SOLUTIONS IN MECHATRONICS, ROBOTICS & DIGITAL-TWINS

Acrome is a worldwide provider of hands-on robotic experiments and education with hardware, software and an integrated courseware for academia. Our mission is helping academia and schools to train future talented engineers with our innovative lab solutions.

PRODUCTS

ACROME

BALL
BALANCING TABLE

A ball placed on a table does not fall on the ground because it is stabilized with this table and your control algorithm.

Balancing a ball on a table in a desired position is one of the most important and classical problems of control engineering. Advanced control techniques are used for the stability of the ball, which are very essential techniques in modern industrial control processes. Students have the opportunity to conveniently learn the essential aspects of control theory by experimenting.

ACROME

STEWART PLATFORM PRO

= 50 KG / = 10 KG	= 10 CM / = 20 CM
PAYLOAD CAPACITY 50 KG	**LINEAR TRAVEL RANGE**	**RESOLUTION** 0,1 µM
ANGULAR TRAVEL RANGE 30°	**READY TO USE INTERFACE** -MATLAB -C# -LabVIEW -phyton	**READY TO USE HARDWARE**

ACROME Stewart Pro Platform is used in precision positioning applications thanks to the high sensitivity of linear actuators, gyroscope and a three-axis accelerometer.

ACROME

DELTA ROBOT
Compact 3-DoF Robotic Arm with Machine Vision Functionality

PAYLOAD CAPACITY 1 KG	**LINEAR TRAVEL RANGE** 110 mm.	**RESOLUTION** 2 mm.
Z TRAVEL RANGE 110 mm	**READY TO USE INTERFACE** -MATLAB -C -LabVIEW -phyton	**READY TO USE HARDWARE**

ACROME Delta Robot with its embedded camera and replaceable magnetic and capacitive touch end-effectors can identify and interact with different parts. Suitable for vision guided Pick-and-Place operations and can be used in applications, e.g. Quality Assurance, Engineering Research Applications, Wearable Items test, Touch Screen tests.

BALL AND BEAM

Realize control theory with ACROME Ball and Beam System! Controlling the position of a ball on a beam is one of the conventional problems of the control theory.

Ball and Beam system can be used for a wide range of control system design implementations from basic linear controllers to advance nonlinear methods. Students can understand system design approaches with hands-on methodology. Effects of linearization, modelling errors and control algorithm's deficiencies could be visually distinguished and further analysed thanks to the provided Graphical User Interface. User Interface contains plots of the simulated response and system's real measured values.

1-DOF HELICOPTER

Flight simulation control unit for teaching and research.

ACROME 1 DOF Helicopter is a perfect introduction plant for learning fundamentals of flight dynamics and control.

1-DoF Helicopter has been designed to simplify the intelligent control strategy of flight systems. With the motor compatible electronic speed controller and high-resolution encoder 1-DoF Helicopter enables the student to experience the main concepts of quadcopters, rockets, hovercrafts, and underwater vehicles. Ready to use courseware enables the student to understand the main topics of control engineering such as system modeling, linearization, linear control system design and frequency response analysis. The fully open-source software gives the freedom to students and researchers to modify the algorithm or design their own structure.


AUTONOMOUS MOBILE ROBOTIC KIT

Remove the barrier of learning the autonomous mobile robots. Access everything you'll need in a ready-to-use rich content package and through a web accessible digital-twin simulation.

ACROME Autonomous Mobile Robotics Kit is a hands-on, ready-to-use kit curated to start learning and developing yourself in the world of autonomous mobile robots.

Kit contains the popular Turtlebot mobile robot, with a step-by-step curriculum and example codes to start.

For maximum accessibility, a web-based online simulation environment is also provided.
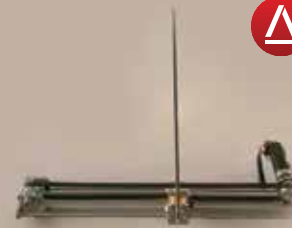

LINEAR INVERTED PENDULUM SYSTEM

A classical non-linear control system with widely available parts and ready to use content.

The inverted pendulum system is a popular demonstration of using feedback control o stabilize an open-loop unstable system and widely used as a benchmark for testing control algorithms. The system can be used to teach students how to balance a vertical rod at the tip of a moving arm.

PRODUCT COMMON FEATURES
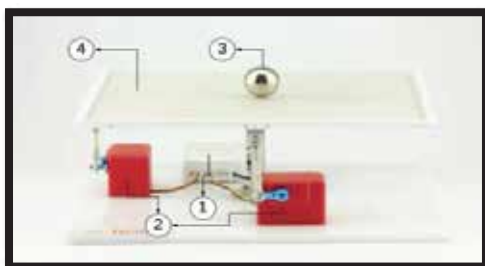
COMPONENTS OF PRODUCTS
1. Power Unit
2. Motors & Actuators
3. & 4. System Mechanics
5. Microcontroller
6. Software & Documentation (Courseware)

Software is our differentiator !

Open Source Code | Local PC or Remote Experiments | Support to Various Software Platforms | Easy to Use, Easy to Install

sales@embeddedsingapore.com
www.embeddedsingapore.com

GOPALAM EMBEDDED SYSTEMS

SOLUTIONS IN MECHATRONICS, ROBOTICS & DIGITAL-TWINS

ACROME SMD Family is a versatile and powerful solution for robotic projects and motor control applications. Products in the family have features to optimize the motor's performance and ease the cabling process. Multiple boards can be synchronized for simultaneous control of multiple motors, simplifying the complex robotics tasks. The hardware options provide support for different motor types, supply voltage ranges, and current capacity. Overall, the ACROME SMD family offers an efficient and comprehensive solution for controlling and optimizing DC motor applications.

PRODUCTS

Smart Motion Devices are used for building multi-axis, daisy-chained robotic systems with various motor types, add-on sensors and different type master controllers.

ACROME

SMD - STARTER KIT

Use with SMD UI or Python, Raspberry PI, Well documented Python, Arduino and Java Library

ACROME

SMD - EDUCATION KIT

Use with SMD UI or Python, Raspberry PI, Courseware for Matlab/Simulink®, examples available for Python and others

ACROME SMD (Smart Motion Devices) products are modular products designed to simplify the creation of robotics and mechatronics systems with a holistic electronics, mechanics and software approach. The main electronic part of the product family is SMD Motor Driver boards, which can be daisy-chained with each other using an optimized message protocol over a multidrop RS-485 communication link.

SMD - Education Kit - This kit provides an educational package for robotics and sensors with the user friendly SMD ecosystem.

OPTIONS FOR SMART MOTION DEVICES

SOFTWARE OPTIONS

» LabVIEW, Real-Time (optional), FPGA (optional)
» Executable & GUI
» Python
» MatLab/Simulink
» API for External Control (Examples for LV, Matlab, Python)

HARDWARE OPTIONS

» USB (PC based)
» Raspberry Pi + Shield
» NI myRIO
» Arduino Mega + Shield

ACROME

SMART MOTION DEVICES CAN BE USED IN INDUSTRY ORIENTED CURRICULUM.

GETTING STARTED PROJECTS

Cabling the Components

Installing the GUI Application

Commissioning the DC Motor

MOTOR CONTROL WITH EXTERNAL SENSORS

Cabling SMD Sensor Network

3D Parts and Building Instructions

Slider Door Example Project

Auto-Irrigation Example Project

BUILD YOUR OWN MOBILE ROBOT

Mobile Robot Components

3D Parts and Building Instructions

Assembling the Robot

Obstacle Avoidance Example Project

BUILD YOUR OWN MOBILE MANIPULATOR

Manipulator Robot Components

3D Parts and Building Instructions

Assembling the Robot

Kinematics Example Project

ESTABLISH NEW GENERATION APPLIED ENGINEERING LABORATORIES WITH ACROME MECHATRONIC AND ROBOTIC SOLUTIONS

GOPALAM EMBEDDED SYSTEMS
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