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UNLEASHING THE POTENTIAL:

Empowering Artificial Intelligence (AI) with Misty II Robot

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Misty II Robot is a programmable personal robot platform for developers. It is a new category of robotic platform that integrates computer vision, sensors and Simultaneous Localisation and Mapping (SLAM). It is specifically designed for human-robot and robot-robot interactions, vision algorithm, supervised or autonomous control, and voice recognition. Misty can easily create an empathetic link with students with disabilities such as autism and other emotional and behavioral disorders, inspiring them to develop social and emotional skills through physical and intellectual exercises. Users can add different sensors and accessories to make the robot more capable. The development platform is intended to make it easier for developers, educators, and researchers to develop software and accelerate robotics adoption. This article explores the Misty II robot standard edition, features, software and Misty robot for education. The technology represents a significant leap forward in research and development.

Robotic technologies allow educators use the latest technological breakthroughs, helping students learn while also engaging them in exciting activities and social experiences that enrich their minds. According to Bernstein, Founder and Head of Product, Misty Robotics, there are more than 23 million developers around the world, and they are the key to unlocking the future of robots, previously only available to the world of roboticists. Users now have the freedom to develop new skills or behaviors for Misty by utilising programming languages such as JavaScript and Python. Furthermore, the robot's potential can be expanded by incorporating various sensors and accessories to enhance its capabilities and usefulness. Due to its advanced features, Misty is used by the world's leading researchers, innovators and educators.

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/chief editor's note

Future living and society

Hello! It is an absolute pleasure to welcome you to the 21st edition of TECHIES, which is also the last edition of the year.

In this edition, we cover some insights relating to artificial intelligence and living with a robot. Robotic technologies allow humankind to learn while engaging in activities and social experiences that create new minds. Today's robots can interact, visualise, supervise, and more. While they will not replace human learning specialists, they add so much value to the human experience, particularly in education, which then leads to unprecedented advancements in industries and the world at large.

To add, we also explore the importance of environmental sustainability and the role that technology plays in resolving today's critical environmental issues. From awareness to action, we see how learners are empowered to do their bit in protecting the environment. For example, we read about how raw plastic bottles are reprocessed into Eco Fabric and Eco Products, and how multifunctional plastic beds are constructed to be used during disaster events. We know that a recycling process is a tedious operation, but it can be simplified using technology. With image processing capabilities in a home-grown sustainability app, the effort required to carry out the recycling process is reduced, making it more efficient.

We hope you enjoy our content curation. Thank you for your continued support, and we look forward to connecting with you again in 2024. Happy reading!

Zuraidah Mohd. Zain

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MISTY II ROB STANDARD EDITION

The Misty II robot is designed and built by the Misty Robotics team. The Misty Standard Edition is the original Misty II model. It provides developers with a professional-grade platform robot that can take on a wide variety of assignments including cases that benefit from SLAM, 3D images for AI and/or CAD, and full robot autonomy made possible through auto charging. Users can charge Misty using a wireless charging station, or it can be plugged directly into the port on her base.

The robot can autonomously move around a room avoiding obstacles. It also detects and recognises people with an expansive field of view. To add, it responds to touch on her head or chin. The user can customise Misty by changing her arms, add a trailer, and a host more changes and expansions.

SOFTWARE

Misty is a great platform for beginners or advanced programmers who want to work with a fun, fully-programmable and expandable social robot. For beginners, Misty can be programmed using Blockly, a block-based visual programming language editor that runs in the user's browser. The Misty App is a mobile app for iOS devices that can be used to set up the robot's Wi-Fi connection.

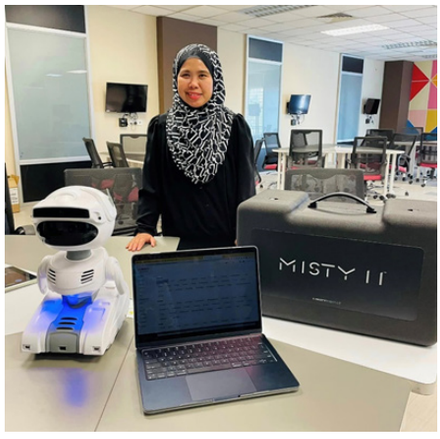

Figure 1: Meet Misty, the world's most lovable social robot.

Misty also supports student learning to code with age-appropriate, easy-to-use tools - from graphical block programming to simple APIs in standard programming languages. For more advanced users, Misty is fully-programmable in Python, JavaScript and ROS. It is able to create 3D maps and moves autonomously and dynamically in response to its environment. Misty can recognise faces and objects and understands voice commands. Purposely built for developers, Misty has the tools needed to easily build up her skills, and is readily extensible via third-party APIs, hardware modifications and additional sensors. For those with an interest in Human Robot Interaction and critical topics like Alzheimer's, Autism, Learning Disabilities and Aging in place, Misty is ready to play a central role.

Users can use the Misty App to drive Misty and see information about Misty's software. The Misty App can be downloaded from the App Store (iOS) or Google Play (Android). Once the app is launched, Misty is connected via Bluetooth. There is an SDK (Beta) such as Misty's REST API, JavaScript SDK, or .NET maintained by the Misty Robotics organisation to get started. It is not recommended for multiple users to each use a separate instance of the Misty companion app to connect and send commands to a single Misty robot. If more than one person connects to Misty at the same time, as in a class or in a group development environment, they will need to take turns sending commands, or Misty may respond unpredictably.

MISTY FOR EDUCATION AND RESEARCH

The use of robots spans across various research topics and applications. These range from exploring human-robot interaction to gathering samples in harsh and challenging environments, and to the development of novel commercial uses for robotics and artificial intelligence. Misty is designed to optimise learning and engagement, and has both an attractive and rich design, and very advanced sensors and hardware, making it unique in the market today. In this era of advanced technology, ensuring quality education, particularly special needs education, has become a crucial responsibility for numerous specialists. If robots are used now, by the time the next generation arrives, many of the common challenges facing today's children with disabilities will be things of the past.

The new paradigm of teaching will involve robotic innovations that will profoundly affect education, technology, and society. Personalising techniques to fit each student's communication, social, and learning needs will be used. Educators will undergo comprehensive training and continuously update their skills and resources to deliver effective intervention for children with special needs. Robotic technology enables educators to leverage the latest technological advancements and engage students in stimulating activities and social experiences that contribute to their cognitive growth and development.

Robots cannot replace teachers and learning specialists, but the digital age has certainly paved the way for incredible advancements in all sorts of industries, including education. Robotics in education can be used to support, assist and augment the teaching professional. Thus, it gives more opportunity for the professional to assess, observe and analyse children's performance. Education is such a high priority because, unlike many other fields, it is tough to predict what the requirements of tomorrow might be.

PERFORMANCE OF MISTY II ROBOT

Misty Robotics teamed up with Intrinsyc Technologies, a wholly owned subsidiary of Lantronix, Inc. – a global provider of hardware and software solutions for the Internet of Things (IoT) and Out of Band Management (OOBM). As an innovator in product development services and edge computing modules, Intrinsyc helped Misty Robotics work with solutions from Qualcomm Technologies, Inc. (QTI) to create Misty II, an open robotics development and learning platform based on Misty the robot. Misty II Robot is ready for developers to build skills that take full advantage of her capabilities such as detecting and recognising people. Misty's high-resolution camera and object detection capabilities enable her to detect faces and other visual information. Her far-field microphones and audio processing capabilities give her the ability to hear speech while filtering out background noise. Misty can record video and audio data and share it with other devices, or use screen and speakers to stream data shared by other devices.

In February 2020, a pilot test was supposed to be carried out in Barcelona on the elderly, in order to study how far the robot could improve the quality of life of people with some kind of dependency, who lived at home by themselves. With the pandemic, the plans had to be delayed and, at the moment, the robot is being tested in three different homes to see if the robot could help reduce the isolation of the elderly, whether it is used to monitor their health, or if it is useful to improve patient-adherence to medication or attendance to medical visits.

In Japan, the development of elder care robots is given priority in order to help fill a projected shortfall of 380,000 specialised workers by 2025. The UK is similarly facing acute shortages of staff. In 2021, the country's social care workforce shrunk for the first time in almost a decade, while reports estimate that there are approximately 165,000 job vacancies in the sector. This staff shortage is also set to deepen in the years to come as more than one in four care workers are aged 55 or over and nearing retirement.

BENEFITS OF MISTY II ROBOT

Misty has an impressive array of capabilities and gives developers the opportunity to build the skills of robot applications. Its straightforward software development kits and hardware customisation can provide an engaging opportunity for students to learn programming, robotics, and more. Meanwhile, her more sophisticated technology can assist with research and learning in universities. Educational robots help children develop one of the basic cognitive skills of mathematical thinking at an early age. Misty is able to create 3D maps and moves autonomously and dynamically in response to its environment. It can also recognise faces and objects and understand voice commands. Dozens of other use cases are being explored and built, including greeter, receptionist, delivery agent, security monitor, and more.

Misty's most promising applications may have yet to be invented. It has the potential to tap into the imagination of millions of developers who aspire to work with robots, helping to shape the future of the industry.

Overall, the benefits of robots in future education holds the potential to revolutionise the way students learn and interact with educational content. Robots can be used to teach science, technology, engineering, and mathematics (STEM) subjects in an interactive and hands-on way. It can conduct experiments, solve complex problems, and provide practical demonstrations. However, it is important to note that while robots can enhance the educational experience, they cannot replace the vital role of human teachers in education. Therefore, the integration of robots should be seen as a complementary tool to support educators and students rather than a replacement for human educators.