

# Watson-powered robot aimed at aiding elderly and caregivers

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IBM Research today announced the creation of the prototype IBM Multi-Purpose Eldercare Robot Assistant (IBM MERA) done in collaboration with Rice University. IBM MERA is a first of a kind Watson-enabled application designed to help assist the elderly and their caregivers. IBM Research also has plans to work with Sole Cooperativa, an independent healthcare provider in Italy, to instrument senior housing with sensors to monitor day-to-day activities of its residents.

According to the [United Nations](#), the number of people aged 60 years or older is projected to grow by 56 percent worldwide by 2030. To help improve eldercare resulting from this rapidly growing demographic, IBM Research has opened a new "Aging in Place" environment in its ThinkLab in Austin designed to mimic the types of interactions elders may have in their homes. By leveraging IBM MERA, the Internet of Things, and other cognitive-powered technologies, IBM can study how data from atmospheric, motion & falling, audio and olfactory sensors could be used by the ecosystem of caregivers to potentially improve healthcare and wellness as physical or environmental conditions change.

"Now is the time to invest in, care for, protect, and empower our aging population so they can live more independent lives," said Arvind Krishna, Senior Vice President, IBM Research. "Our new research on 'embodied cognition,' which can combine real-time data generated by sensors with cognitive computing, will explore how to provide clinicians and caregivers with insights that could help them make better care decisions for their patients."

## Multi-Purpose Eldercare Robot Assistant

IBM created the prototype robot with students and faculty from Rice University's departments of Electrical and Computer Engineering and Psychology, and it is being hosted inside the IBM "Aging in Place" research environment. IBM MERA will be used to help study innovative ways of measuring an individual's vital signs, such as heart rate, heart rate variability and respiratory rate; answer basic health-related questions; and, determine if an individual has fallen by reading the results of an accelerometer.

Running on the IBM Cloud and a Softbank Pepper robot interface, IBM MERA uses IBM Watson technologies and CameraVitals, a technology designed at Rice University that calculates vital signs by recording video of a person's face. These technologies allow IBM MERA to obtain fast, noninvasive readings on a patient's heart and breathing measurements that can be done multiple times per day. Combined with IBM Watson Speech to Text and Text to Speech APIs, the camera can also view if a fall has occurred and provide information for caregivers.

IBM MERA is also designed to interact with individuals using IBM Watson Speech to Text, Text to Speech and Natural Language Classifier APIs so we can study how they could receive answers to health-related questions (e.g. "What are the symptoms of anxiety?" or "What is my [heart rate](#)?").

"The Multi-Purpose Eldercare Robot Assistant represents the powerful impact that results when leaders in academia and private industry bring their best to bear on pressing societal issues," said Rice Provost Marie Lynn Miranda. "We are delighted to work with IBM on this critical research project, which provides an opportunity for our students and faculty to collaborate with IBM's best Age and Ability researchers at the IBM Research Lab in Austin."

## Creating Smart Senior Living Residences

In Italy, Sole Cooperativa is planning to work with IBM to create smart spaces for its senior residents that will leverage the Internet of Things and IBM cognitive computing to identify changes in physical conditions or anomalies in environmental readings, and is designed to inform caregivers of changing situations.

For example, by monitoring atmospheric readings, such as carbon-dioxide and carbon-monoxide levels, Sole will use IBM technology to determine the room someone is in and how long they remained, and then leverage cognitive systems to help build a contextual understanding of a normal day (e.g., what time do they get up and go to bed, or how many meals do they eat and at what time). By integrating data from other sources, including traditional databases and streaming sensor data, Sole will be equipped with holistic views of their residents.

"This new system will be designed to help our residents live safely and independently for as long as possible," said Roberta Massi, President, Sole Cooperativa. "By better understanding a person's routines and surroundings, we can identify potential risks, personalize care and deliver precise recommendations that improve their quality of life. We can also more effectively improve our business operations by ensuring our staff is more focused on helping residents and patients as potential medical issues arise."

Provided by IBM

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