

Solution Brief

Human Wellness Monitoring
Artificial Intelligence



Enhancing Health Outcomes and Quality of Life with Netown's Babybot Smart Health Solution

Utilizing powerful Intel® Processors, the Intel® Distribution of OpenVINO™ toolkit, and the latest advancements in AI technology, Netown Corporation offers a solution to optimize patient health outcomes through personalized health reports, training, and rehabilitation programs.

Innovative Exercise Technology for Greater Health and Fitness

The past decade has brought about groundbreaking changes to modern exercise equipment, with AI-based solutions helping people take their fitness even further. Digitalization of fitness equipment and the creation of smart exercise machines enable users to analyze and monitor their progress at a more granular level to improve overall performance. The global connected gym equipment market—valued at just under \$888 million and projected to reach USD 5.96 billion by 2025—includes use case applications for hospitals, hotels, gyms, rehabilitation clinics, and fitness centers.¹

Additionally, the need for real-time health monitoring in response to COVID-19 has increased demand for IoT devices that track health and fitness information and can be integrated with user devices such as laptops and smartphones.² This, coupled with the growing need for solutions that enable more cost-effective and efficient healthcare service delivery, has resulted in a large-scale adoption of medical exercise devices that can automatically monitor patient progress with AI for muscle training and rehabilitation.

Traditionally, physicians have had to manually record patient exercise data during trainings, using their eyes and expertise to analyze progress—an inefficient, inaccurate, and time-consuming process. This also means physicians are unable to track how their patients are performing outside the hospital or clinic setting, which often leads to a regression in patient progress. Despite the growing demand for this equipment, it has—until recently—not specifically targeted a rapidly growing part of the general population who could benefit greatly: the elderly. According to the UN, in 2019 people aged 65 years and older accounted for 9% of the global population with projections estimating an increase to 16% by 2050—which translates to 1 in 6 people in the world.³



About Netown

Established in 2003, Netown Corporation implements smart healthcare services via its innovative Babybot Smart Health Solution to help people maintain and advance their health and mobility. Netown has been working with Tier 1 medical centers and hospitals and several public hospitals to make its smart healthcare service more accessible to end users.

Currently, Babybot can be found in over 500 communities, up to 60 clinics and pharmacies, more than 12 nursing homes and commercial companies. Babybot may be seen in cosmetic chain stores, factories, telecom enterprises, construction firms providing customized healthcare solutions for consumers in each market segment.

With increased age comes more potential serious health problems, making it difficult for the elderly to live independent lives, affecting their quality of life as well as that of their families'.

Research has shown how exercise and training is key to preventing sarcopenia (or muscle loss) in the elderly, meaning there is growing demand for tailored and effective health enhancement for this population in particular.⁴

Recognizing a need for digitalized fitness equipment designed for the elderly, Netown Corporation leveraged powerful Intel® Processors and industry-leading technology to create an intelligent wellness platform specifically geared to help users regain muscle strength and reduce their risk of injury.

Using AI to create personalized health reports and recommendations, the Netown Babybot Smart Health Solution helps users build muscle to maintain or enhance their health and well-being.

Personalized Health Enhancement with Netown's Babybot Smart Health Solution

Netown is an innovator in the healthcare industry, offering revolutionary, AI-based end-to-end healthcare solutions that can improve outcomes for patients while optimizing physician time and accuracy. The Babybot Smart Health Solution includes three main components that integrate to create a holistic solution spanning health assessment, health enhancement, and health management with different application scenarios for common users and long-term care facility operators. Babybot's smart evaluation series offers an analysis of a user's current health status. Then, using a smart exercise series and health management platform, Babybot can monitor user progress by analyzing and communicating health data to medical professionals or trainers so they can streamline recommendations for care and therapy.



Babybot is a leading solution in market with capabilities that include conducting smart muscle strength measurements, automatically transmitting muscle strength data, and analyzing muscle loss risk level. It uses AI data analytics to provide evaluation and individualized health management plans for users like tailored training programs and real-time tracking and fine-tuning. The solution aggregates user data for personal assessment and remote monitoring by healthcare providers through the solution's cloud platform and data management system. The monitoring system provides easy-to-use UI to track vital signs and health trends with a mobile dashboard; perform analytics on wellness data; and send automatic medicine reminders and real-time alerts for vital sign irregularities.

The solution also integrates into exercise equipment to empower gym users with wellness data and progress tracking through specific feedback and measurements, so user can make real-time, targeted adjustments for better results. As a result, physicians can provide higher quality primary care and improve the living standards for elderly and chronically diseased populations, while fitness users can gain insight into health and AI-generated personalized training programs. Additionally, Babybot offers telehealth service options ranging from smart medical services to lifestyle services including a full set of smart exercise series and videoconferencing to create enhanced wellness solutions.

Case Study: Improving Quality of Life for the Elderly

An 85-year-old man who had difficulty walking began training with Netown's Babybot when his grandson saw an advertisement for it at his fitness center.

After training with the solution for three months, the man was able to walk for long distances by himself and had **76.5%** improvement in his lower limb muscle performance.⁵

Not only was he able to improve his physical health, but also enhance quality of life for himself and his family by regaining lost independence and reducing stress around his safety for his family.



Babybot Smart Health Solution End Customer Benefits

These features and capabilities enable the Netown Babybot Smart Health Solution to provide the following benefits to end customers:

1. Improve health and quality of life

Using personalized treatment plans that are precise and tailored to individual needs, different user groups can experience health recommendations to meet their own, unique goals. Elderly users can maintain their independence and experience better quality of life by minimizing their need to rely on others for support and giving them more control over their daily living. In addition, their family members can worry less about their safety and well-being, enhancing their lives as well. Beyond improving elderly patient care, the solution also benefits middle aged people looking to maintain or enhance their health and mobility.

2. Optimize health & rehabilitation services

Compared to traditional muscle strength measurements which are carried out manually, Babybot significantly saves time for testing with automatic measurements that provide more accurate analysis for healthcare, fitness, and rehabilitation teams. In addition, automatic load adjustment technology helps reduce the workload of the staff at different facilities while enhancing service quality and user experience. Healthcare practitioners can meet patient needs remotely no matter the geographical distance. They can see their progress, give feedback and encouragement, and access health reports, allowing them to provide support more quickly. Users can also view their reports and progress, giving them more motivation and providing them with a specific path forward toward continuous improvement.

Optimizing Rehabilitation and Muscle Training with AI and Intelligent Analysis

Netown's Babybot Smart Health Solution integrates with health equipment in community centers, rehab centers, and hospitals through a Bluetooth, WIFI, or USB connection to collect vital-sign and other health data, enabling healthcare teams to remotely monitor a patient's status. The solution's edge device sends user data to its cloud platform via WIFI for storage and analysis so physicians and trainers can review user exercise data. It sends analytics to hospitals, fitness centers, or clinics, and back to the users, and automatically generates a health management plan for the user which can be accessed with their smart exercise device. Powered by Intel processors and hardware, the solution automatically adjusts for efficient buffering so doctors can access patient

information faster. It furthermore runs data encryption and decryption processes synchronously for more efficient, secure processing.

Through intelligent analysis and pre-and-post evaluations, Babybot can help healthcare professionals create more precise training programs. The smart training system leverages 11th Gen Intel® Core® Processors to integrates technologies for motion sensing, load adjustment, strength detection, power calculation, and training range data to create a personalized training course for each individual where their real-time training progress can be monitored remotely. This function makes every second in the training process recordable, which allows physicians to analyze the holistic training progress of each user and adjust training targets appropriately.

The motion sensing, heart rate sensing, and load adjustment technology each utilize the high frequency processors to make the user's movements detectable to the training device so it can adjust the training load automatically, meaning Babybot can track the user's heart rate and increase the training load when the user's heart rate is lower than the target value, or reduce the training load when the user's heart rate exceeds his or her maximum heart rate.

Case Study: Boosting Muscle Performance for Middle-Aged Golfer

A golf-lover around 50 years old was getting tired playing an entire 18-hole golf course because his muscle endurance ability was not good enough to support him.

After training with the Babybot Smart Health Solution for three months, he reported he could easily play the entire course without feeling tired. His muscle performance increased by **1.1 times** for his upper limbs and **1.2 times** for his lower limbs.⁵ While tailored for elderly rehabilitation and use, the solution can benefit anyone looking to improve their muscle function.

This not only ensures user safety during training but also keeps user training in the optimal fat burning zone. The healthcare team can check this data remotely and provide additional feedback and assistance.

Babybot runs AI at the edge without the use of accelerators, allowing it to optimize AI in monitoring a user's heart rate during their exercise without having to wear any device. Babybot uses Intel's OpenVINO™ for the development of their AI algorithm which significantly shortens development time.



OpenVINO™ allows Netown to utilize the same AI models that have already been developed and extend them across any of their machines without having to spend significant time redeveloping them. The strength detecting and power calculation technology combines mechanical and electrical engineering concepts with industry knowledge and exercise science to turn user movement into quantitative data. As a result, physicians can review user data on muscular power and muscular strength during the exercise process. The training system

scans the user data and automatically adjusts training targets to fit their physical condition, continuously fine-tuning the settings as the user can reach a higher training target—again, to ensure user safety as well as enhance the effectiveness of the smart training system.

User data is automatically uploaded and analyzed in the Babybot smart training system which generates a personal user report. If desired, users can participate in group ranking and see the performance of each person in their group, so users in different locations or time zones can compete with one another to encourage better performance and better outcomes. Data can be deployed confidently and securely as user IDs are saved only as code names and are double encrypted, so the identity of the user remains unknown. These code names are also stored in a separate database to make them untraceable and to secure privacy.

Netown and its partners help provide implementation services for customers with customizable package options, all of which include data management and intelligent analysis services. The suite of exercise machines offers equipment specifically focused on different muscle groups. Based on customer needs, Netown can recommend the best combination machines to optimize outcomes. If the end user is a beginner, Netown can deliver an entry level machine for the service provider to offer one piece of the exercise equipment to the end user through a subscription service. Or, for a fitness center that services people of higher fitness levels, Netown can provide a complete exercise machine with smart analysis software pre-integrated.

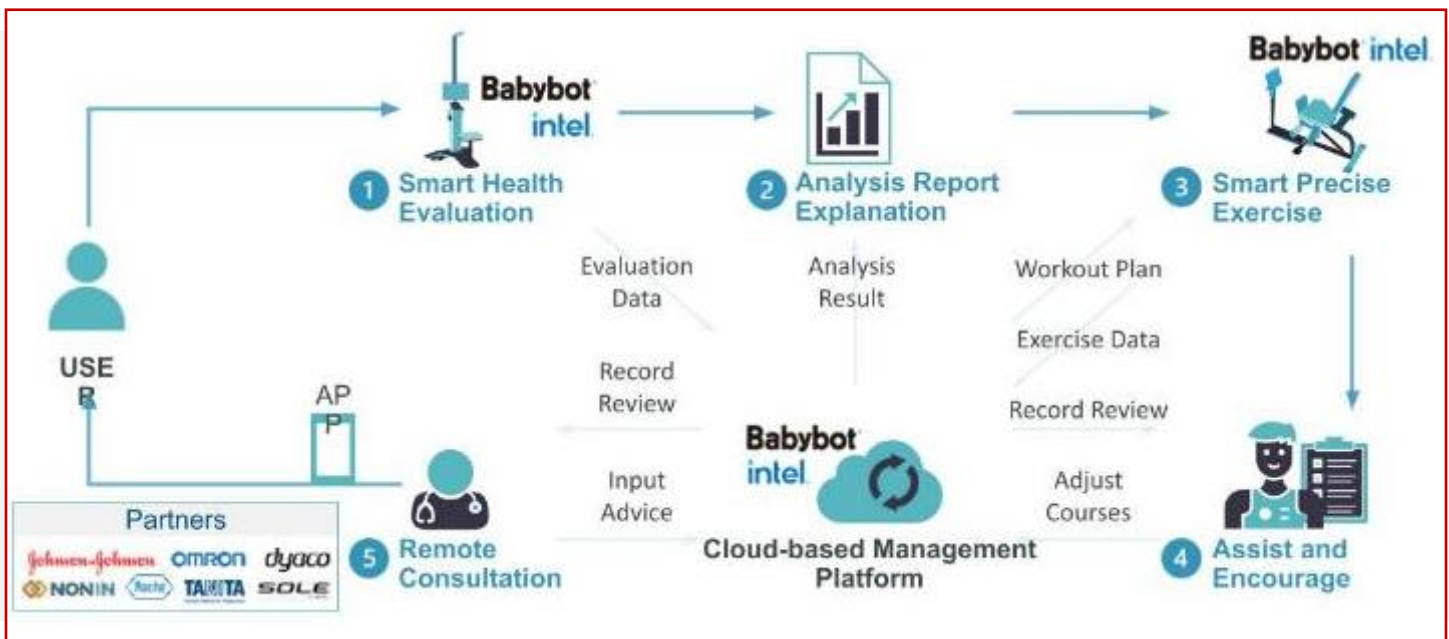


Figure 2: System Architecture of Babybot Smart Health Solution

Intel Solution Components

Intel® Distribution of OpenVINO™ Toolkit

The Open Visual Inference and Neural Network Optimization Toolkit enables developers to build and optimize AI-based computer vision models on Intel® hardware and makes it simple to adopt and maintain code. Developers can take advantage of existing Intel® processor architecture to quickly build, optimize, and scale deep learning and visual inference applications.

Intel® Celeron® Processors

Intel's computer microprocessor CPUs built for performance and value on affordable, entry-level PCs and portable devices.

Intel® Core™ Processors

Intel's highest-performance CPUs for laptops and desktops, delivering advanced responsiveness, connectivity, and graphics performance.

¹[Connected Gym Equipment Market Growth, 2025 | Industry Report \(millioninsights.com\)](#)

²[IoT Healthcare Market Size Share and Global Market Forecast to 2025 | COVID-19 Impact Analysis | MarketsandMarkets](#)

³[WPP2019_10KeyFindings.pdf\(un.org\)](#)

⁴[How to Fight Sarcopenia \(Muscle Loss Due to Aging\)\(healthline.com\)](#)

⁵Netown internal estimates from training program evaluations

Learn More

- [Netown Website](#)
- [Babybot Intel Solutions Marketplace Page](#)
- [Netown Intro Video - YouTube](#)



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