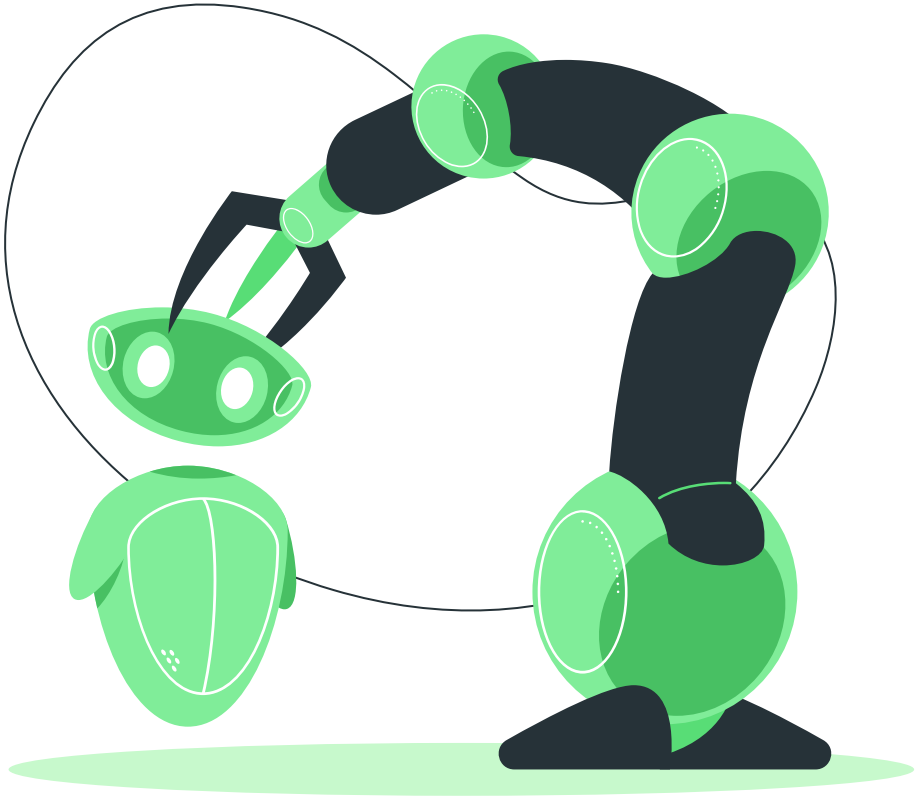
Field Training

By: GateIn Technology



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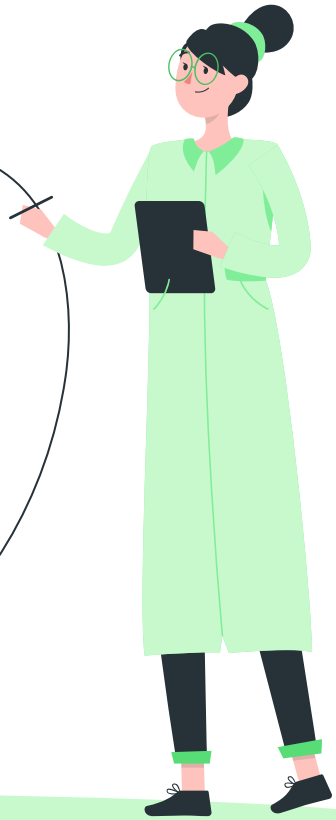


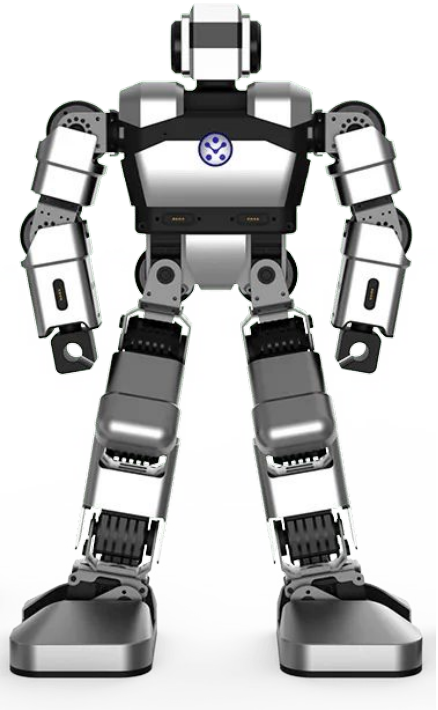
About The Field Training

During our field training, we explored various aspects of robotics, focusing on the study and practical application of four distinct robots: an arm robot, the Yanshee robot, and the NAO robot. The training provided hands-on experience in robotics, offering insights into the mechanical, computational, and AI-driven functionalities of these machines. Each robot presented unique challenges and learning opportunities, **from understanding the basic movements and controls of robotic arms to delving into more advanced humanoid robots like Yanshee and NAO**, which are equipped with AI capabilities for interactive learning and problem-solving. This comprehensive training not only deepened our understanding of robotics but also emphasized the growing importance of automation and AI in today's technological landscape.

Robot Overview

Yanshee Robot:

Yanshee is a humanoid robot designed to integrate AI, robotics, and education. Equipped with advanced sensors, AI capabilities, and a user-friendly development platform, Yanshee offers a rich learning environment for programming, robotics, and AI research. Its flexibility allows for various applications, ranging from educational environments to research and development in robotics.

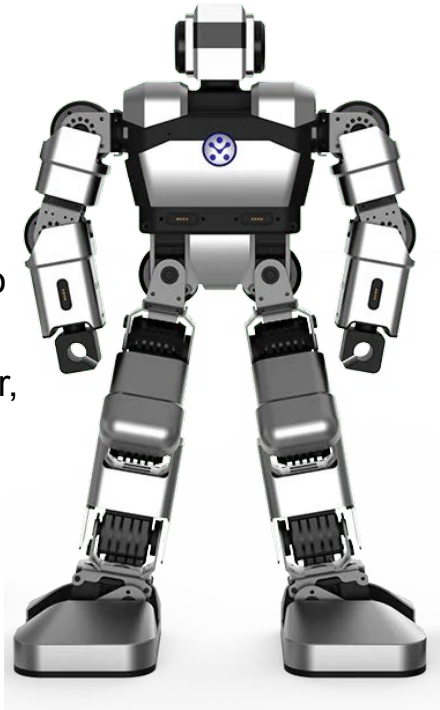


Robot Overview

Yanshee Robot:

Key Features of Yanshee:

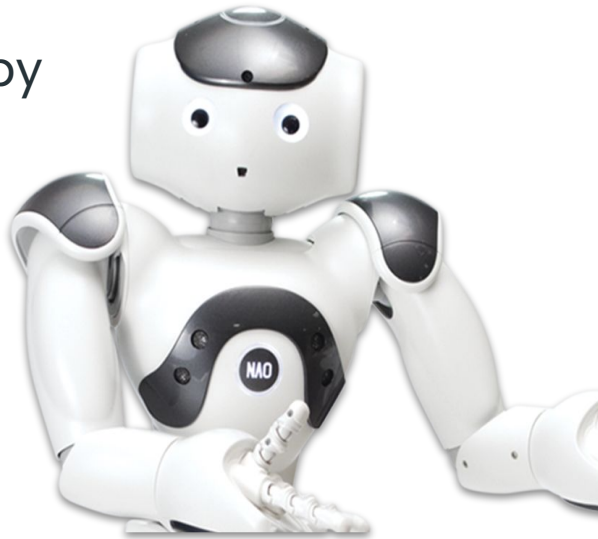
- **AI and Programming:** Yanshee supports programming in multiple languages, including Python and Java, allowing users to develop custom applications and AI algorithms using its YanAPI.
- **Interactive Sensors:** Equipped with a camera, ultrasonic sensor, and touch sensors, Yanshee can detect its surroundings, recognize objects and faces, and interact with users through voice and movement.
- **Voice Recognition and Speech Synthesis:** Yanshee can recognize speech commands and respond with synthesized speech, making it ideal for interactive learning experiences.



Robot Overview

Nao Robot:

NAO is a versatile humanoid robot developed by SoftBank Robotics, widely used in research, education, and interactive applications. Its compact design, along with a wide range of sensors and programmable features, makes it an ideal platform for teaching robotics, computer science, and AI. NAO has become a popular tool for exploring human-robot interaction, artificial intelligence, and motion control.

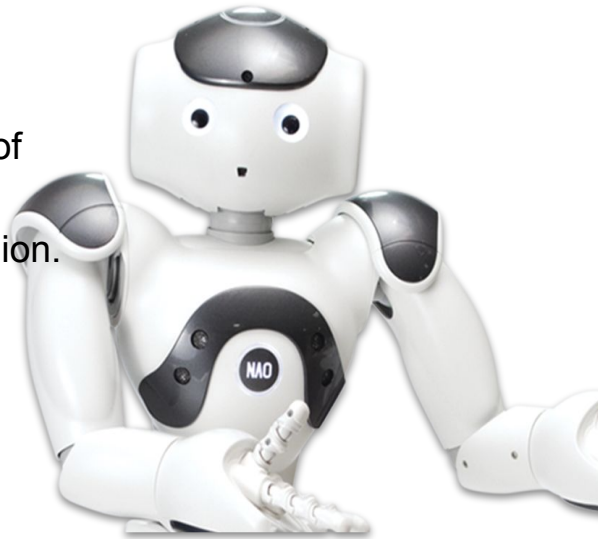


Robot Overview

Nao Robot:

Key Features of NAO:

- **Humanoid Design with Full Mobility:** NAO has 25 degrees of freedom, allowing it to walk, dance, sit, and perform gestures, making it capable of mimicking human movements with precision.
- **Speech Recognition and Generation:** NAO can understand spoken commands in multiple languages and respond with synthesized speech, enabling rich interactive experiences.
- **Vision System:** Equipped with two HD cameras, NAO can recognize faces, track objects, and navigate its environment through image processing and visual feedback.



Robot Overview

myArm Robot:

The myArm 300 is a flexible and precise robotic arm developed by Elephant Robotics. It is designed to be user-friendly and adaptable, suitable for educational purposes, research, and light industrial tasks. myArm 300 offers a balance between functionality and affordability, providing a powerful platform for learning and experimentation in robotics, automation, and artificial intelligence.

Robot Overview

myArm Robot:

Key Features of myArm:

- **5 Degrees of Freedom:** The myArm 300 has five axes of motion, allowing it to perform various tasks such as gripping, rotating, and manipulating objects with fine precision.
- **Customizable with Multiple End Effectors:** The robot is compatible with a wide range of tools and end effectors, such as grippers and suction cups, enabling it to handle different objects and perform diverse functions.
- **Programming and Control Options:** myArm 300 supports multiple programming languages like Python and C++, as well as graphical programming tools like Blockly, making it accessible to users with different skill levels.

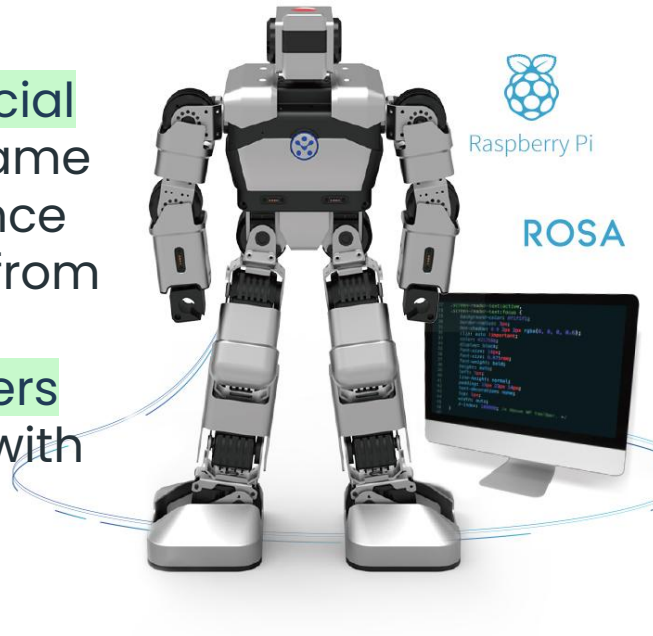
Project: Interactive Quiz Game

After completing our training on robotics, we embarked on a project to develop an interactive Quiz game specially designed for yanshee robot that could recognize a person, ask questions and more. Our goal was to apply the knowledge gained from working with various robots, such as MyArm, Yanshee, and NAO, to create a functional and interactive robot system.

Project: Interactive Quiz Game

Project Description:

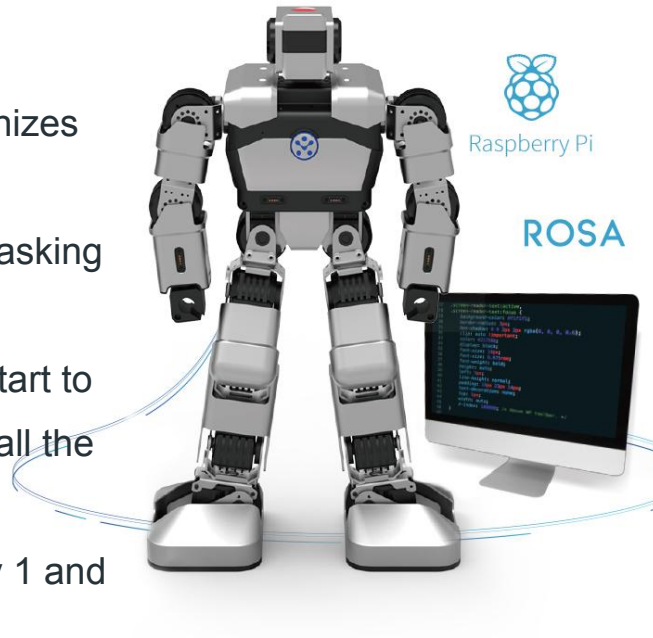
An interactive quiz game for a robot that uses facial recognition to identify specific individuals. The game only starts if the recognized person is present. Once identified, the robot prompts the user to choose from categories like animals, countries, general knowledge, and math. The user types their answers to the questions. Correct answers are rewarded with congratulations and an increased score, while incorrect answers result in the game restarting



Project: Interactive Quiz Game

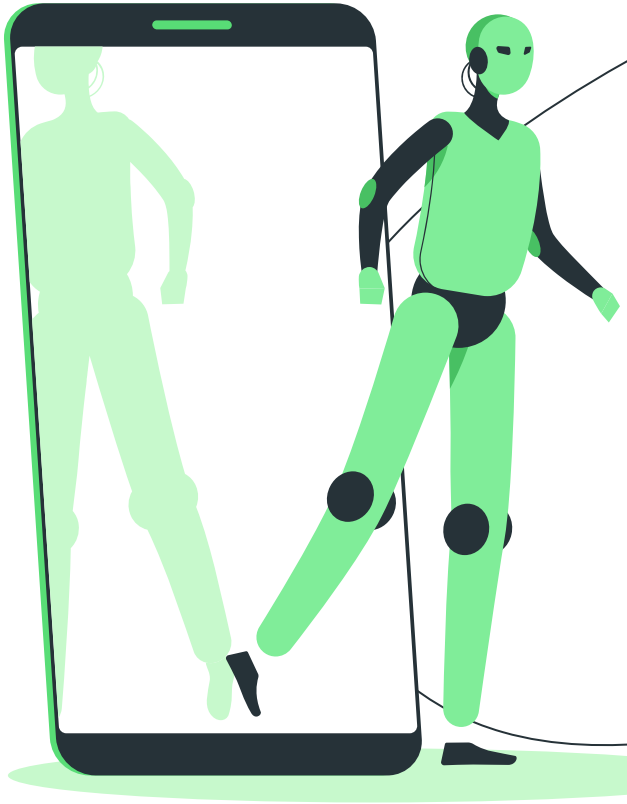
Key Features:

- **Facial Recognition:** The game starts only when the robot recognizes the specific individual using facial recognition.
- **Interactive Learning:** Yanshee interacts with users in real-time, asking questions and providing immediate feedback.
- **Answer Evaluation:** After user typed his own answer Yanshee start to compare the answer with the predefined dictionary that contains all the question and answers given to user based on category.
- **Game Scoring System:** If the answer is right score increases by 1 and if the answer is wrong the game start from the beginning.



Conclusion

The robotics training provided a comprehensive foundation in working with diverse robotic systems, including the MyArm, Yanshee, and NAO robots. Through hands-on experience, we gained valuable insights into the design, programming, and application of various robotic technologies. The training not only enhanced our technical skills but also deepened our understanding of how robotics can be applied in real-world scenarios. In summary, the training was instrumental in bridging theoretical knowledge with practical application, setting the stage for us to undertake innovative projects and contribute to the evolving landscape of robotics.



Thanks!

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