L’obiettivo del progetto ATTICUS è lo sviluppo di un sistema hardware/software intelligente, in grado di monitorare costantemente un individuo e di segnalare anomalie che riguardano sia il suo stato di salute, rilevate attraverso la misura e l’analisi automatica dei parametri vitali, sia nel suo comportamento, rilevate attraverso il monitoraggio e l’analisi degli spostamenti che la persona compie nello svolgimento delle sue attività.
Coupling of propeller and motor is very important in the design phase of a drone: maximizing thrust is only a part of the optimization procedure, because it is important to analyze performance in terms of efficiency, consumptions and response time. Our platform can be useful to perform the rotor (propeller + motor) performance identification. It is based on load cells to sense thrust, infrared encoders to measure RPM and current and voltage sensors to capture the power load.

At the center of the platform, a STM32G431 (Nucleo32) performs data acquisition, while an ESP8266 is used as a WiFi link to the PC.
Low-Power Neural Networks engines for Smart Sensors

OWNER
alerusso@unisa.it
s.adesso2@studenti.unisa.it

APPLICATION FIELDS
Condition-based Maintenance, Edge-Computing, Smart Sensors, IoT, Industry 4.0, Health & Safety

KEY SELLING POINT
• Highly Customizable
• High Performances
• Reliability
• Integrability
• Low Cost

STAKEHOLDERS
• Industry
• Mobility and Transport
• Automotive
• Healthcare
• Consumer electronics
Embedded Systems a.a. 2020

OWNER

http://mivia.unisa.it
https://www.diem.unisa.it/

APPLICATION FIELDS

Smart home, smart cities, robotics

KEY SELLING POINT

• Low cost
• Easy to use
• Modular
• Whatever they are your key selling points

STAKEHOLDERS

• Education
• Robotics
The developed board is part of an industrialization project of a distributed remote management system. The goal is to create an intelligent light pole that can allow remote adjustment of city lighting. The communication protocol implemented, based on Wm-Bus, is such that each pole can communicate with a central control unit through which it is possible to send the appropriate brightness profile.
Embedded Systems a.a. 2020

OWNER
http://mivia.unisa.it
https://www.diem.unisa.it/

APPLICATION FIELDS
Robotics, DIY

KEY SELLING POINT
• Low cost
• Easy to use
• Modular
• Whatever they are your key selling points

STAKEHOLDERS
• Education
• Robotics
Implementation of an oscilloscope that features a multi-touch interface. The oscilloscope is based on a STM32F746NG demo board, that is equipped with an ARM CORTEX M7 core, operating up to 216 MHz and with three 12-bit ADCs. The device was developed within the academic program of the “real-time measurement systems” course. The user can reduce horizontal scale executing a spread gesture along x-axis, the system changes time base (s/div) coherently. Simply touching, it is possible to set horizontal and vertical position of the trigger. Swiping, the trigger position changes in real-time creating an amazing drag effect. The user can increase the horizontal scale with a pinch gesture.
STM32 Based Projects
Electronic Students UniNA

• This system based on ST32F746GZ microcontroller is able to measure thickness of materials with a non-destructive technique, thanks to an HV pulse generator that stimulates a piezoelectric probe to generate ultrasound waves. Due to its small size and high performance, it can be installed on drones.

• AI application based on an edge device (B-L475E-IOT01A2 board from ST based on an Arm Cortex M4 core): the system will be able to acquire data (from smart sensor for IoT or signals), process data and make predictions locally, by running the pre-trained neural network model.
Pulmonary ventilator developed by the opensource community during the lockdown and revisited by DAM Bros Robotics both in the mechanical and in the electronic and control part.

Automatic lung ventilator

OWNER

www.dambrosrobotics.it

APPLICATION FIELDS

• Life support
• Personal care
• Life-saving systems

KEY SELLING POINT

• Low cost device
• Configurable according to patients needs
• Easy to modify and upgrade

STAKEHOLDERS

• Health facilities
• Schools and universities
• Sport facilities
• Public offices
UniNa Corse E-Team

OWNER
http://www.eteam.uninacorse.com/

APPLICATION FIELDS
Automotive

KEY SELLING POINT
Electric cars are the future!
We are looking for companies willing to open possible collaborations to have the opportunity to complete the construction of the electric single-seater in order to participate in the Formula Sae Italy competition.

STAKEHOLDERS
- University
- Electronic stores
- Industry
- Automotive market

We are the Federico II FSAE electric team, a group of students with the aim of creating opportunities for better technical training through the design and production of an electric racing car. The students who make up the team come from every engineering study course (electronic, electrical, mechanical, mechatronics, etc.), as well as from courses such as economics or law for team management and relations with sponsors.
AT Lab was born as a personal passion about electronics starting as a “garage” activity. Now it becomes a reference point for learning with fun electronics. Several projects are shared with interest together with a background PhD activity in embedded electronics system.
BAIAExperience is the first Virtual Reality Tour in the roman underwater ruins sit at 5 meters deep in the sea of Baia, in the Campi Flegrei, in the West side of Napoli.

APPLICATION FIELDS

- Archeology
- Tourism
- Social VR for disabled people

KEY SELLING POINT

- Suitsables for all ages
- In replace or integration of diving
- Bring people closer to archeology and history

STAKEHOLDERS

- Educational world
- Museums
- Local and international tourism market
- Public institutions
Disclosure duties have become an integral part of the online economy. However, they remain complicated and costly to administer. We offer a comprehensive framework to automate and customize disclosure so to make them less costly and more effective by harnessing the power of machine learning.
Mimic Project

Mimic is an Open Source project by ISIS FERRARIS-BUCCINI of Marcianise carried out as part of the activities of PCTO in collaboration with DAM BROS ROBOTICS.

The prototype allows to capture body movements using everyday materials and inexpensive technologies (the arms are made with electric PVC pipes). The control circuit is made with the STM32 board. This digitized movements can be used to control humanoid robots, virtual reality models and interact with complex systems.

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The system **SPFD** allows the control of disabled parking areas to detect the presence of unauthorized parked cars. In this case, a luminous/phonic timed deterrent signal, will be activated and a SMS will be sent to the smartphones supplied to local Police officers, ensuring rapid verification and repression of abuses with sanctions imposed by the Highway code.

The system includes a series of nodes, that acquire the signals coming from the magnetic parking sensors, using LoRa technology, and by means of RFID UHF receivers, for detecting of electronic CUDE, linked to a Gateway, that sends data to a central server, by means of a GPRS connection.
IoT Modules

RC-S2LP-XXX
STMicroelectronics S2-LP based modules (433/868/915MHz).
- CE/FCC Certified
- 868/915MHz version available with Helical Antenna.
Maximum performance in a minimal space, with 4 programmable I/O pins.
Mechanical Dimension : 15 x 22mm.

NEW ➔ S2LP based pin to pin compatible with SPSRFC module

KEY SELLING POINT
- Time to market reduction
- Easy to use
- CE/FCC Certification
- Custom design

STAKEHOLDERS
- System Integrator

APPLICATION FIELDS
Wireless Module, IoT Modules

OWNER
http://www.radiocontrolli.com
UTM-BOX helps enterprise drone operators in autonomous and long range flights by streamlining the aircrafts management process, ensuring the safety and the compliance with the rules.

It is specifically designed for the upcoming European U-space services for flight planning and execution, such as tracking, buffer area estimation, horizontal and vertical separation from obstacles and other aircrafts.

**Application Fields**

- Internet of Flying Things
- Smart City
- Logistics

**Owner**

[https://www.topview.it](https://www.topview.it)

**Easy to install on board and automatic wake-up**

- Logs: position, pressure, temperature, humidity, heading, speed
- Integrity and Reliability of data
- Designed for U-space: integrated application and partnership with D-flight

**Stakeholders**

- U-space service providers and Authorities
- Drones manufacturers and system integrators
- Enterprise drone operators and Drone professionals
- Research, testing and validation organizations
- Pilots associations
Edge ID is a complete solution for IOT and Industry 4.0 with high computing capabilities. The system is composed by a customizable hardware that is direct connect to the cloud middleware. The data are collected on the field and available on the cloud with a complete abstraction layer infrastructure.
Safe ID is a wearable device developed for safety applications. Safe ID is used to detect critical safety events (such as falls and movements) and send alarms to a cloud platform. Safe ID is able to make and receive emergency calling.
VITA is a system based on a wearable device designed to enable remote monitoring and localization of people with a complete set of sensors. The approach is to have a modular sensor platform that can perform different kind of measurement of vital sign and can be configured to get the parameter directly from the device without depending on smartphone connection. The device has the capability to detect if the device is removed from wrist, falling, movements and vital parameters.
Puritalia Berlinetta

Driving the eMobility Revolution
https://www.puritalia.com/

APPLICATION FIELDS
Electric sport cars with proprietary electronics, controlling software and battery system.

KEY SELLING POINT
• All Wheel Torque Vectoring software
• Direct Liquid Cooling technology for battery packs
• AI (Artificial Intelligence) based management software
• Smart Grid ultra fast EV charging

STAKEHOLDERS
• Automotive market
• Battery Manufacturers
• Smart Grids providers

We provide innovative new technologies for Electric Vehicles and Vehicle-To-Grid solutions
**SYEN MAINT**

**SY. PLA. MED**

**OWNER**

http://www.syenmaint.it

**APPLICATION FIELDS**

Telemedicine and Management of Medical Logistic

**KEY SELLING POINT**

- Health Monitoring and Prediction
- Fast Delivery of Life-Saving Materials
- Modular and Scalable
- One Product for Several Services

**STAKEHOLDERS**

- Patients
- General Practitioners
- ASL
- Hospitals and Clinics
- Operation Centers

E-Health 4.0 System for remote assistance of patients at home and for terrestrial and drone transportation of life-saving materials with predictive self-diagnosis of the transport conditions
Nexus MLReady

Nexus MLReady – Easy way to Machine Learning with Nexus TLC and Edge Impulse!

Nexus TLC makes custom IoT sensors for different scenarios and applications. Data generated by Nexus custom IoT Sensors can be used with Edge Impulse to create valuable machine learning datasets, algorithms and solutions.

Get started quickly, deploy to efficient hardware, and get to production at scale.
TruckY is the ADAS plug&play device capable of increasing the environmental sustainability of heavy-duty vehicles and offering an economic advantage to their operators thanks to its patented method. TruckY offers a reduction in fuel consumption up to 10% and the containment of the related polluting emissions, without increasing travel times and modifications to the vehicle. As you drive, TruckY processes information about road elevation, payload, speed limits, traffic condition and vehicle characteristics to manage the speed in the most efficient way.

**LESS FUEL, MORE BUSINESS - LESS EMISSION, MORE PLANET**

- **3,000,000 €/y**
- **5,000 ton CO₂**

*Figures related to 1000 vehicles*
Doremic is a parabolic audio stereo microphone. Its innovative features are: USB output and XLR stereo output. Low power, high quality, high sensitivity and low noise are the goals of this microphone specifically designed to listen sound emission located at long distance.
A new conception of the automatic technologies use enslaved to the needs of the human being for the applications of environmental safeguard, industrial maintenance, and safety areas.

www.greentechsolution.it
www.greentechsolutionblog.it

Environmental protection, agricultural, industrial and safety applications.

• Multi-environment automatic collaborative missions (Earth, Air, Water)
• Adaptability to the operational context
• Artificial intelligence
• Remote control, implementation and acquisition in IoT.

Mare Vivo, Legambiente, AMP, CIMA
Universtà, Software House
Enac, RINA, Ass. Amb.
Forze Armate, Corpi ad ordinamento civile
XDOM BNB is a system that allows access management, for guests of your Bed and Breakfast, without using keys or cards. The heart of the system is the smart switch XDOM, which allows to control the electric lock (door or gate) to which it is connected.
We used STM32L053 Micro and STTS22H Sensor to build a smarter Badge: Wear2Be. It’s a wearable badge with an extra function: it monitors the body temperature with a customizable frequency and it stops the access control’s functions when the temperature exceeds the set limit.
No more info needed for this application.
A led shows if the temperature is under or over the limit.
MAB is a device initially developed for electric wheelchair tractors, but it can also be used for electric scooters or bikes, golf karts and all other electric-powered vehicles. Using lidar technology, the device detects people or objects that are in the path of the electric vehicle, within a configurable distance up to 10 m and automatically activates the braking signal if the obstacle is below the critical distance.
SPIDboard is a control development board for a wide range of industrial applications, including aerospace, automotive and railway, and educational purposes. It allows fast delivery of control algorithms, due to full and simple integration with MathWorks Embedded Coder and HDL Coder.

SPIDboard is an excellent solution to avoid the effort of designing a custom board for control applications, focusing just on the firmware code generation via MATLAB/Simulink.
Lung ventilator with gas blender

**OWNER**
www.officinaelettronica.it

**APPLICATION FIELDS**
Assisted and controlled mechanical lung ventilation in intensive care and home healthcare.

**KEY SELLING POINT**
• Low cost pressure monitoring
• Tele-monitoring e data collect
• Pathogen UV treatment
• Microcontroller with touchscreen and mechanical knob and keys

**STAKEHOLDERS**
• COVID-19
• Home healthcare
• Hospital intensive and sub-intensive care

Mechanical lung ventilator with integrated respiratory gas blender pressure monitored for multipurpose care focused on COVID19 patient ventilation.
Dropper is a startup that focuses on researching and developing people counting devices. These sensors are indicated for business activities such as shops to help them increase their sales and understand better their customers. Dropper also makes public and private spaces safer making sure they are always under safety regulations imposed by the Government.
Dropper never forgets that privacy shouldn't be a concern for users walking across sensors, that's why designed people counters are 100% anonymous.

*In comparison to other products on the market.
The project LIFE-SAVE focuses on the development of a kit aimed at converting conventional cars into hybrid solar vehicles, reducing fuel consumption and emissions, increasing range and improving performance without affecting safety.