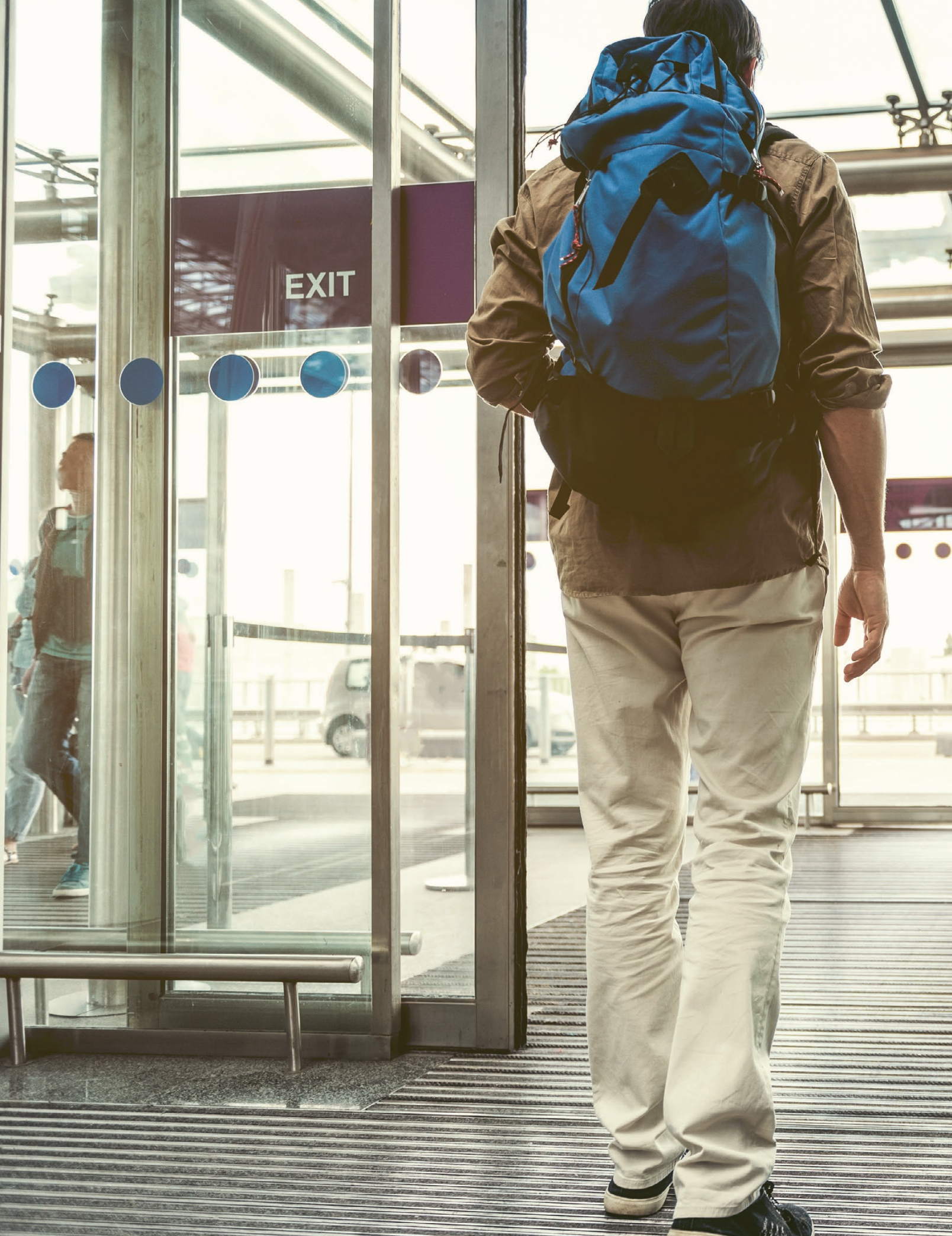
EXIT

TOUCHLESS TECHNOLOGIES

by David Vinson, PhD

During pre-production of the 2002 neo-noir film *Minority Report*, director Steven Spielberg invited fifteen experts to think about technologies that would be developed by 2054, the year in which the film is set. Their insights helped to build the future "reality" presented in the film.

Looking at *Minority Report*, its portrayal of the future appears almost prophetic, and credit certainly goes to Spielberg's team of tech experts for their accuracy. We're already witnessing some of their predicted technologies, those such as multi-touch interfaces, personalized advertisements, self-driving cars, gesture recognition, and even retina scanners.

Of course, private universities and colleges across the country are well acquainted with the benefits of cutting-edge technologies, for these make our classrooms smarter, our student-athletes faster and stronger, our buildings and green spaces cleaner, more beautiful, and more eco-friendly.

And in light of the challenges precipitated by the COVID-19 outbreak, higher education institutions are also embracing technology as a means of keeping communities healthy and safe.

Touchless technology represents a viable strategy for reducing cross-contamination, whether in terms of the COVID-19 outbreak or in regard to slowing the potential spread of other illnesses like the common cold or the flu.

Redefining What's Possible with Touchless Technology

Thanks to innovations in touchless technology, activities once imagined in works of science fiction are now becoming a reality.

Once again, I'm reminded of *Minority Report* and a scene in which John Anderton, the film's central character, uses multi-touch interfaces as well as gesture recognition. Anderton's movements are captured by sensors, and as he motions with his hand, he "flips" through different images, finally selecting the film recording he wishes to view.

As far back as 2008, computer designers were already working to give users similar freedoms. In this case, they aimed to replace the mouse of the computer with touchless technology. The idea was to create software that allowed users to play or pause videos and music by holding an open palm up to the screen. Make a fist, and the hand functions as a mouse, pulling a cursor around the screen. Flip a thumb up and down to click.

This was a novel approach, and it inspired future innovations. With touchless technology today, we're now using sensors to recognize one's voice, facial features, or gestures to complete a task.

Siri and Alexa are practically ubiquitous as examples of voice-based technology, which interprets speech using automated speech recognition (ASR).

With facial recognition, human facial patterns are used for identification. Smartphones, for example, can now use facial recognition for unlocking a phone, or in lieu of typing passwords.

Gesture-based technology is perhaps most common in touchless technology. This allows a user to control and interact with machinery, appliances, and portable devices without actually touching them. The most important component of this system is sensors, which are located near the screen. And once compatible, cloud-based software is calibrated, data from the sensors can be analyzed, thereby transforming a screen's utility and freeing the user from any need to touch.

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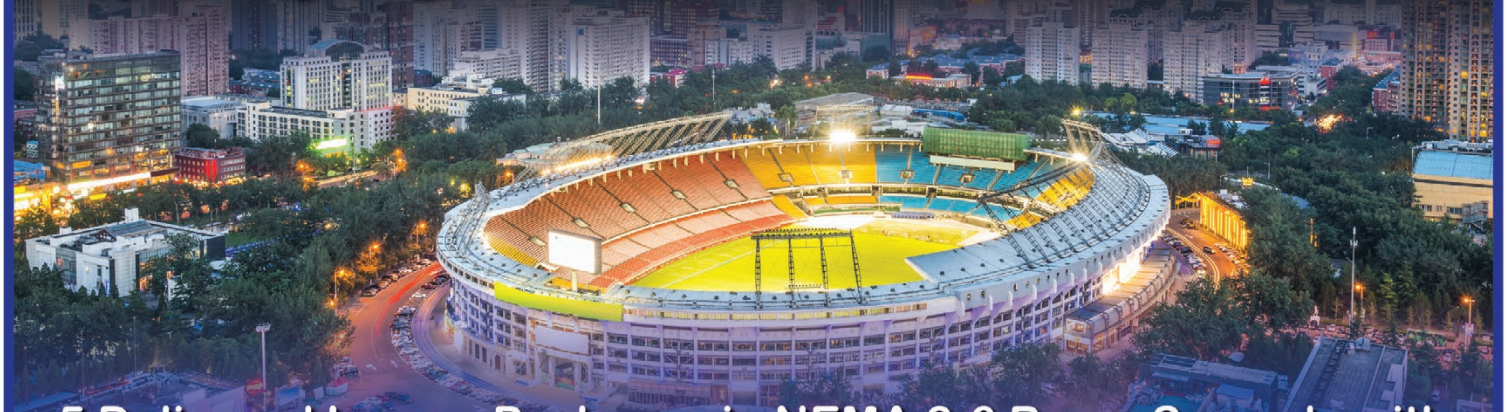

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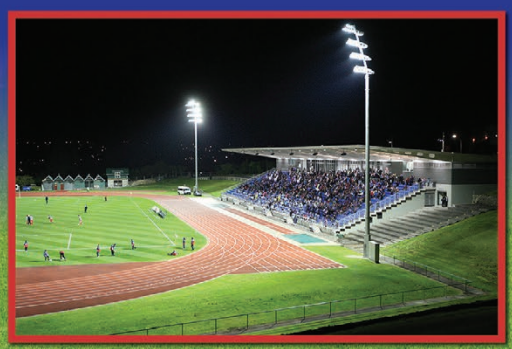

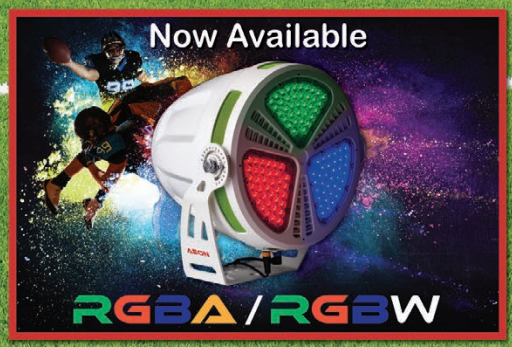

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The Market for Touchless Technology is Growing Exponentially

According to market reports, the demand for touchless technology is growing at the rate of 17.4% and will reach $15.3 billion in 2025 from $6.8 billion in 2020. This growth is certainly a reflection of how touchless technology is considered an asset in our collective efforts to mitigate the COVID-19 outbreak.

The implementation of touchless technology is surfacing in all kinds of surprising ways, and this highlights its versatility. In India, different peer-to-peer ridesharing companies are using touchless technology to discern if a driver is wearing a mask based on the selfie sent by the driver whenever he or she begins a new ride.

Due to COVID-19, most companies that used biometric attendance have now suspended it. Some are using access cards for the time being, but large enterprises are likely to adopt facial recognition going forward. This speeds up the entry process and alleviates the need to keep track of one's card.

Aviation is another sector that is increasingly investing in contactless processes. In the future, we may see a boarding pass printed through gestures or voice-based technologies used for the boarding process. Contact-less baggage management is another process that aviation companies are exploring.

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Common Touchless Technologies at Higher Education Institutions

Many higher education institutions already utilize touchless technologies, although not all operate in the same way.

Touchless faucets, for instance, may seem like magic, but they do not detect actual motion. A sensor on a touchless faucet detects the presence of an object, whether it is the swipe of a hand or a pile of dirty dishes. The sensors use a small infrared light mounted next to an infrared detector. The infrared light bounces off the user's skin as it approaches the faucet, and the signal turns on the faucet valve.

Touchless faucets, touchless paper towel dispensers, and touchless sanitizer dispensers all provide the key benefit of protecting the user from needing to touch objects that innumerable others have also touched. This reduces the number of touchpoints and works to prevent the spreading of germs.

Motion-sensitive, touchless lighting systems are also becoming increasingly common at higher education institutions, and these cut down on energy use while also limiting the number of touchpoints used, whether in the classroom, the public restroom, or in any other heavily trafficked, indoor space.

While touchless technology may be common in certain areas of campus, the pressing necessity to further utilize this technology is becoming all the more apparent amidst the COVID-19 pandemic.

The Necessity of Touchless Door Entry Systems

Gesture-based, touchless technology can and should be applied to all doors on campus.

An obvious benefit is the reduction of potential touchpoints at busy entryways. Just think of the number of persons who touch a door that provides access to a lecture hall, a cafeteria, a restroom.

Even the door to a seminar classroom equipped for 15 students can become a locus for spreading illness. If that same room is used only twice in a single day—and many rooms are used far more on a daily basis—at least 30 students, their professors, and anyone else who has reason to use the room have touched the same object when they both enter and exit, not to mention those who may need to exit for the restroom during a class session. If the same two classes meet three times a week, the number of touches add up exponentially.

In other words, it may be tempting to dismiss the need to equip less trafficked spaces on campus with touchless technology, but all it takes is for one individual who's infected with COVID-19 or another illness to create an infection hotspot. With COVID-19 in particular, this is a stark reality, and it is one we must contend with until the curve is flattened.

Other Benefits of Touchless Door Entry Systems

The technology of touchless door entry systems not only prevents cross-contamination and slows down the spread of illness, but it also speeds up workflows and prevents others from having to wait.

A large lecture class attended by 100 or more students can be held up by the nuisance of a line as students enter the room. On an even larger scale, sporting events attended by thousands may indeed offer multiple entryways, but that isn't to say the lines aren't still egregious as starting time approaches. A touchless, high-speed door entry system can open doors up to 4 times faster than a traditional entry point. This enhances everyone's experience and makes for safer, healthier use of public spaces.

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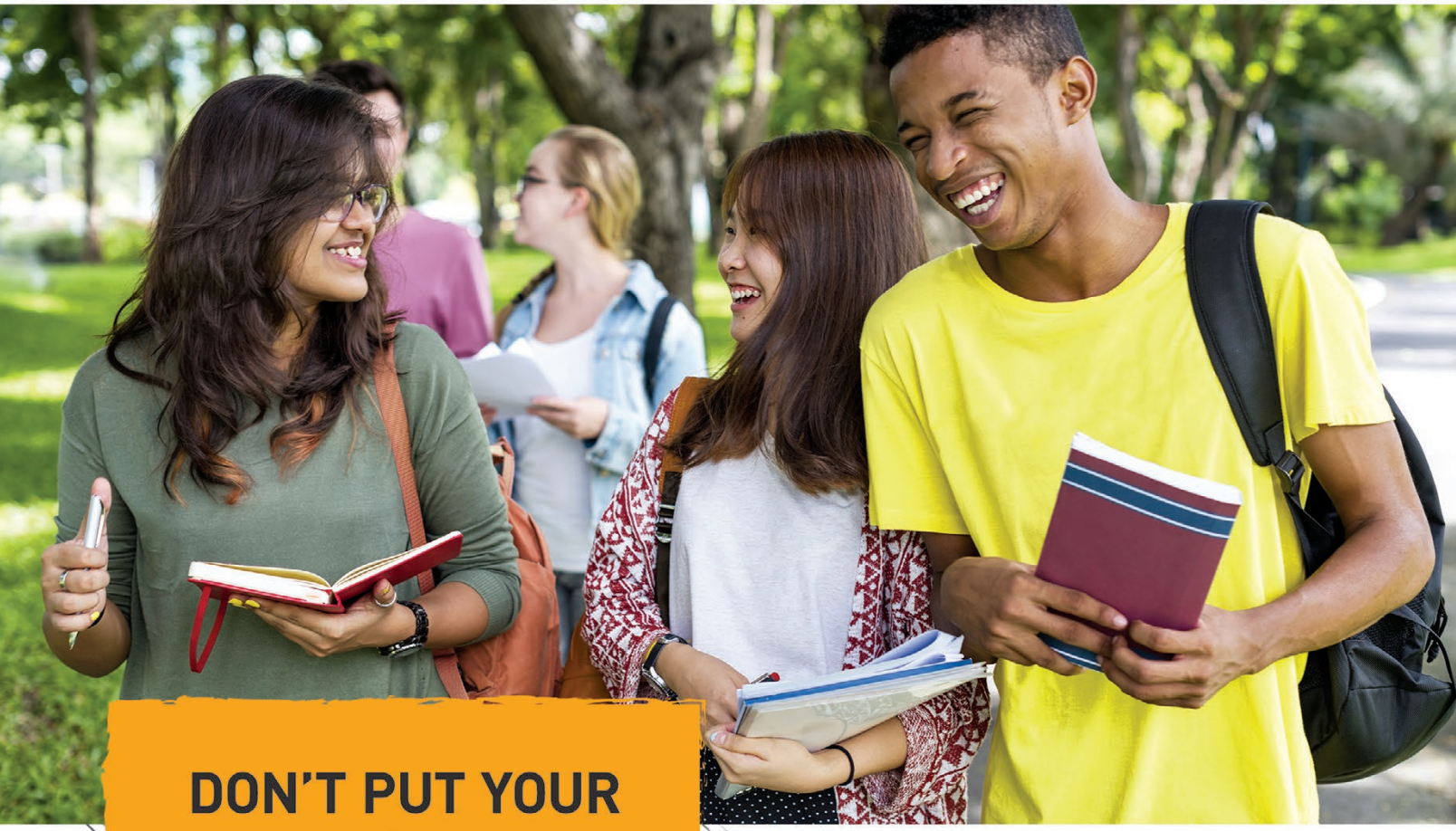

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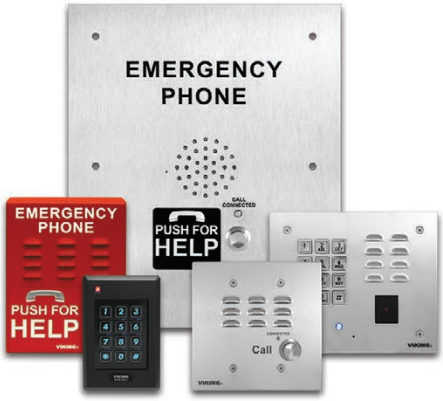

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If a door leads to the outside, touchless doors can protect against pests because they will automatically shut when not in use. Moreover, a rubber or brush weather seal can be added to create a complete seal to stop drafts, pests, as well as while light from entering a building.

Touchless doors can also increase energy efficiency by sealing off outside air. They can be designed to create a weathertight seal to prevent air exchange through gaps around dock levelers and doors.

Apps for Touchless Technology

Apps designed for smartphone use can now deliver personalized work experiences that cater to employee's needs. The workforce that keeps our private universities and colleges operational can be safer and healthier than ever before.

For instance, apps can now be used to adjust and monitor light and temperature of workspaces exactly to an employee's individual needs. This in turn minimizes the need for employees to touch or adjust light and temperature switches.

Some apps can even be used to locate colleagues. This feature can potentially be developed to help with social distancing practices such as notifying employees of crowded spots within the co-working space.

Touchless Technology is the Present and the Future

We have not yet reached the point in which can refer to the COVID-19 in the past tense. It still looms, and we are all in search of solutions for striking a balance between maintaining our productive and rewarding public lives while also staying safe and healthy. Touchless technology has the potential to greatly mitigate the spread of illness, and it can help us navigate our new "normal."

Moreover, if we take a step back and contemplate the ways in which we're already using touchless technology, whether with touchless doors, motion-sensitive faucets, or touchless lighting systems, it becomes apparent that touchless technology is both the present and the future.

The need for this technology will persist, not simply because it safeguards us from the spread of illness, but because it is convenient, efficient, and can be applied to a wide range of settings.

Just the other day, I read about how touchless technology is making coffee and vending equipment safer. Now imagine the benefit of this in a workplace where coffee and vending machines are touched repeatedly throughout the day, and by multiple users.

This technology works to sense the user's proximity to the machine. All the user needs to do is hover his or her finger under an inch from the selection pad for the machine to recognize the purchase. The process is completed with touchless payment options.

There are scenes in Spielberg's *Minority Report*, those that feature consumers completing transactions, all aided by gesture-based, touchless technology. Our tech-based fantasies are becoming realized, and what was once only possible in science fiction is now entirely within our grasp.

ABOUT THE AUTHOR: PUPN staff writer Dr. David Vinson has a PhD in English with specializations in transatlantic literature and cultural studies. He is a committed scholar, teacher, husband, and dad. If you ever meet David, avoid the subject of soccer. His fandom borders on the truly obnoxious.

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