



# HOW AI-POWERED TECH IS ADVANCING TOUCH SYSTEMS

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March 29, 2021 | by **Gene Halsey**

A technological “gold rush” is emerging as artificial intelligence enables users to interact with computers in ways that were unthinkable just a few years ago. In fact, AI-powered technology is giving rise to perceptual user interfaces like voice- and gesture-based recognition, allowing users to interact with kiosks, displays and other devices with the sound of their voice or the movement of their body. Many proponents of the innovative technologies are touting them as alternatives to touch systems, claiming they’ll surpass touchscreens to become the new, dominant modes of human-computer interaction and communication.

But, as history tells us, the user experience determines whether new tech lives or dies, and based on the stand-alone capabilities of voice and gesture, it’s difficult to imagine that either can replace the ubiquity of touch systems. Nor will either fade into obscurity and join the ranks of Blackberries and Palm Pilots. Rather, we’re on the precipice of a new era of technology, where we can bring together voice, gesture and touch to create an entirely new user experience that harnesses the best of each interface.

It’s true that voice and gesture are commanding enthusiasm in the human-computer interface industry. But it’s likely touch will continue to dominate the marketplace and serve as the backbone of these new hybrid technologies.

Many reasons account for this, but none more than touch’s intuitiveness. Touch is the first sense we develop as humans, according to scientists, and it plays a fundamental role in our development as humans. Not to mention, people naturally gravitate toward surfaces, materials and objects they can touch with their hands. The evidence of this is clearly seen in the rapid rise of touch systems throughout society today. In fact, current and future generations moving into the workplace already have been primed for and expect touch capabilities in their work environment.

The widespread use of touch hasn’t gone unnoticed by big business and major corporations, all of which have been pouring resources into the integration of touch into the workplace for several years now. But the expansion of touch doesn’t stop there. A vast majority of retail centers and stores also have moved to touch for their POS systems, informational displays, interactive product catalogs and many other use cases.

## **Supplementing touch**

Like all technology, however, touch has its limits. But where it may lack, voice and gesture can supplement it to create a more intuitive and instinctive device. For example, natural language processing, known as NLP, the behavioral technology behind voice-recognition interfaces, has given rise to Siri, Alexa, Cortana and Google Assistant. Each of these devices has had much success, showing there’s a healthy demand for future NLP technology in the consumer marketplace. But NLP has yet to

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penetrate the business community and take advantage of a sector that's always looking for new ways to streamline operations. How voice becomes integrated with supplemental commands for the primary touch experience will be developmental for the next generation user experiences.

Similarly, gesture-based recognition interfaces can provide a computer with real-time data by utilizing cameras to feed images into a sensing device. This technology is driving advancements in automation, including smart homes and smart cars, virtual

assistants, online customer support, augmented reality games and many more applications. Gesture's influence on the future of automation technology will undoubtedly be strong. And when paired with voice and touch, the benefits could go much farther than better video games and smarter virtual assistants. Together, these technologies could solve some of the world's toughest problems. Think about how an interface trio with touch, voice and gesture would interact with an entire person rather than one aspect of their body, possibly reducing pain and fatigue, maintaining comfort and preserving a user's mental acuity during long hours of interaction with the natural interface.



## Welcome to the virtual experience

One of the latest examples of natural interfaces solving real-world problems can be found in the board room, where innovators have enticed corporate buyers with new technology that fosters collaboration among employees. By utilizing voice, touch and gesture, we are looking at developing a next-generation, collaborative-based conference system, built with fixed microphones and voice-recognition cameras strategically placed around a digital touchscreen whiteboard, giving virtual attendees the full boardroom experience. The device may sound like a mouthful, but it can streamline meetings and save the corporate world millions — if not billions — of dollars in wasted time and board room inefficiencies.

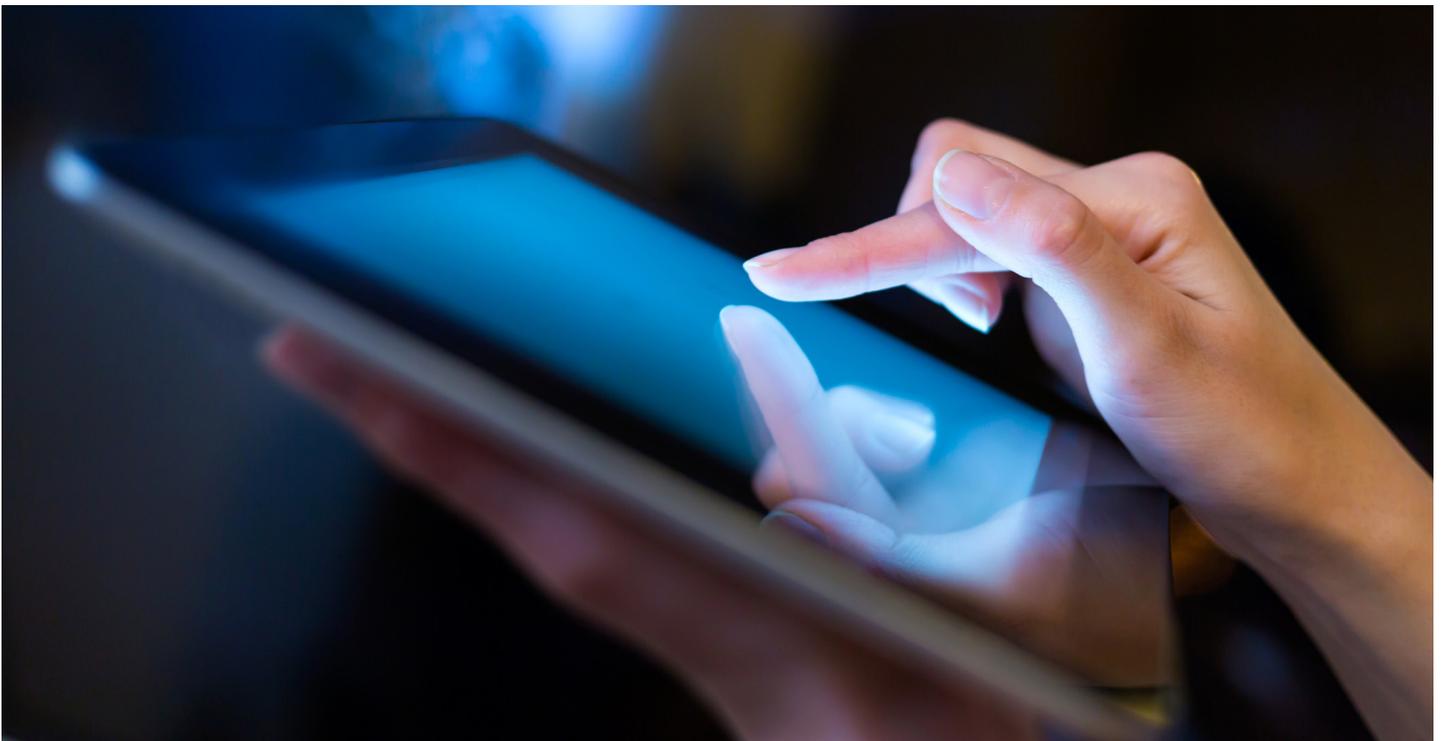
We will also see these technologies converge in the hospitality industry, specifically fast-food restaurants, where customers will be greeted by kiosks that actually communicate with them. Imagine exchanging pleasantries with a kiosk before you gesture your hand to turn a digital page on the screen. Once you find what you're looking for, you reach up to the kiosk and touch your selection. As you walk out the door with your food in hand, a familiar voice calls out your name. You turn back around to see the kiosk alerting you that you left your credit card behind.

These products will be successful if they operate as intended. However, as a 30-year touch systems engineer, I know all too well that it is one thing to build new technology and another thing to build it right. Time and time again competitors leap-frog the pioneers of new innovations because the technology wasn't done right. We've seen this with early e-book adopters, which

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brought to market e-book readers much sooner than Amazon. Unfortunately for those companies, the user experience of their platforms was poor due to glitches and other problems. Customers found a better option with a store called Amazon and we know how that story unfolds.

We are experiencing exciting times in the world of inclusive touch systems. As innovators continue to integrate touch with perceptual user interfaces like voice and gesture into one single interface, we will see the best of our technologies rise up and help us communicate in ways we never thought possible — not only with computers but also with each other.



## ABOUT THE AUTHOR

Gene Halsey is the Vice President of Product and Business Development for TES America, LLC. TES is the world's leading manufacturer of projected capacitive touch systems.