Artificial Intelligence
for Human Services

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About the author

Dr. Bulot is a nationally known expert on long-term services and supports (LTSS), health policy and assistive technology. Prior to joining WellSky, he served under three governors as the State Director for Aging and Adult Services where he was responsible for Older Americans Act, Public Guardianship, Protective Services and Medicaid 1915c waiver programs. Jay is also a past President of the National Association of State Units on Aging and Disability (NASUAD), and a tenured Associate Professor, Department Head and Research Institute Director.

Dr. Bulot has worked closely with state and federal leadership on developing performance benchmarking data for recipients of HCBS services. He develops, promotes and maintains relationships with leaders at health systems, government agencies, universities and associations to drive better understanding of the need to integrate health, social and behavioral supports.

Several months ago, I attended a forum on "Artificial Intelligence for Older Adults and People with Disabilities: Balancing Safety and Autonomy," hosted by the National Academies of Sciences, Engineering and Medicine in Washington, D.C. The forum was well attended by various federal agencies, national advisory and advocacy groups, and quite a few academics.

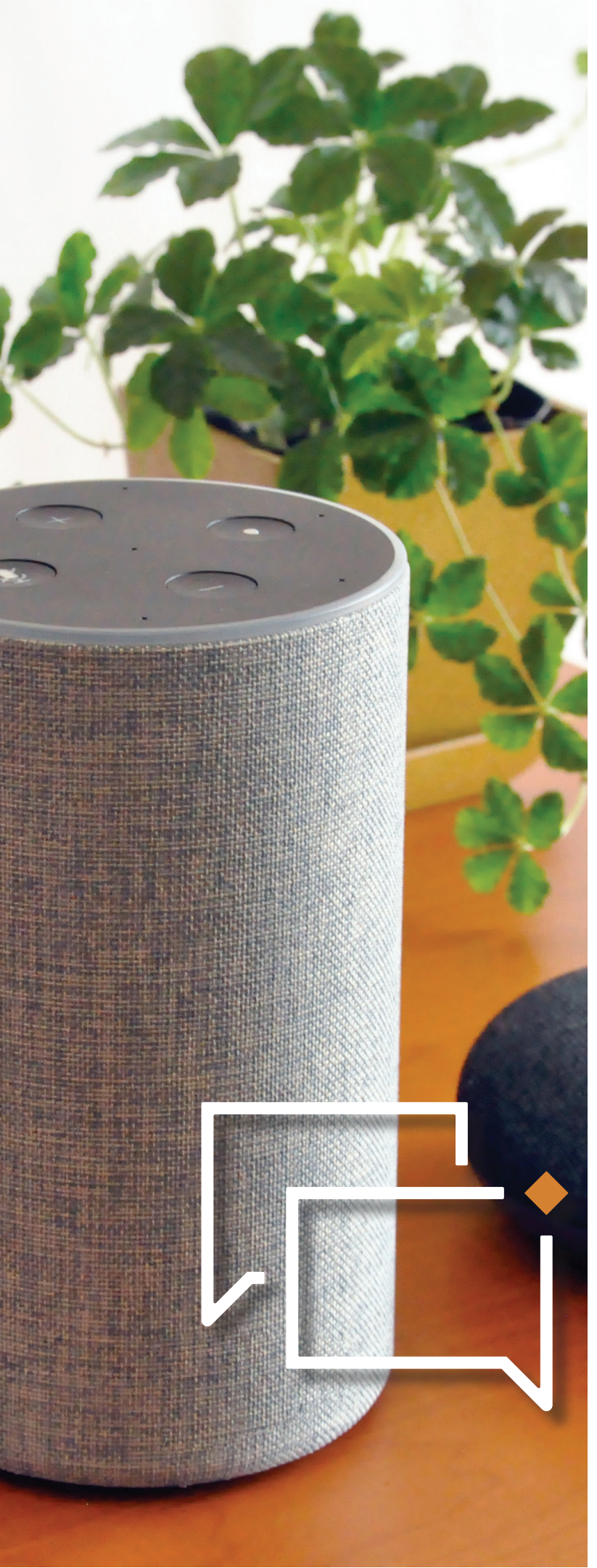
The message is intriguing. While distinctions are being made between the nuances of artificial intelligence and machine learning – and we are years away from true AI – we are already seeing the impact of machine learning in how we use and interact with technology today!

It's important to recognize that the emerging field of artificial intelligence, and our perception of what it is or has the potential to be, has been fueled by decades of science fiction authors, movies, and futurists. The fictional depiction of a new tomorrow, with AI working altruistically to help support and advance our highest aspirations are countered with just as many stories of potential risk, and worst-case scenarios of technology "taking over" our lives.

Developing the vision for AI

The reality of AI today is much different, and those who work in and follow the day-to-day development of AI understand how far away we are from either of these futures. However, there is value in creating a vision for how AI could and should contribute to our expectations for the future. The forum reinforced there is general understanding and consensus for the potential of these newer technologies to have a significant impact on how human services are administered and coordinated in the near future.

The use of artificial intelligence has increased dramatically in the last few years, and the market for AI continues to grow exponentially. It is estimated



that the AI market will be worth $191 Billion by 2024.[1] There is the obvious potential value in business-process automation, decision making, and even research, to drive significant cost savings to state healthcare systems. Several states have implemented AI to help with claims processing and compliance validation.

AI also has potential to assist the growing population of people over 65 and/or those with disabilities remain independent for as long as possible. Researchers have already used AI and machine learning to help identify early warning signs of illness[2] and dementia;[3] convert thought into action through computers and robotics; and now, we successfully convert thought into speech and images.

More work is needed on how AI can be applied to human services today. There is promise that these types of technologies can be utilized in people's homes, retirement communities, and even nursing homes to improve quality of life and reduce staff demands. They would also allow people to more fully take control of their lives and how they receive care. AI is already being used for a few very specific purposes today.

Allowing seniors to remain in home

One of the most important benefits of AI allows seniors to stay in their homes for longer periods of time. There has been a steady decrease in the number of caregivers available to help care for older adults and people with disabilities. When we fail to provide care in a person's setting of choice, we almost always wind up spending more money on health and institutional care. A study by AARP has estimated that by 2030 there will be only four family caregivers available per person to provide care.[4] While families try to meet the needs of their loved ones, there usually comes a point where primary caregivers have to sacrifice safety or employment due to the increased needs of their family members.

AI robots and technology that can eliminate some of the tasks for caregivers and make it easier for them to monitor the health of seniors attempting to remain at home is ever more important for these reasons.

Several types of AI are being used for speech recognition, and sensors and wearables are bringing innovation to remote monitoring. Even more mainstream technologies – like Alexa – are bridging human-machine interactions to make it easier to ask for help, set up reminders, be more active, order groceries, and even schedule household chores.

Sensors are helping to monitor the health and activities of seniors in their homes. This technology has been used to see if seniors are having difficulty managing day-to-day tasks, taking their medications, and tracking other indicators of failing physical or mental health. AI sensors, in collaboration with doctors' offices, help caregivers have more information to make reasonable decisions.

Helping maintain mental clarity and stability

One interesting AI application is imperative for those who are at risk for, or suffering from, early stages of Alzheimer's or other forms of dementia. The University of Denver has developed a companion robot that helps people with dementia retain cognitive ability by playing brain games, helping them remember important things like taking their medications, and showing them pictures of family and friends to help them recall and reminisce.[5] This robot can be used either in facilities or in the home. In addition, the University of Missouri has created an AI robot with sensors, pattern recognition, and analytics that monitor health symptoms, and the senior's ability to care for themselves.

Facilitating greater impact for human service agencies

Much of the work around AI for people with disabilities and older adults is directed toward the direct-to-consumer market. Human service agencies have long recognized the potential to impact the health and well-being of the people they serve through service coordination. More and more agencies are taking a "technology when you want it, people when you don't," approach to care delivery and service coordination. This approach recognizes some consumers will always choose to work with people, while others, would prefer to self-direct their care with as little interaction with people as possible.

AI's ability to augment decision making presents interesting opportunities for human services:

- For professional care coordinators and case managers, AI can help inform the most likely successful care plan for achieving a person's goals and objectives.
- For consumers, intelligent assistants can help navigate complex systems.
- For providers, intelligent assessments can generate service recommendations that best meet the needs of a consumer.
- For payors, early identification of at-risk individuals delay or prevent adverse events from occurring.

There is also even more potential for bridging the consumer market with human service applications and health care delivery systems. The combination can provide more insight and actionable information to all stakeholders. We are beginning to see some of the potential with wearable technology data paired with a large healthcare provider, to enable data sharing, and to identify potential life-threatening events before they happen.

However, we are also beginning to see some unintended consequences in the larger field of AI. Race, culture, gender, and age biases are all being discovered in AI models in various forms. For example, The University of California-Berkeley published a study that found racial bias in lending algorithms, and Amazon's recruiting tool was proven to favor male applicants.[6]

Our approach in human services will be like those in other fields – so it's important to recognize these potential biases will likely exist as well.

Conclusion

Whether it's artificial intelligence, machine learning, or augmented decision making - when our approach is transparent, and these technologies are embedded into human services delivery systems, and developed in coordination with consumers, they will likely have a significant impact and help improve quality, lower cost, and achieve better outcomes for all.

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Our vison is to break down the silos that have traditionally separated government, health care, and non-profit entities, all of whom work for the greater good of our communities. By helping everyone in the care continuum partner more effectively, we can address the social determinants of health that make our world safer and healthier for all.

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