Using AI to help aging populations live better

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IBM Research and UC San Diego have announced a multi-year commitment to enhance quality of life and independence for aging populations. Credit: National Institute on Aging

The world's population is rapidly aging: Today there are 617 million people over the age of 65. By 2050, that number will jump to 1.6 billion. The population of seniors over 80 is expected to triple in that timeframe, and in some Asian and Latin American countries, it's expected to quadruple. People might be living longer, but that doesn't mean they are living better.

As people age, cognitive health—the ability to think clearly—can decline. Cognitive decline can determine whether older people live independently, which can, in turn, affect their health and happiness. Medical diseases, as well as many medications, can result in adverse

cognitive impacts and compromised functioning for older adults. This is why we must better leverage technology and data to provide opportunities for seniors to continue living meaningful, productive lives.

To help us do so, UC San Diego is launching a collaboration with IBM Research to enhance quality of life and independence for aging populations. We are privileged to be the first West Coast university to partner with IBM's Cognitive Horizons Network. The new Artificial Intelligence for Healthy Living Center (AIHL), located on our La Jolla campus, will combine the technology, cognitive and life sciences strengths of IBM and UC San Diego. Together, we will promote critical research and applications in two thematic areas: Healthy Aging and the Human Microbiome.

We have a rapidly aging world population on one hand, and the relatively new field of human microbiology on the other. How do we bring those two together to make the greatest impact on human health? This is the exciting part because it's never been done before. Over the next five years, this project will study the impact that genetics, environmental factors, daily habits and the human microbiome have on the cognition of older adults.

This collaborative research initiative will also use artificial intelligence (AI) systems to comb through massive amounts of data with the goal of promoting healthier living. We want caring for the older population to be not just palliative, but preventive. Rather than treating serious cognitive decline, we seek ways to stop it.

And the path to prevention may be through the human microbiome; in other words, the bacteria that live on your skin, in your mouth, and in your gut. It is vast, complex and not well understood—yet. But we do know that many diseases linked to aging, such as Parkinson's, have been shown to have a basis in the human microbiome. The further we study it,

the more we are able to understand how it can contribute to lifelong health. In the future, we may be able to use microbiome data for an individual or an entire community to prevent disease and individualize medical treatment.

The other exciting element is that this partnership builds bridges: between microscopic bacteria and worldwide health outcomes; between big data and personalized medicine; between private industry and public university. At UC San Diego, we're bringing together top researchers from across our campus including computer science and engineering, the San Diego Super Computer Center, cognitive science, the Center for Microbiome Innovation, medicine including psychiatry, and the Qualcomm Institute for Telecommunications and Information Technology. All will work together in what will be a transformative collaboration about human cognition focused on the innovative design of the study as well emerging products and services to help maximize the quality of living for older adults.

And, of course, the bright minds at IBM will provide valuable insight and expertise as they visit our campus and we visit theirs. Hands-on research experience with UC San Diego and IBM scientists will be complemented by jointly taught classes and seminars, and will showcase opportunities for trainee and faculty projects. This project is supporting 15 UC San Diego faculty members, along with 46 students, postdocs and research staff.

UC San Diego has a tradition of nontradition. Ever since our founding in 1960, we've prided ourselves on breaking down barriers, bending the rules and believing that forging new paths is always better than treading the old ones. IBM shares this history of innovation with us, from the early days of the Selectric typewriter to Deep Blue and now Watson—and all with the simple mandate to "THINK."

We truly consider ourselves fortunate to partner with IBM in such a meaningful way, and look forward to the cutting-edge research that will take place through the Artificial Intelligence for Healthy Living Center. Our mission is to help turn the last decades of life into a true Golden Age of healthy, happy and wise seniors. We think of the aging of society not as a challenge, but as an opportunity. By leveraging our combined strengths in technology, research and innovation, we can make a difference in the world's aging population.

UC San Diego and IBM together—just think of what we can do.

Provided by IBM

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