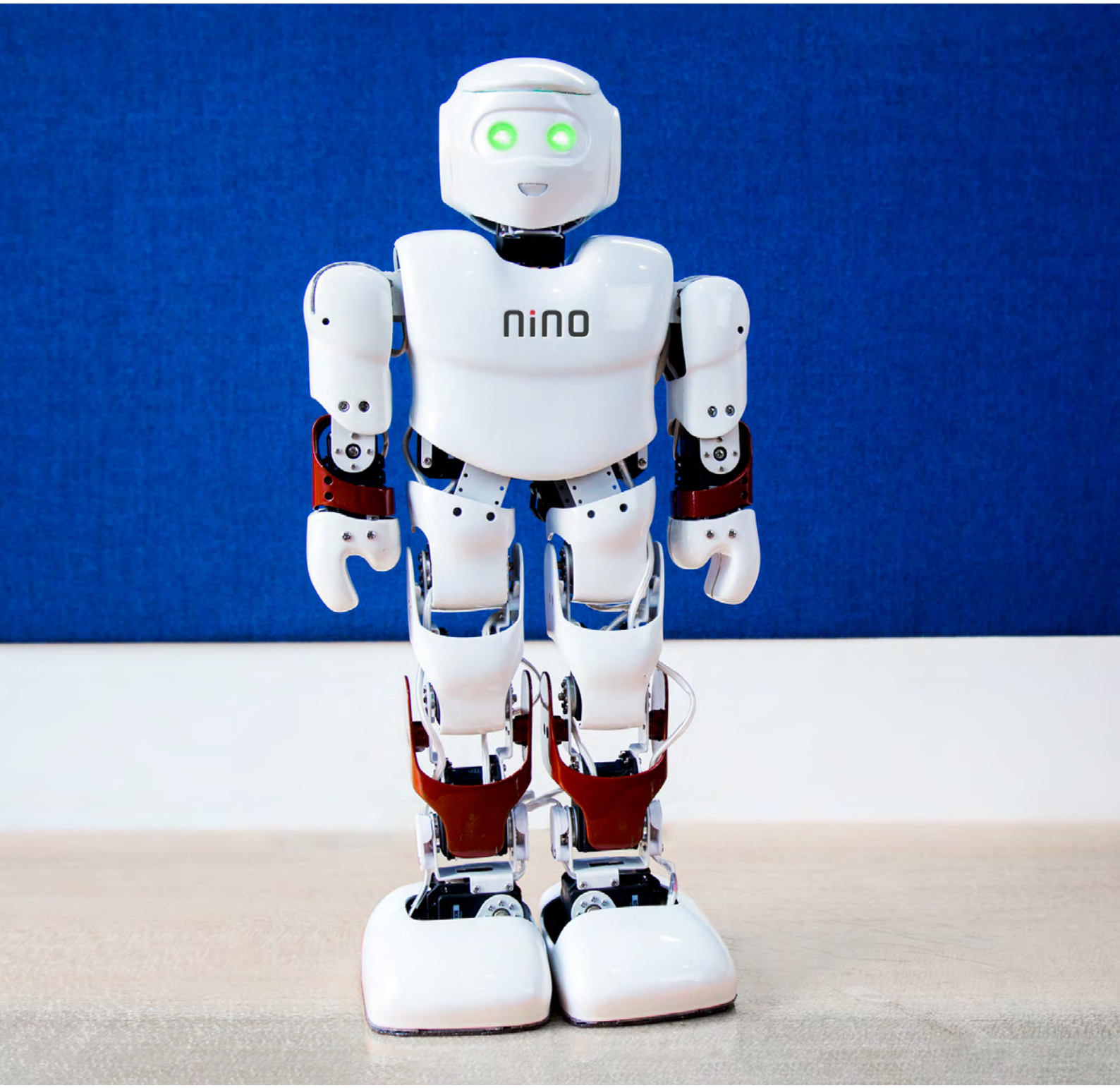
Sirena TECHNOLOGIES

Introducing SKIP-E

Sirena Knowledge & Information Program - Engineering



www.sirenatech.com

SKIP-E

Sirena Knowledge & Information Program - Engineering

About Sirena

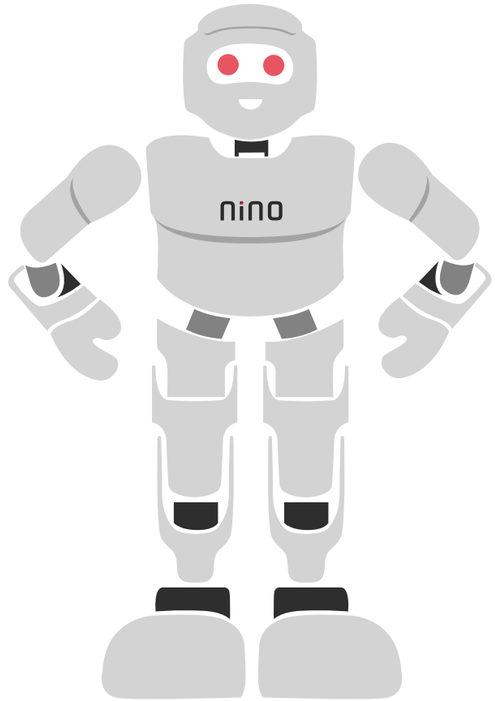
We take this opportunity to introduce Sirena Technologies, based out of Bengaluru, formed with the vision to bring innovative world-class products to the market; designed and developed in India. We are the first Indian company to build the Humanoid Robot - NINO, to act as a teaching assistant in schools and colleges. We provide various robots which enable students to learn technology by programming and creating new product prototypes. These products are designed with real use cases that can help our community at large. Sirena offers a comprehensive education program where; the company sets up Robotics and Internet of Things (IoT) labs with all advanced equipment and introduces Sirena Knowledge & Information Program (SKIP) for schools and Sirena Knowledge & Information Program - Engineering (SKIP - E) in engineering institutes.

About Sirena Ecosystem

Taking Robotics to the Masses - Making Technology Available to Everyone

We have created:

- First Indian Humanoid Robot - NINO
- Life-size Humanoid Robot: NINO-T, for Karnataka Tourism
- Sirena Knowledge & Information Program (SKIP) - Specialized Robotic kits and content for labs
- First set of “real” Robotic Labs in schools in India
- Robots delivering classes along with teachers
- Content aligned with school curriculum
- Faculty - trained in Robotics and deployed
- Robotic labs for Engineering Institutes, SKIP-E with cutting-edge projects
- SKIP - IoT Labs for Engineering institutes
- SIR (Sirena Institute of Robotics) to train and equip robotics with one and all



Robotic Labs

Full-fledged, self-sufficient labs installed in educational institutes and completely run and maintained by Sirena Technologies.

Curriculum/Content

Customized to educational institute’s curriculum, Covers the K-12 & engineering segment, Designed around ‘Multiple Intelligence Model’, ‘Differentiated Instruction’ and ‘Theme-Based Learning’.

Mentors and Training

Sirena Certified Trainers deployed in educational institutes, In-service Professional Development Sessions.

Tools and Accessories

Hardware and Software to program and learn, Sirena Wi-Fi Speakers to complement Nino, 4G routers maintained by Sirena for internet connection.

Service/Maintenance

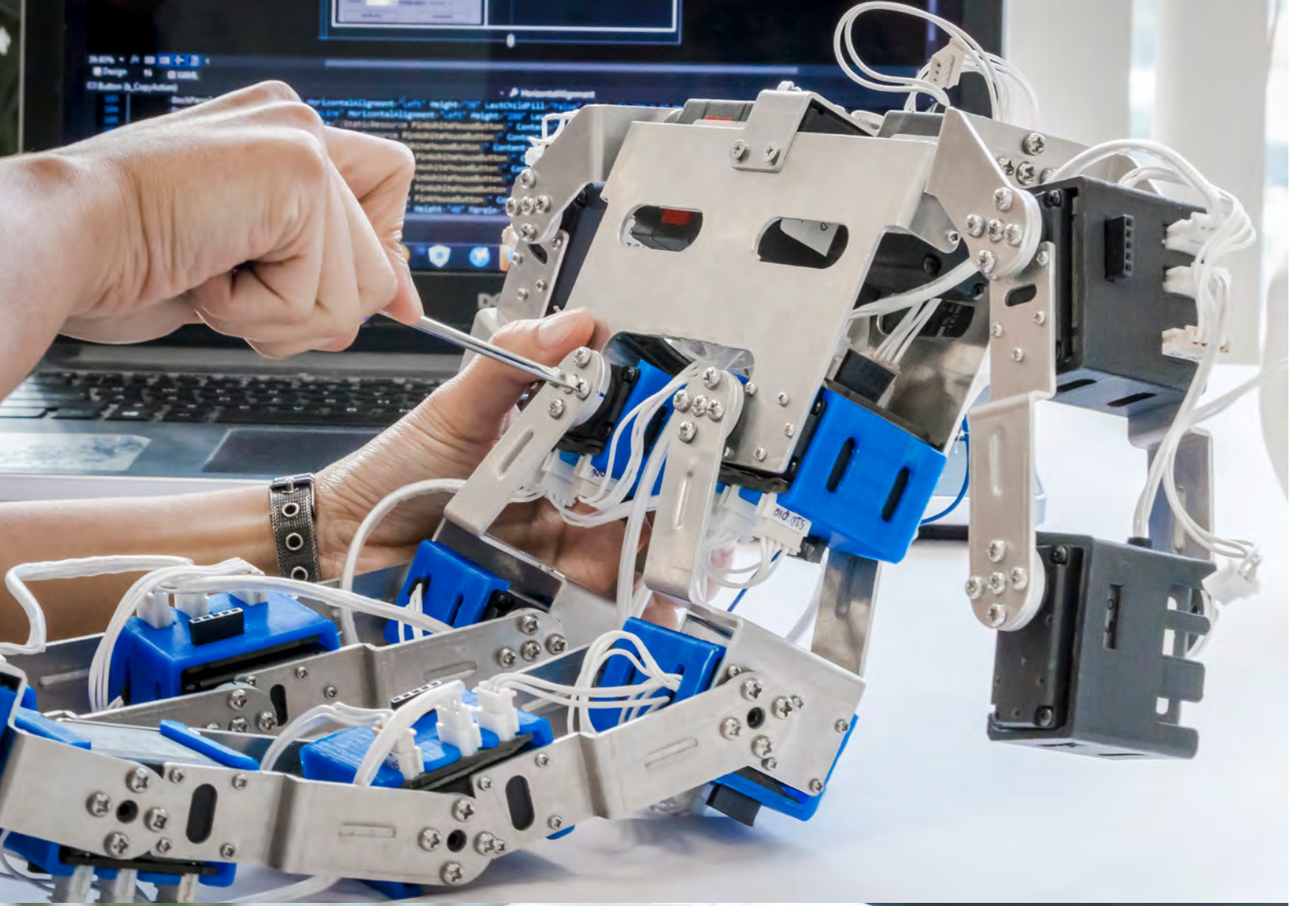
NINO and all tools/accessories would be fully serviced and maintained by Sirena without causing any interruptions.

Projects/Competitions

Special projects for exploration, Support educational institutes in Global Robotic competitions, help setup/host Robotic Competitions.

3rd Party Cloud Integration

Increase the knowledge base by using Sirena Voice service, Integrated knowledge based system to complement Robotics based on educational institute's need.



About SKIP-E

Sirena Knowledge & Information Program - Engineering (SKIP - E) is a tailor-made course designed to meet the ever-growing demands of engineering education. Ever since its inception, the ultimate objective of SKIP - E has been to empower engineering students and graduates with the right skill-set and mindset so that they are industry-ready. Presently, there is a big technology gap that exists between industry and education sector. At Sirena Technologies, we strive to bridge this gap with our customized program for college, namely the SKIP - E. Our proposed “Sirena Robotics Lab” has been designed with a purpose to foster curiosity amongst engineering students & graduates, and to revolutionize the education sector. We plan to achieve this by providing them with the right exposure, advanced technical skills and state of the art resources.

SKIP-E

Technology

Robotics

Humanoids

Internet of Things (IoT)

Vision

Artificial Intelligence (AI)

Machine Learning

Voice Assistants

Deep Learning

Far Field Mic and ASR

Natural Language Processing (NLP)

Wi-Fi

Cloud

Big Data and Analytics

Industrial Robotics

Renewable Energy

3D Printing

Communication Protocols

Introduction to real world advanced technologies with hands-on experience.

Hardware

Mechanics

Motors/Servos

Sheet Metal

Skeleton

Linkages

Fasteners

Wires/Connectors

Electronics

EVK - PCB

Processors

Micro-Controllers

LEDs

Speakers

Sensors

IMU

Battery

Camera

Mics

Software

Sirena SDK

C Programming

C++ Programming

Android Programming

Python Scripting

Windows OS

MATLAB

Windows SKIP Tool

Android App

CAD

3D Printing Software

Knowledge about hardware and software integrated systems which explains how real world products are built.

Design

Ideation

Sketches

Industrial Design (ID)

Prototyping

- Mechanical Design: 3D Printing
- Electrical Design: Circuit Diagram, Manufacturing
- Aesthetics

Manufacturing (understanding materials like plastics, acrylic, sheet metal & process like vacuum casting, laser cutting, injection moulding)

Introduction to product design cycle - helps visualise the end product.

General Concepts

Mechatronics

Electrical and Electronics

Kinematics and Controls
Object Oriented Programming

SDLC

Software Configuration Management (SCM)

Enriches learning as students would be able to correlate their respective disciplines with SKIP-E projects.

Skills

Programming

Designing

Logical Thinking

Product Life Cycle

Art and Design

Team Work

Presentation Skills

Time Management

Critical Thinking

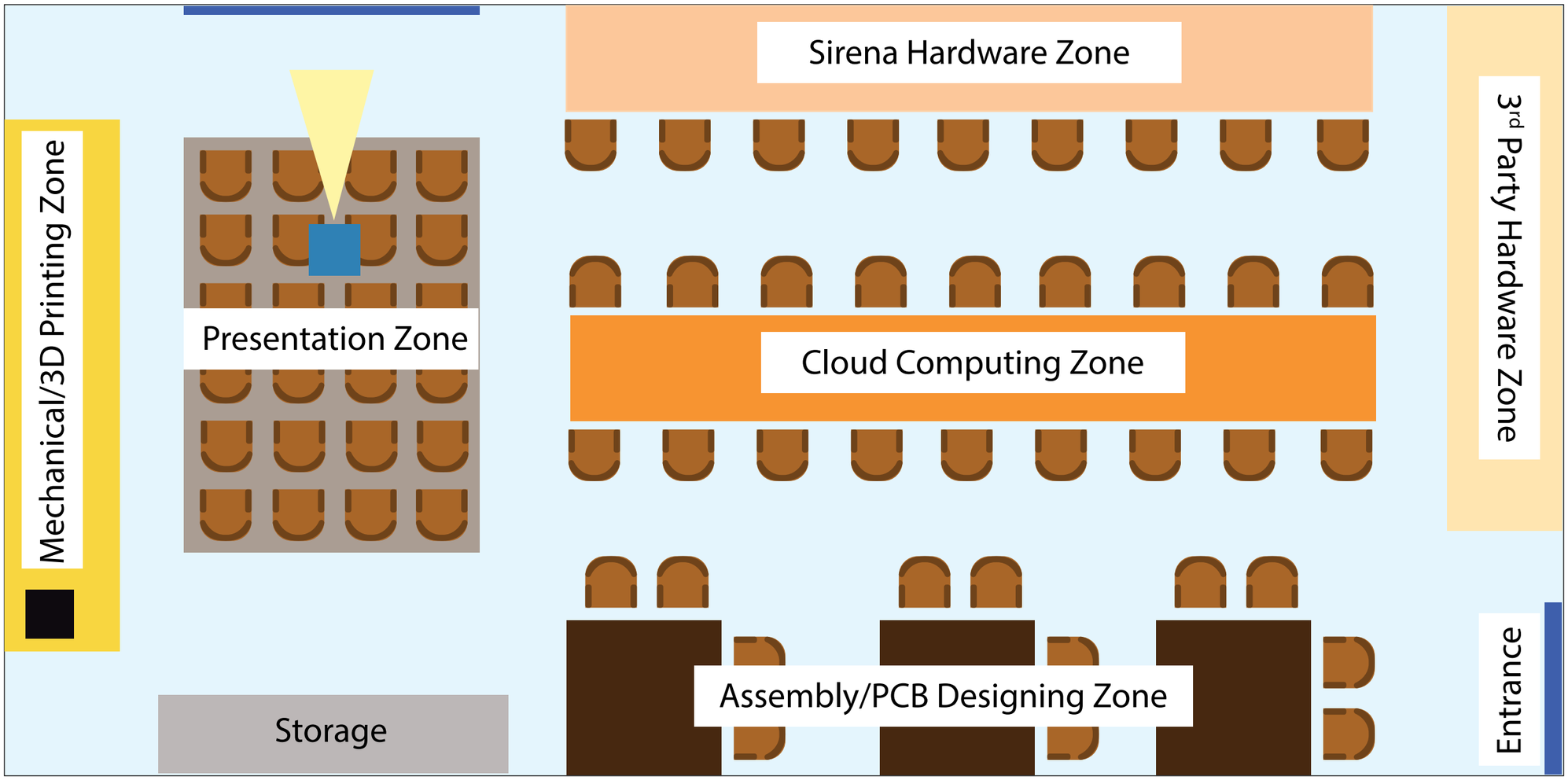
Personality Development

Creativity and Innovation

Analytical Skills

Students develop interpersonal and intra-personal skills benefiting their overall personality development, while connecting with real world technologies.

SKIP-E Lab Layout



Lab Size 30 x 60 ft

Projector/Writing Board
11.0 ft width

Sirena Hardware Zone
30.0 ft X 4.0 ft

Cloud Computing Zone
30.0 ft X 4.0 ft

Assembly/PCB Designing Zone
6.0 ft X 6.0 ft

3rd Party Hardware Zone
22.0 ft X 4.0 ft

Mechanical/3D Printing Zone
22.0 ft X 4.0 ft

Storage
15.0 ft X 3.0 ft

Sirena Hardware Zone

- General Purpose EVKs
- Robots and their accessories
- Humanoid Robot
- Video Surveillance Hardware
- Voice Integrated Platforms
- Module Shields
- Synchronous Audio Streaming Platforms

Mechanical/3D Printing Zone

- 3D Printers
- Drill machine with accessories
- Screw driver toolkit
- Dremel toolkit

Cloud Computing Zone

- NVIDIA GPU enabled Ubuntu Systems for R&D
- Python
- Android
- STM32 Workbench
- C, C++ Platform
- V-rep
- LabView
- Windows Operating System for Visual Studio

Assembly/PCB Designing Zone

- PCB Design workstation
- Hotair guns and its accessories
- Soldering station with accessories

3rd Party Hardware Zone

- Arduino
- Raspberry Pi
- Beagleboard
- STM32
- UDOO
- Onion Boards
- Xigbee
- Bluetooth Modules
- ESP32 Wi-Fi Modules
- Multiple Sensors
- Servos
- Smart Motors
- Basic electronics kit

SKIP-E Models

Centre of Excellence (CoE)
- Skill Set Enhancement
- Research Goals
- Innovation & Research
- Hands-on at Industry Level Projects

Internet of Things (IoT)
- Wireless Audio Streaming
- Voice Control
- PC & App Based Control
- Home & Workspace Automation Projects

Advanced Robotics
- Design & Assembly of Robots
- Humanoids
- Automation Navigation
- Localization & GPS Navigation

1. Centre of Excellence (CoE)

Centre of Excellence will be integral to the academic vision and mission of the institute and aligned with the institute's academic objectives and learning practices. The Centre will be essential in providing the necessary support and resources, so as to deliver a seamless learning experience. The centre will have the capacity to nurture mutually beneficial collaborations with industry and academia, thus contributing towards an effective curricular engagement across a range of venues and eventually transforming as a nexus of innovation and research.

2. Internet of Things (IoT)

With the fascination that is taking over the world to make everything smart, IoT is coexistent with every form of technology that is out there. Sirena's IoT Centre provides a complete studio learning experience that enables its learners to create and implement smart technology. From streaming audio and video wirelessly to automating an entire home, our IoT products are designed around an efficient platform to ensure that its users end up learning not just IoT but IoE (Internet of Everything).

3. Advanced Robotics

The last decade has seen an exponential surge in the development and growthof Robotics. From research to industry, even the commercial sector has made significant investment in robotics. Robotics has a strong presence in every domain, and at the least, acquaintance of this skill is indispensable. Our advanced robotics facility aimed at imparting the necessary technical expertise and providing a platform that enables learning and research in the field of robotics.

SKIP-E Projects

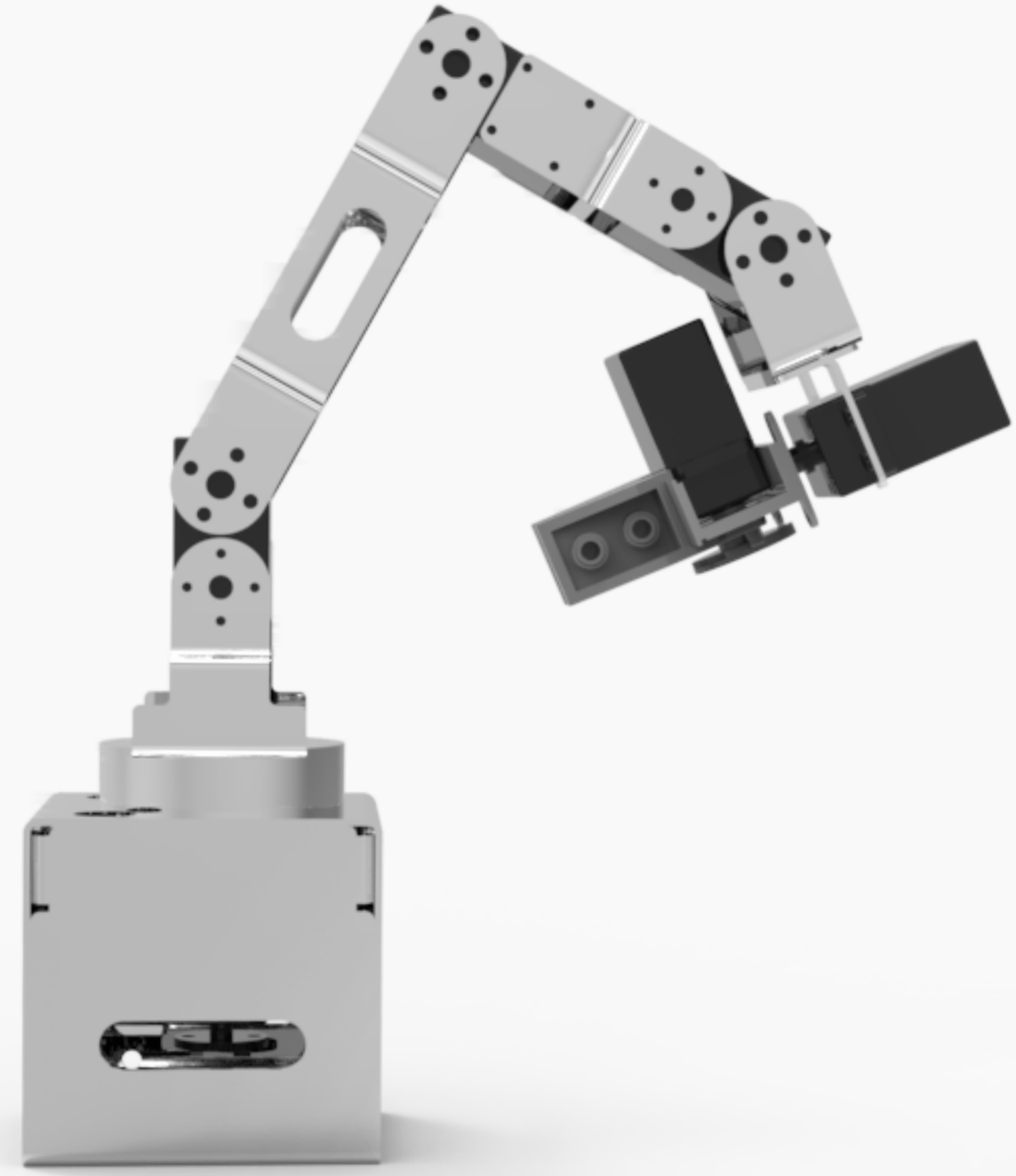
The last decade has seen an exponential surge in the development and growth of Robotics. From research to industry, even the commercial sector has made significant investment in robotics. Robotics has a strong presence in every domain, and at the least, acquaintance of this skill is indispensable. The advanced course of Robotics at SKIP-E Robotics Lab is aimed at imparting the necessary skills and giving learners hands on experience with creating and controlling some interesting robotic projects.

SKIP-E Projects

1. Legged Robots

Projects include Spider robot and Dog robot. Learning skills include:

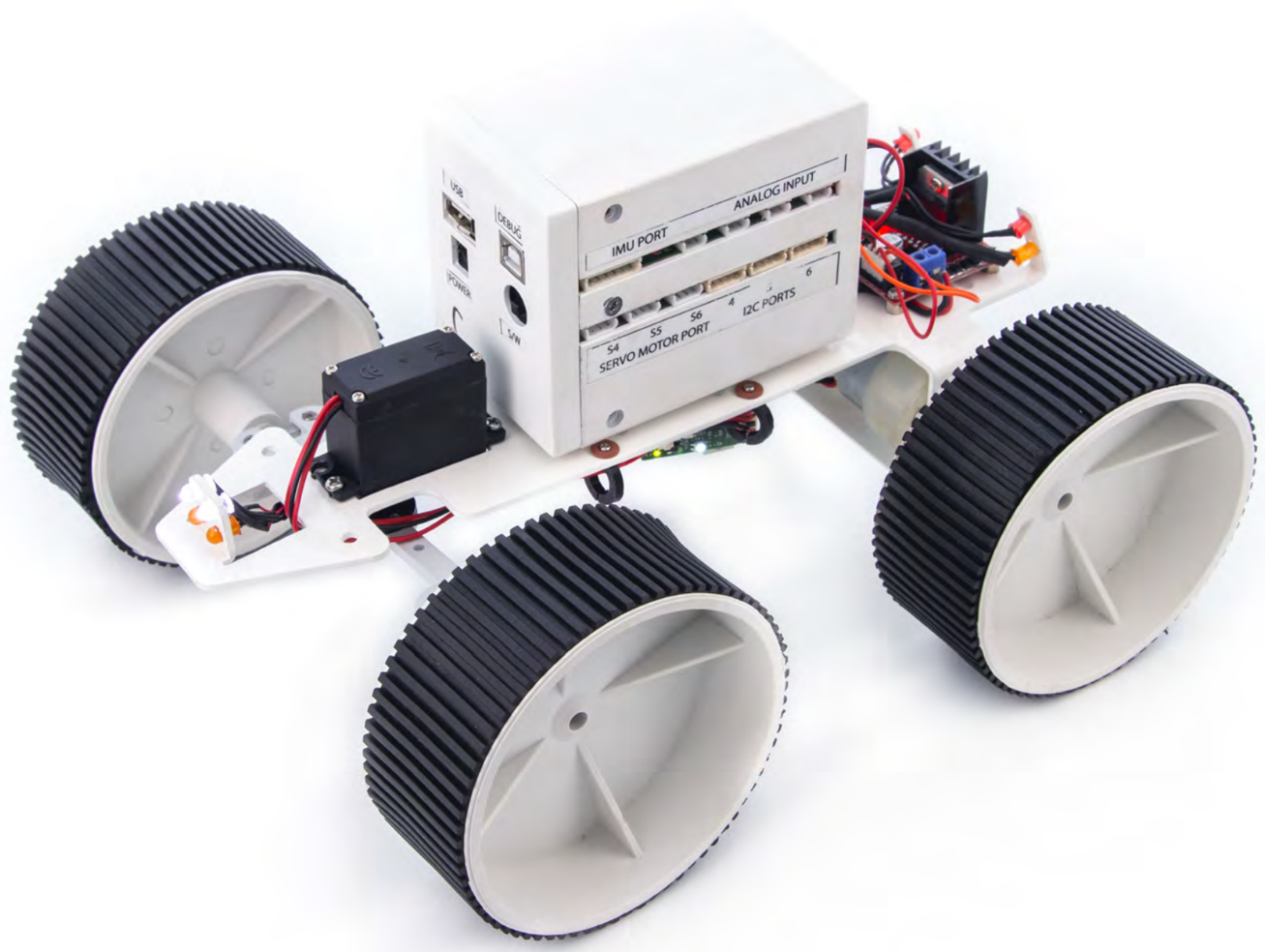
- Design and Assembly of the Robots
- Implementation of Linear and Non-linear Walking Algorithms
- Wireless Control with Voice Assistance
- Wireless Audio Streaming
- Developing User-friendly Platform for Interaction



2. Robotic Arms

Learners will build robotic arms from the scratch. Learning skills include:

- Modeling and Assembly of the Arm
- Pick and Place Operation
- Object Sorting
- Precision Writing and Tracing



3. Ground Robots

This includes omni bot and autonomous navigation car. Learning skills include:

- Design and Assembly of the Robots
- Wireless Video Streaming
- Implementation of Algorithms for Static & Dynamic Obstacle Avoidance
- Implementation of Algorithm for Autonomous Navigation

4. Aerial Robots

This includes autonomous car and quadcopter. Learning skills include:

- Design and Assembly of Quadcopter
- Wireless Control
- Autonomous Navigation
- Implementation of Stability Algorithms
- Localization and GPS based Navigation

SKIP-E Projects

5. IoT Solutions

With the fascination that is taking over the world to make everything smart, IoT is coexistent with every form of technology that is out there. Sirena provides a complete studio learning experience that enables its learners to create and implement smart technology. From streaming audio and video wirelessly to automating an entire home, our IoT products are designed around an efficient platform to ensure that its users end up learning not just IoT but also IoE (Internet of Everything). Core projects include:

- Wireless Audio Streaming
- Voice Control
- PC & App based Control
- Home and Work Space based Automation Projects

Sirena
TECHNOLOGIES

simply curious

Sirena Technologies was formed with an inspiration to bring innovative world-class products to the market; designed and developed in India, leveraging global ecosystem. The company focuses on products for education, entertainment, and smart homes through disruptive technologies and aims at transforming education and consumer electronics markets-with strategic focus on price-sensitive markets. Sirena's completely home grown Robotic-Platform, brings unique value proposition forthetechnicalinstitutions&schoolsprovidingthem an opportunity to do research, learn & contribute.

Engineering is an Art when learnt Right

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