



UF's 'Smart House' helps seniors live independently

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By **DIANE CHUN**
Sun staff writer

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ZOOM TRACY WILCOX/The Gainesville Sun

Youssef Kaddoura, a research assistant with the computer science and engineering department at the University of Florida, demonstrates the Smart House technology Friday morning in the living area of the new home for tour groups. The background screen shows someone at the door and allows the occupant to open the door with a voice command.

For older people with diminished physical skills or failing memory, giving up the freedom of living in their own home can be more painful than turning over the car keys.

Thanks to the high-tech devices being developed in the Gator-Tech Smart House, which officially opened Friday, that day of surrender may be put off for many of Florida's senior citizens.

The research home in the Oak Hammock retirement community off Williston Road in southwest Gainesville has been equipped with a battery of computer-monitored devices and the latest sensor technology to provide the helping hand most of us will require as we age. In fact, it's the only so-called "smart house" in the United States designed for seniors to live in and provide feedback on the technology while it is still in development.

The University of Florida researchers who developed the array of devices to make everyday tasks easier describe it as an "assistive environment." With some 78 million baby boomers just reaching their 60s, it's technology that will be much in demand in the decades ahead, according to William Mann, director of the UF Rehabilitation Engineering Research Center on Technology for Successful Aging.

"Our focus has been on developing technology for older people to help support their self-care needs," Mann said Friday as groups of six or eight toured the home. "We started by looking at 'smart phones.' It quickly became clear to us that we could do so much more if we could develop a place where seniors could live with the technology and give us feedback."

The "smart house" has a master bedroom and handicap-equipped bathroom with a roll-in shower and whirlpool tub, living and dining room, kitchen and media room with a big-screen TV that could be the envy of the neighborhood on Super Bowl Sunday.

The "smart" floor can detect where a resident is standing within the house. Voice-activated commands can open the front door, close the window shades and turn on the TV or stereo.



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Electronic monitoring lets the residents ask the house if all the doors are locked and windows secured before they retire for the night.

Discretely located behind a door on one side of the house are a room full of computer monitors and servers and a second bedroom and bath where the research assistants who will man this working laboratory can bunk down.

Mann, professor and chair of the department of occupational therapy in the College of Public Health and Health Professions, has spent more than a decade studying how technology can help alleviate the disabilities associated with aging. Now he's looking forward to seeing that technology move out of the laboratory setting and into the marketplace.

With Florida's population of residents over the age of 85 projected to almost double within 15 years, the need for assisted care is expected to skyrocket. Florida State University's Pepper Institute on Aging and Public Policy estimates that 650,000 Floridians will be aged 85 or older by 2020.

Sumi Helal is an associate professor of computer and information science and engineering. He is also director of technology development for the research center and worked with Mann to develop the "smart house," first in space in the College of Engineering and now in Oak Hammock, a new community of apartments, single-family homes and duplex units that will eventually house 500 residents.

He looks forward to further advances in the technology that will allow caregivers or family members to monitor the resident's health electronically, even prompt a person with dementia who may forget what they are doing in mid-task.

"You'd need a dozen Ph.D. students to reproduce this house right now," Mann admits, but with half of the men and women in the United States over the age of 80 needing outside help to live independently, he sees a great demand for the technology.

Mann said they would be setting up a schedule for when the house would be open for tours. Volunteers will help the researchers fine-tune the home's features, first staying during the day and then later, living in the house for days at a time.

"We want to reach the point where this technology is available in a box at Home Depot, so you can buy and install it yourself, without the aid of an engineer," Mann said.

"It should be no more difficult to use than a computer is today, and in fact, a computer will be the 'intelligence' behind the system."

Diane Chun can be reached at (352) 374-5041 or chund@gvillesun.com

FYI: Gator-Tech Smart House

Some of the features already installed in the Gator-Tech Smart House laboratory/home in Oak Hammock include:

- Smart mailbox that senses mail arrival.
- Smart front door for keyless entry, electronic monitoring.
- Driving simulator to evaluate older drivers.
- Smart blinds to automatically control light, privacy.
- Smart bed to monitor sleep patterns.
- Smart mirror with built-in message display.
- Smart microwave that "reads" directions.
- Smart floor that tracks occupants, detects falls.
- Smart phone acts as a remote control for all appliances.
- Smart leak detector near washer-dryer, water heater.

To learn more:

- On the Web, www.rerc.ufl.edu.
- Contact the Smart House coordinator, Nate Pendell, at (352) 273-6133.

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