

Robert McCann, PhD — Experimental Psychologist

PUSHING BUTTONS

Experimental psychologist Robert McCann, PhD, focuses on the user experience — on land and in space.

He applies his expertise to the complex cockpit system displays, navigation systems and safety displays used by astronauts in NASA spacecraft.

"In 1999, NASA began a project to upgrade the cockpits of the space shuttles," says McCann, who works as a research scientist at NASA. "Without hesitation, I joined a large team of human factors engineers, astronauts and flight controllers in designing a new generation of shuttle displays to increase the safety of shuttle missions."

It was a chance McCann had dreamed about since he first saw Neil Armstrong and Buzz Aldrin land on the moon on July 20, 1969. And he didn't even need to know how to fly; a background in psychology was the ticket.

"Working for NASA has afforded me many opportunities to apply my knowledge of human information processing to NASA's goals and missions," says McCann.

NEGATIVE SPACE

At NASA, McCann's expertise in human limitations of attention and display processing is critical. In other words, what can people reliably see and correctly interpret on an instrument panel? He helps determine the features of cockpit displays without overloading the pilot or taxing his or her attention span.

"One of the purposes of the display was to alert the astronauts to the presence of a failure that interrupted power in a specific region," says McCann. "The most obvious way to depict this interruption was to simply remove (or dim) the white line(s) connecting the affected components."

But McCann understands that sometimes the best answer is not so obvious or intuitive.

"Basic research on visual attention had shown that humans don't notice the removal of a display feature very easily when the display is highly cluttered," McCann adds. "We are much better at noticing a feature or object that is suddenly added to a display."

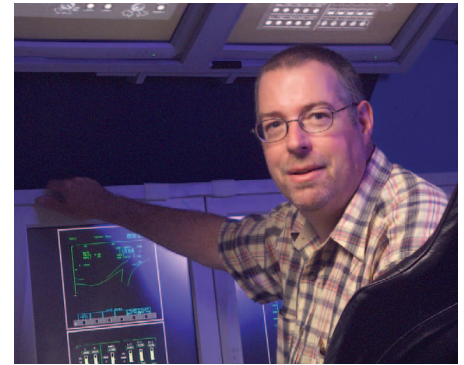
ON THE HORIZON

Looking beyond the space shuttles — which have been retired — NASA is working on designing the next generation of space transportation systems that will send astronauts and robots to destinations beyond the moon.

According to McCann, these missions will require fundamental changes to operations for both crew and ground personnel — such as applying artificial intelligence — to pilot spacecraft at extreme distances.

"My most recent work is focused on the design and evaluation of user interfaces between spacecraft operators (crew and ground-based flight controllers) and 'smart' applied artificial intelligence systems that will allow man and machine to work together," he says.

Together, people and systems will monitor and manage next-generation spacecraft systems.



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EXPERIMENTAL PSYCHOLOGY

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