

Meet Heather, a humanistic multilingual robot with facial recognition, designed to help retirees

Richard Johnstone poses for a photo at his home at Shorehaven in Oconomowoc, with his robot "Heather" in front of some of the many patents he owns from his years of work as an engineer. Photo By Todd Ponath

By Donna Frake Lake Country Publications
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Even in retirement, Richard Johnstone, 83, continues to innovate and share his knowledge of technology.

Residing now at Shorehaven Towers, Johnstone lives alone, save for a creation of his retirement: a robot named Heather.

Created as a model of human support as we age, Heather is a sophisticated voice-command robot that includes facial and speech recognition software and can speak fluently in English, French and German. Heather boasts binocular color vision and has acoustic and laser range finding and defense systems.



"There's nothing standard in it at all," said Johnstone, who machined every part, created all the hardware and wrote the software for the robot.

"I physically made the microcomputers for it," the British inventor added.

"Being multilinguistic is a big part. At the moment, you have to switch some software to go from one language to another.

It is designed so I can tell her what to do, and she can do it: voice command."

Vision in the robot is another futurist detail.

"The purpose was that Heather could answer the door, and she had recognition so if she had met you once, she could recognize you," explained Johnstone's daughter, Carol Jefferies.

"That was a big, big part of it. Human identification — it's tricky stuff," Johnstone said.

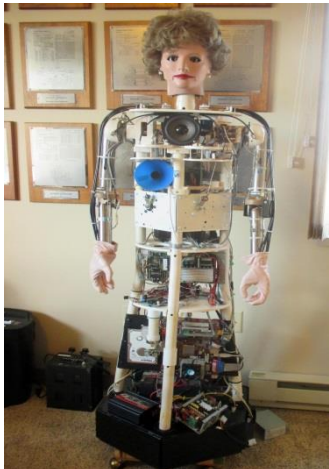
Animatronics became a hobby in retirement, but his focus sharpened in answer to a need.

"I was always a dabbler. People would say you can't do that, and I would say, why not?"

The motivation behind creating the robot was to have it help with tasks while his wife was ill, such as retrieving medications. Johnstone's wife died earlier this year.

The robot has articulated fingers, hands and wrists to enable it to be of service

"Her shoulders, elbows, hands and fingers are absolutely humanistic," Johnstone said.



"She could serve you and retrieve medications" through speech recognition, he added.

"It's a work in progress, " Johnstone said of the robot, which was dismantled for the move and currently does not operate.

He plans to bequeath Heather to Waukesha County Technical College's Electronics department for further development upon his death.

On the cutting edge

The creation of Heather is just one of Johnstone's impressive accomplishments.

He traces his ability to create back to his youth when he was fond of dismantling objects to see how they worked.

"Yes, I would take things apart and then put them back together again. All the time," he recalled.

In his earlier years, Johnstone designed and built motorcycles, cars and trailers in 1950s, using restored military parts.

"I had a lot of fun with them," he said.

He raced the fastest motorcycle in the world, the "Vincent" and went on to become a leader in the design and manufacturing of computer controlled machine tools.

During his career, Johnstone developed and patented software, holding nearly 40 patents, including patents with NASA, and rose through the ranks from the ground floor to vice president of international technology at Kearney and Trecker.

He's traveled the world many times and led a top security work life.

Largely self-taught, he added to his hands-on learning experiences with service in the British Airforce.

"I was supposed to be a flight engineer and did everything but drive the plane myself," he laughed.

A background in both mechanical and electrical engineering and heavy experience in electronics landed Johnstone at the cutting edge of the computer age. When the company he worked for in England was bought by Kearney and Trecker, he relocated to the United States.

Among his impressive array of patents, Johnstone created spars for airplanes.

"We made it possible to make things like those big Boeing airplanes and stuff like that," Johnstone said.

He built a prototype of the cruise missile and designed and created the DCS (diagnostic communication system) in the late 1960s.

"I invented a global program that would enable us to service machines anywhere in the world and do it remotely with local people," he explained.

"Nobody was doing anything close to that," former colleague Eric Groenke said.

Getting connected

Computer connections took on a whole new meaning when Johnstone requested an Internet connection in his new apartment at Shorehaven.

Serendipity struck when Shorehaven's IT professional stopped by and discovered they were former colleagues at Kearney and Trecker.

"As soon as I walked in the room, I recognized him immediately," Groenke said.

"I knew of him first by reputation," he explained, but then the two got to know each other by working together.

"Richard was an extraordinary engineer. A legend," he said.

Finding that friend has made a difference for Johnstone's transition after moving from Arizona two months ago to be closer to his daughter.

The two have engaged in technical conversations, and enjoyed the repartee of a shared interest. However, Groenke is soon retiring.

Jefferies is worried that the loss of the connection with his former co-worker will be difficult for her father, having recently lost a spouse and relocated across the country.

She is hoping that some like-minded people may be interested in meeting and talking with Johnstone.

"I'm hoping this will open the door for some enthusiasts or visitors or for an invitation to visit a campus and speak about Heather or invite some friendship."

If you, or someone you know, would like to connect with Johnstone, call Jeffries at (262) 569-8033.