



Url	https://www.aum.edu.kw/english/innovation-amp-research/centers-and-labs/engineering-research-and-innovation-center/robotics-and-ai-center
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The Robotics Research Center aims to broaden students' knowledge and hone their technical skills in the area of Artificial Intelligence (AI) and Robotics. The Center offers a wide range of research and educational programs with an interdisciplinary nature; targeting both fundamental and advanced robotic systems.

The Center contributes to the advancement of robotics systems and their underlying technology components through a student-centered approach to research and learning.

The Center focuses on developing the skills of AUM undergraduate engineering students by introducing them to the joy of robotics, while promoting hard work, dedication, and teamwork. In addition to competing in local and international competitions, the Center's primary research focus is in the area of Artificial Intelligence and Humanoid Robot, Mobile Robots, Wearable Technologies, Autonomous Systems, and Aerial Robotics. The Robotics Center spans over an area of 3000 square meters, with the objective of supporting the development of fundamental research in robotics and mechatronics, while

collaborating with top international research centers and engineering firms in a rapidly developing field. The center bridges the gap between students' graduation and research projects with the local industry, aiming to render the students' project amenable to solving real world problems. The center consists of five main areas: Robotics Club and Aerial Drone Lab, Motion Capture Lab, Humanoid & Artificial Intelligence Research Lab, and Fabrication Lab

Robotics Club

AUM Robotics Club introduces the science and technology of robotics to students starting from the basic level to an advanced research level in a healthy, fun, yet competitive environment. The AUM College of Engineering and Technology students join the club to develop their scientific intuition, skills, team spirit, and leadership qualities by participating in local and international competitions in robotics. The students practice their knowledge of robotics through using the most updated platforms that help improve their skills in mechanical design, electronics, prototyping, and programming. The club is equipped with all the necessary workshop tools for assembling robots, in addition to powerful PCs for designing structures, modeling, simulation, and programming. The club offers several workshops during the term to train new members in the field of robotics and AI. Furthermore, the club organizes in-house competition among participating club members to create a competitive environment and prepare students for representing AUM in local, regional, and international robotics competitions. International competitions are essential for providing AUM students the chance to interact with students from all over the world in robotics and share their skills and experiences. Since the establishment of the club, AUM students have won over 30 prestigious national and international awards.



AUM Practicing Arena

AUM practicing arenas are designed according to the international robotics competition standards to allow the AUM Robotics Club students to test, tune, and practice. The most common arenas in place are: Line Following Arena, Complex Track Line Following Arena, Maze Solving Arena, Mini Sumo Arena, Metallic Mega Sumo Arena, Ball Collector Arena, Humanoid Sprint Arena, Humanoid Sumo Arena and Puck Collect Arena.



Aerial Drone Lab

The field of aerial robotics is gaining significant interest in the broader field of robotics and AI. AUM robotics club offers the opportunity for the students to learn the main technical concepts of quad copters, octa-copters and drones in terms of operation, control and optimization. A variety of well-recognized drones is used such as: Parrot drones, DJI drones, and Customized drones. On the advanced research level, two DJI S1000+ spreading wings offer an enormous opportunity for research in adaptive control. The aerial drone lab has PCs with advanced tools, such as Matlab, Visual Studio, and LabVIEW. An arena built to international standards emulates an indoor drone environment and is equipped with a surrounding net for protection and safety.



Robotics Motion Capture Lab

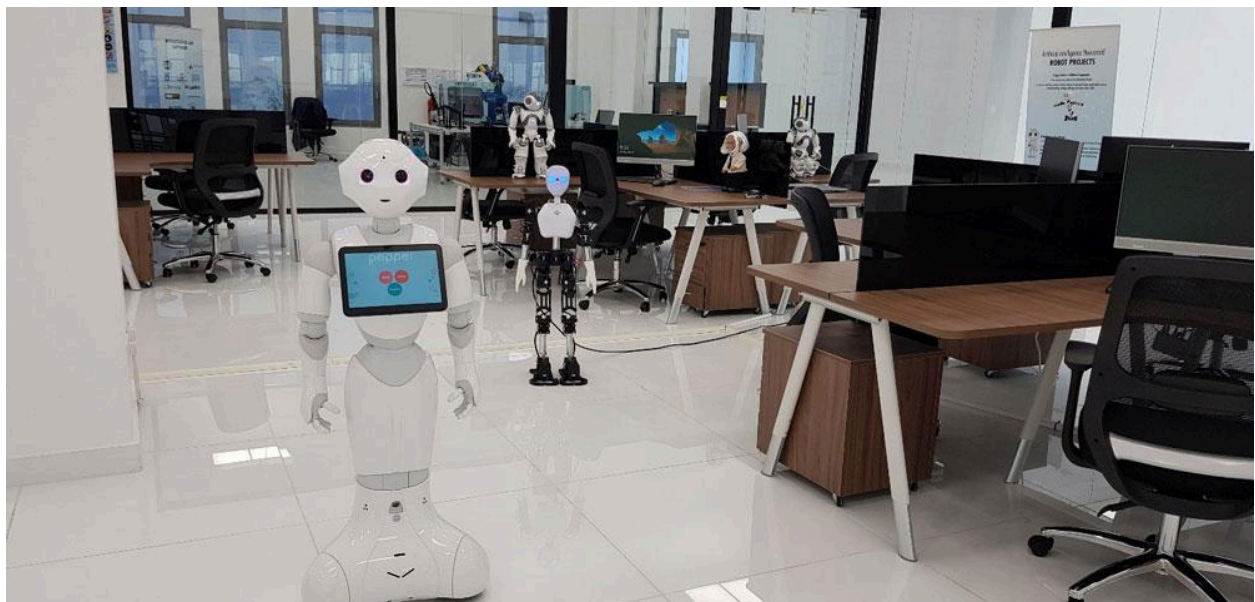
Robotics Motion Capture lab provides the state of the art technology for recording the precise movement of both ground and flying robots. The lab is equipped with the latest Vicon system for mobile and aerial robots. The system consists of six Vicon T40 tracking cameras, capable of tracking multiple flying objects in real-time with 6 degrees of freedom and millimeter accuracy. Furthermore, Nexter Wifibot robots are also available in the center for those who want an affordable open mobile platform for developing and learning the basic concepts of self-driving vehicles.



Humanoid Robots and Artificial Intelligence Research Lab

The Humanoid Robots and Artificial Intelligence Research lab is equipped with the latest state of the art robotics platforms. Senior students working on their graduation projects utilize the lab in the areas of artificial intelligence, robot kinematics, control algorithms, and wearable technologies. This lab is equipped with advanced humanoid robots, such as Pepper humanoid robot, which has generated several research projects and graduation projects.. Two humanoid robots, the Nao V6, which is the latest version of the Nao robots, are used for studying robotics kinematics, vision, speech and sound recognition, since this robot is a programmable. The UXA 90 robot is added to the list of the humanoid robots in the center, which is well-proportioned 1m tall humanoid shaped robot. It is designed with a structure to the ratio of the ideal human body. Since the skeletal structure of the robot imitates that of a human, it is possible to emulate human-like movement patterns.

The lab is also equipped with Bio Sensors Kits such as Bitalino kit, Bioplux EMG sensors, MYO armband, Brunel hand and IOT kits. It also offers extensive opportunities for research in bio-medical engineering at AUM. These kits are for those who are interested in wearable technologies, machine learning and biomedical applications spanning multiple graduation projects.



Fabrication Lab

The Digital fabrication lab is equipped with high-end 3D printers (ABS, PLA and Resin) used in 3D modeling such as Ultimaker extended +, which can print using PLA and ABS. In addition, Form labs 2 is used for laser technology to print using Resin material, allowing for very precise 3D printed models. The lab is also equipped with a BigRep studio machine, one of the biggest 3-D printers around the world, providing an option of producing large objects in a single part. A laser cutting machine is also available for cutting the wooden or acrylic boards. In addition, the lab is equipped with a 3D scanner and power tools, which provide users with the ability to fabricate different robotics models. Finally, a Voltera printed circuits board maker machine provides the center with the technology of producing pre-designed PCB for applications in robotics.



