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New Era Al Robotic Inc. **Technology Strengthens the Healthcare Workforce!** New Era Al Robotic Inc. Managed to Develop AMRs Dedicated to the Medical Profession in Conjunction with Intel and ADLINK

#### Introduction

### New Era Al Robotic Inc. (N.ERA)

Industry: EMS, ODM Headquarters: Taiwan Website: https://www.neweraai.com

New Era AI Robotic Inc. was established in 2017 and backed by New Kinpo Group (NKG), the world's leading electronic manufacturing conglomerate. We dedicate to developing reformatory AI technologies and excels in robotics solutions for the service and manufacturing sectors. Our module matrix provides a multi-functional portfolio with maximum flexibility and agility, prepping enterprises for a future of higher efficiency, benefit, and safety.









#### Challenges

Healthcare system is an invaluable asset to the modern world; however, little technological effort has been attempted to resolve a looming shortage of medical workers and to relieve both their physical and mental stress. The COVID pandemic since 2020 has seen overloaded hospitals on the verge of collapse, but it has also propelled the development of Autonomous Mobile Robots (AMR) to serve a wide range of medical purposes. This year, teamed with New Era AI Robotic Inc. (N.ERA) and the industrial PC giant - ADLINK Technology Inc., Taichung Veterans General Hospital has successfully put AMRs into use for contactless delivery of heavy surgical instrument and equipment, ridding the medical staff of the burden of delivery heavy equipment as well as saving up to 5,000 man-hours per annum.



Ligo Lim, Head of Global Sales and Marketing of New Era AI Robotic Inc., indicated two fundamental points in terms of the application of AMRs. One is to think about what problems they can address. The other is to enable customized design that combines AMRs with the existing operating procedure and the operational environment to further satisfy users' need, highlighting AMRs' core value.

Therefore, Taichung Veterans General Hospital first introduced AMRs in order to reduce labor costs for time-intensive respective tasks. When considering how AMRs could be deployed, the hospital realized what seemed most laborious to the medical group was deliveries of heavy surgical instrument and equipment. With regard to this, N.ERA set out to look into this problem and plan carefully in hope of automating repeated tasks in hospitals and freeing up more time for medical personnel to focus on other emergencies and responsibilities. In so doing, N.ERA truly accentuated the value of the cooperation between humans and robots.



For healthcare workers, delivering medical equipment is a laborious process.

#### Challenges

Once the goal was clear, the next step would be to execute customization.

First off, N.ERA devised a piece of software in line with the hospital's operating procedures and then digitalized them. With simply one click away, AMRs would march over to the operating room, and return to the instrument room. Overall, the operating mode was easy, virtually identical to the original operating procedures.

Second of all, a few adjustments had to be made in keeping with AMRs' working environment. The actual width of the corridors in Taichung Veterans General Hospital is 80 to 85 cm, which is fairly narrow. If there are medical staff or equipment in front, collisions will be inevitable. On that account, hazard identification or risk assessment methods early in the design process must be handled delicately to minimize the odds of collisions. To this end, N.ERA tweaked algorithms to enable their AMRs to adapt to new environments and move accordingly. Plus, with new elements such as light detection and ranging (lidar), 3D camera, and ultrasound, the AMRs' level of obstacle avoidance has been optimized to the max.



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#### Solutions

# With Techniques for Integrating Software and Hardware Plus a Professional Team, **ADLINK Tops the List of the Best Partners** in Assisting with Delivering Products

Upon mentioning what resulted in the collaboration with ADLINK, Lim referred to two reasons. First, ADLINK is capable of integrating software. N.ERA has been engaged on the development of robots for 7 years. During this period, N.ERA has been in contact with quite a few suppliers of controller, with ADLINK being the sole firm that's capable of integrating software and aiding N.ERA to shorten the product development cycle. Dr. Bill Wang of ADLINK's New Generation Robotics Platform Division added, "ADLINK started as an industrial fanless PC manufacturer, and these years we proceeded to expand our business empire in the field of robotics, integrating industrial PCs with ROS as well as providing mobile robot platform hardware and software integration solutions that directly address mission-critical businesses.

Second, ADLINK has a well-trained team dedicated to ROS. Lim believed that N.ERA placed complete trust in ADLINK for integrating hardware and software of robot controllers largely because of their reliable support and technical expertise in ROS. Through the complementary and professional work division with ADLINK, N.ERA is thus able to concentrate on mission-critical applications and development, which paves the way for the acceleration of customization and the optimization of both UI and UX, and in turn significantly boosts the integrity and persuasiveness of N.ERA's products.



"In helping Taichung Veterans General Hospital set up the AMRs, we were aware that actually, there was still a demand for a higher degree of customization. And thanks to ADLINK, our product developers could devote all their energies to the part of customization without worrying about ROS 2 integration issues, hence the invention of the robot that truly fulfils the needs of the hospital," said Ligo Lim.



ADLINK's professionalism and technical expertise in the bottom half design in ROS allow N.ERA to focus on the upper half design of AMRs.





#### Solutions

## Adopting ROS 2 and Intel's technologies to speed time to market

In the course of moving, AMRs' sensors have to monitor the changing environmental conditions constantly and swiftly to adjust their route accordingly. This is an enormous challenge to the computing power of the hardware. This make of N.ERA's AMRs adopted the miniaturized controller. Developed jointly by ADLINK and Intel, this version is a ROS 2-enabled robotic controller based on Intel's 11th Gen Tiger Lake CPU, whose processing speed and system execution speed are 20% faster and power dissipation way lower than those of the previous generation. This sheds light on the AMRs more remarkable obstacle avoidance performance and their greater endurance, and their connectors also meet N.ERA's requirements.

ROS 2 is already underway, and N.ERA will almost certainly apply this technology. ADLINK has foreseen this, and made some adjustments to the design that could help simplify and streamline development process based on ROS 2. Next, ADLINK introduced the integrated software package - NeuronSDK - to their users. Neuron SDK is highly beneficial to the new AMRs because it is a comprehensive and user-friendly solution that guides users through the process of prototyping and testing robot applications on ROS 2 with ease.

Lim relished the prospect of continuing to strengthen the cooperation with ADLINK. With ADLINK's long-term and close partnership with Intel, N.ERA will be able to develop smarter, more efficient AI-based robots capitalizing on Intel's resources. Wang also agreed on the idea that ADLINK hoped to join hands with more system integration providers and robotic components manufacturers to build a robotic ecosystem, promoting the application of AMRs in various industries and making more people embrace the core value of AMRs.

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