

Executive Summary

Team Name: IntelliRobot

Team Members: Zhidong Su, Fei Liang, Andrew Karaoulis, and Chinmayi Rane

1. Business Concept

IntelliRobot is a startup company that is in the process of creating a smart elderly care companion robot to help older adults and caregivers. This robot is designed to enhance communication between older adults and their caregivers by providing an elder-friendly video call function with an intuitive interface, promoting a safer and more healthful lifestyle through functions like medication reminder, fall detection, daily activities monitoring and vital sign tracking, and reducing caregivers' workload by connecting with older adult through the robot and automatically receiving urgent alerts. There are 55.8 million older adults over 65 in the US and this is a \$61.38 billion market. We have talked with over 100 older adults and caregivers. They are all very interested in our robot. There is not any elderly care robot like ours that can provide plenty of useful functions for older adults and the market will boom over the next few years.

2. Company

IntelliRobot builds smart elderly care companion robots to enhance communication between older adults and their caregivers, promoting a safer and more healthful lifestyle and reducing caregivers' workload.

IntelliRobot' objective is to become a leading and trusted provider of smart elderly care companion robots, setting the industry standard for innovation, quality, and reliability. We will develop a cutting-edge, user-friendly elderly care companion robot that is easy for both older adults and caregivers to use, ensuring a seamless and positive user experience. We will provide a comprehensive set of functions and features that cater to the diverse needs of older adults, including but not limited to medication reminders, companionship, entertainment, and emergency assistance. As the elderly care market is not limited to the United States, we plan to explore opportunities to expand our presence and offer our solution globally.

3. Problems & Opportunities

Some older adults living alone need support from others. For example, when people are getting older, they tend to have poor memories. Some of them have to take medicines every day to relieve pain or reduce blood pressure. If they forget to take medicine or take the wrong medicine, wrong dosage at the wrong time, it

may be harmful to their health. Sometimes it may even cause death. So older adults need to have family members to remind them to take medicine. When older adults fall, someone just waits for someone to find them. Besides, caregivers need to visit older adults frequently to check older adults' status. We searched the market and found that there is a lack of intelligent tools to assist older adults and caregivers, the current intelligent tools are complex for older adults to operate. Caregivers are also struggling when serving many older adults and cannot provide timely help.

The caregiver fees are high for some families. The average annual healthcare costs of elderly people (65+) in the USA are \$25000. The average monthly assisted living cost is \$4,700 and annually \$56,400. The average monthly full time caregiver salary is \$4500 and annually \$50,000.

4. Our solution

IntelliRobot builds smart elderly care companion robots to help older adults and caregivers. The robot can do entertainment, recognition of daily activities, medication reminder, physical wellbeing assessment, subjective wellbeing assessment, health coaching and telehealth. With those functions, older adults can live alone safely and healthily. The caregivers can use the robot to remotely check older adults' status and the robot can provide a timely alarm to caregivers, which can greatly improve the efficiency and reduce the workload of caregivers.

We have all already spent 7 years building this robot. This project, supported by a total NSF fund of \$800,000, has involved the work of 6 PhDs on this robot.

5. Business Model

IntelliRobot will earn profit by selling the robot and monthly subscription for the software. We will sell the robot to business users like nursing homes, hospitals, old age facilities, etc. We will also sell the robot to individual users like older adults and family members. We also do the research & prototype testing at ASCCLab(OSU). The cost is \$1,000 and we sell it at \$5,000. For the software, the monthly subscription fee is \$50 for individuals and \$200 for business users. For the Market volume, the number of older adults over 65 in the US is 55.8 million. There are 26,514 nursing homes in the US. The market size is \$312+ Billion. Our manufacturer will be the Shenzhen Reeman Intelligent Equipment Co., Ltd. and Jiangxi Hengbida Co., Ltd. They can build the robot at a minimum amount of 100 units.

6. Market Potential & Competition

6.1 Market Potential:

We focus on older adults, family members, caregivers/nurses. In America, the older adult's population is 55.8 million. The number of nursing homes is around 26,000. Based on the census, there will be 80.8 million older adults in 2040. The growth rate is 1.25% per year. The market size is \$312+ Billion.

6.2 Competition:

6.2.1 Primary Competitors

We have conducted a survey of existing competitive technologies and found that several commercial products exist that aim to assist older adults who age in place.



ElliQ is a desktop companion robot that consists of a main body and a tablet. It provides the following functions: companionship and entertainment (chitchat, news, weather, etc.), health coaching (cultivate habits, exercise, and cognitive games), connection to family members (video call, sharing images, etc.), and assistance with daily activities (set reminders, book Uber rides). ElliQ was founded in 2016 and has raised nearly \$83 million. The unit price is \$250, and the monthly subscription fee is \$30.



Temi is a mobile companion robot that can carry out conversations, create maps, and navigate to a certain location, detect, and track users. It has been used in retail, healthcare, education, etc. Medisana robot is like Temi. It can carry out conversations, create maps, and navigate in indoor environments. It can also connect to customized devices for measuring vital signs. Temi was founded in 2016 and has raised nearly \$21 million. The basic unit price is \$4000.



Amazon Astro is a mobile home robot with built-in Alexa. It can manage calls, delivering objects to users, managing alarms/home security, checking on pets, etc. Though it has functions like companionship and entertainment, and home monitoring, this robot is not specially built for elderly care purposes. The unit price is \$1599.



Amazon Echo Show is another product from Amazon. It is a desktop robot with Alexa. It can rotate its 10-inch screen for better video calls. Similarly, it has limited functions for elderly care. The unit price is \$249.

The following table shows the comparison of functions of the investigated products and our robot. All the robots have some daily life management and telehealth functions: 1) They can perform basic conversation functions such as

chitchatting, playing music, playing news, etc.; 2) They support video conferencing with families and friends. ElliQ robot has the health coaching function. Our robot has all functions listed in the table, which is the first one on the market.

Table: Product function comparison

Product	ADL	Physical wellbeing assessment	Subjective wellbeing assessment	Health coaching	Daily life management	Telehealth	movability
ElliQ				x	x	x	
Temi					x	x	x
Echo show					x	x	
Amazon Astro					x	x	x
IntelliRobot	x	x	x	x	x	x	

6.2.2 Competitive Weaknesses

Our robot is a desktop robot that cannot move around the home. It cannot deliver objects to other rooms and cannot detect what is happening in other rooms like Temi robot and Buddy robot. However, the mobile robot is more expensive than our robot. To overcome drawbacks, we can add a mobile base to our desktop robot.

6.2.3 Future Competitors

There have been no elderly care robots that can provide such comprehensive functions like us. We know of no other robot with similar functions like us coming to the market soon. Primary competition will be the ElliQ robot and Temi robot.

7. Sales Approach

IntelliRobot will be sold to nursing homes or family members through 3 ways. 1) Our salesmen go to the nursing home and demo the robot to the customers; the owners can place orders with the salesmen. 2) IntelliRobot collaborates with the medical equipment retailers and the retailers sell the robots to the customers 3) Other individual customers can place orders online, IntelliRobot can deliver the robots through FedEx and UPS.

8. Management Team

The IntelliRobot team is adeptly led by Zhidong Su, a Ph.D. candidate in Electrical Engineering with a specialty in Mechanical Engineering, experienced in artificial intelligence, robotics, and human-robot interaction, and a former AI engineer at a Fortune 500 company. Alongside him, the board includes Fei Liang, also a Ph.D. candidate in Electrical Engineering, with a rich background in AI for elderly care

and experience at Baidu; Andrew Karaoulis, who brings a diverse business background in accounting and finance, with experience at EY and various internships in finance and private equity; and Chinmayi Rane, a professional in product management and data analytics, with experience working on significant projects for the Municipal Corporation of Greater Mumbai. Collectively, the team possesses a combined 5 years of experience in elderly care, robot technology, data analytics, and finances, forming a robust foundation for managing IntelliRobot.

9. Required Funding and its Use

IntelliRobot was granted a PFI funding of \$550,000 led by Professor Weihua Sheng to commercialize the robot. This funding will be used for research, payroll, intellectual property protection, Health Insurance Portability and Accountability(HIPAA), basic development and testing for the MVP version of the robot. The PFI funding has been used for buying the parts and building the prototype. We will hire 4 salespersons, one software engineer and one hardware engineer between 2025 and 2026. It will cost about \$1,000,000. We will look for seed funds to cover that cost.

10. Abbreviated Income Statement

	Income Statement				
	2024	2025	2026	2027	2028
Revenue					
Grants	\$250,000	\$250,000	\$0	\$0	\$0
Sales	\$0	\$750,000	\$2,500,000	\$6,000,000	\$11,000,000
Expenses					
COGS	\$300,000	\$300,000	\$1,000,000	\$2,400,000	\$4,400,000
R&D	\$150,000	\$150,000	\$50,000	\$50,000	\$100,000
SG&A	\$150,000	\$150,000	\$500,000	\$1,200,000	\$2,200,000
Net Income	-\$350,000	\$400,000	\$950,000	\$2,350,000	\$4,300,000

11. Exit Strategy

IntelliRobot anticipates being purchased at the end of year 5 by ElliQ(Founded 2016, \$83 Million), Temi(Founded 2015, \$105 Million) or other big tech company like Alexa(Amazon).