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# Building a Robotic Eco System Using ALTON

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**Abstract**

ALTON is a humanoid robot which is one of a kind educational companion for students, with its key principle of 'modular' robotic parts. Every single aspect of this robot is designed and developed in a way that it makes learning robotics fun. Countless number of hours of research has gone into the development and design of Alton, to ensure that this educational robot be engaging and interesting for students. It has been an incredible journey for the Alton's team to understand its key purpose in education that helped the team to come up with great features, most of them unmatched by any other similar product.

**The key features of Alton are**

**Modular Design**

The robot is developed as 100% modular, such that every part of the robot can be dismantled easily making it easy for students to dig deep to learn about the functionality of motors, joints and other mechanical elements of robots. In addition to the learning of mechanical and electronic concepts, delivery of software and programming concepts are also made attractive with this ideology. To do this, each part can be separately re-programmed and designed by the use of external boards. Alton comes with a curriculum that covers conceptual learning, participatory, and project based learning. This methodology of learning servers a great feature for budding robotic engineers.

**GUI Based Control**

We live in the digital & visual era, and ALTON is not behind in any way. With its interactive GUI interface, controlling and working with the robot becomes an easy task. Interacting with the robot is a walk in the park.

**Image Tracking**

ALTON uses computer vision for object and face tracking, helping it to respond to users in his proximity. This is a cool feature that goes a long way in defining machine learning, machine personification and machine-human interactions.

**Voice Assistant**

ALTON is a great friend when you want to make a conversation. Just ask him a question and you will be surprised how well he responds back.

**ALTON Brain**

ALTON is powered by Rasberry Pi and its components are controlled with the use of Arduino mega boards. The combination packs enough power to meet the needs of robotic students.

**Advanced Obstacle Avoidance**

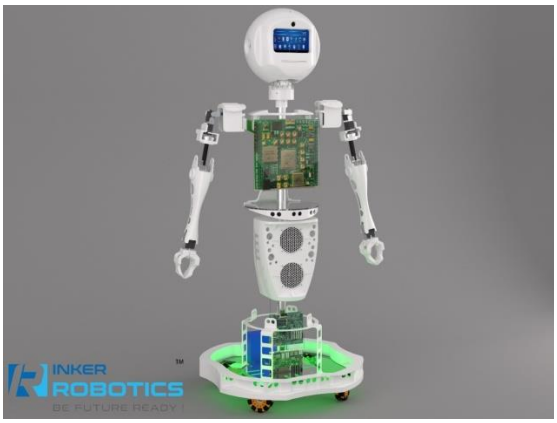
ALTON uses advanced ultrasonic technology to manage obstacle avoidance during motion. This technology helps to have more precise and controlled movements making it lot safer to use in any environment.

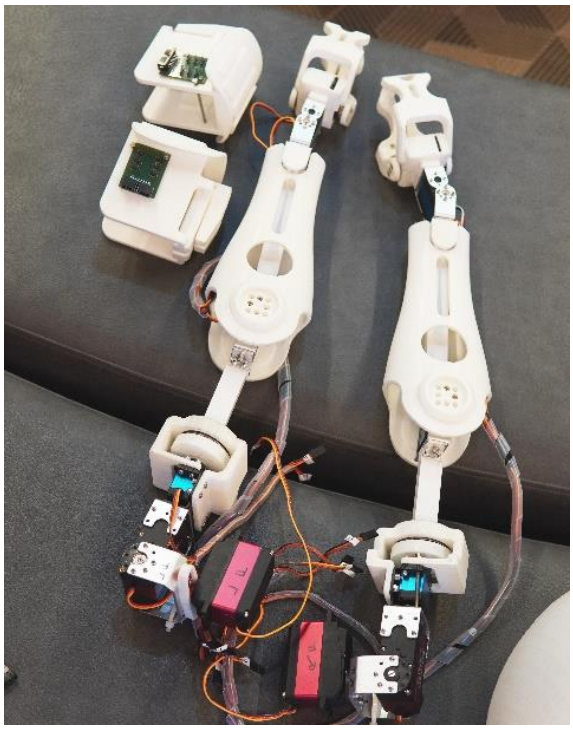
**Component Accessibility**

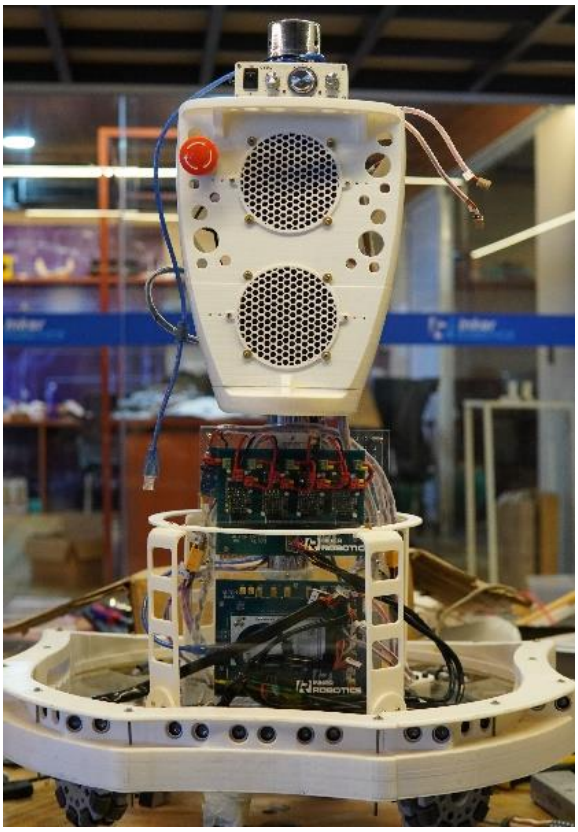
The design of ALTON's body is done keeping in mind easy accessibility to the different boards used so that students can access them with minimum effort and at the same time the components are safe and well protected.

**Improved Stability**

ALTON as a project has always given great importance to the safety and stability aspects of the product in itself. ALTON is developed on a well-researched design base that ensures the robot is stable under the conditions it is prescribed for use.





The development team of Alton continuous their research on the next version of Alton. Alton 2.0 will have differing sizes and advanced image and text processing using Machine learning. The team is looking at feasible methods forintroducing Alton into the B2B market. An interesting video of Alton 1.0 getting ready is attached here.

**Automation cells and solutions**

Industrial robots are utilized in an increasing sort of structures and are often employed in complete automation systems, which contains a mess of commercial robots. Today, individual robots are applied as a “next step” in automation, for instance , for unloading a finished part from a machine and afterwards loading a blank part ready for processing. A “second step” in automation are production cells, where a robot has been found out for unloading and loading several machines but was designed as a cell from scratch. These cells are often subsets of full production lines and sold through integrators to the customer. Robotics OEMs offer turnkey cells, including robotic arms, delivery systems like adhesive

dispensers, cell controllers (typically PLC), and safety equipment for specific applications. The aim is to deliver an answer for the top user and reduce complexity for the top customer, who might not have the time or know-how internally. At an equivalent time, increased standardization for the robotics OEM can lower the value of systems through common solutions. Whether this approach are going to be successful remains to be seen. Solutions, often highly customer specific, include different robots and cells. Typical samples of automation solutions are often found in automotive (e.g., body in white or paint production lines). Another example is electronics, where production is very automated and takes place in lights-out, clean-room environments.

**Increasing labor costs**

As the cost of producing labor is rising not just in industrial countries (e.g., 24 rise in manufacturing labor costs within the US since 1990) but also in traditional LCCs like China or India, the payback for robotics is becoming ever more attractive. the many rise parturient costs itself is due not only to increasing people/worker and skills shortages but also to a rise in cost-intensive labor transience, because it is not any longer uncommon for people to maneuver from job to job.

**Accessible talent**

While robotics engineers were once rare and expensive specialists, people with the skills required to design, install, operate, and maintain robotic production systems are becoming more widely available.

**Ease of integration**

Advances in computing power, software development techniques, and networking technologies have made assembling, installing, and maintaining robots faster and less costly than before. These trends, as well as their impact on the growth of the robotics sector, are expected to continue.

**Simpler to connect**

Regarding the shortage of integrators working across OEMs/geographies/industries, respondents mentioned the subsequent as solutions: improved All players identified the value of robots together of the first challenges to adoption integration capabilities of robots within existing solutions; readiness of system integrators to put in a real turnkey solution for giant industrial automation during a short time span; and more candor and transparency among OEMs regarding who the higher system integrators are. Given the very fact that a lot of OEMs also act as system integrators, the last point seems difficult to deal with.Polar robots are also called spherical robots. For these types of robots, the manipulator connects to the base with a twisting axis and a combination of two rotary axes and one linear axis.

**Biography**

Hanoona Rasheed is a Machine Learning and Deep Learning Engineer adept in Research and Development in Chemometrics, Spectroscopics and Computer Vision projects. With her masters in Signal Processing and having gained experience from corporations such as Robert Bosch, she has developed herself as an Artificial Intelligence Engineer. She has been a consultant trainer to corporations in Banking, Oil-Gas and Software industries. Currently working as a Senior Robotics Engineer at Unique World Robotics, creating one of the world's first Full Stack Engineering Artificial Intelligence (FSEai) Course for experts from all domains as an Artificial Intelligence Specialist.