

# CHRISTOS SOUGLES - PORTFOLIO

## PERSONAL INFORMATION

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## EXECUTIVE SUMMARY

Founder and Chief Engineer of AUTONAVIS R&D, with 13 years of experience in designing and delivering complex embedded systems, and a strong track record in the development and real-world validation of autonomous platforms and embedded AI. I specialize in building AI-enabled systems that operate under real-world, safety-critical, and resource-constrained conditions, covering the full lifecycle from system architecture and sensor integration to embedded deployment and field validation.

Through AUTONAVIS R&D and long-term involvement in European and national R&I programs (Horizon Europe, H2020), I have led the execution of complex, multi-disciplinary initiatives, working closely with engineering, research, and cross-functional teams across diverse environments. My work includes ownership of system architecture, AI pipelines, and validation strategies, while consistently aligning technical development with real-world use cases, stakeholder needs, and deployment readiness.

I operate at the intersection of advanced AI technologies and product direction, translating complex embedded and edge AI capabilities into scalable, user-centric solutions and tangible product value. I contribute to product vision and roadmap development by aligning technical possibilities with user and system requirements, prioritizing features, and shaping solution direction in collaboration with engineering and cross-functional teams. With a strong data-driven mindset, I continuously refine system performance and product value through real-world validation, KPI-driven evaluation, and iterative improvement, ensuring the delivery of high-impact, reliable AI-powered products and systems.

## ENGINEERING LEADERSHIP & PROJECT DELIVERY

### ➤ **Chief Engineer (AUTONAVIS R&D, GoCAV Platform)**

***Feb 2021 – Present***

The GoCAV platform is a fully re-engineered autonomous go-kart developed as a modular, real-world research and validation environment for autonomous driving systems. It integrates LiDAR, a high-definition camera, embedded AI, and RTK-GPS to bridge the gap between simulation and live operation while meeting safety-critical constraints. GoCAV serves as a continuously evolving benchmark platform for field validation, system integration, and applied AI experimentation in autonomous mobility.

(Explore GoCAV in Action: <https://autonavis.com/gocav/>)

(Visual documentation available at Photo Gallery – **GoCAV PLATFORM**)

**Scope & Ownership:**

- *Founder, Technical Lead, and Product Owner of the GoCAV platform, with full responsibility for system architecture, product direction, delivery planning, and real-world validation.*
- *Owned the platform end-to-end, from concept definition and architecture through implementation, testing, validation, and future productization and exploitation planning.*
- *Defined system direction and key development priorities based on real-world validation feedback, aligning technical capabilities with operational needs and potential use cases.*

**Key Contributions:**

- *Translated complex autonomous driving and embedded AI capabilities into structured, usable system behaviors, effectively bridging technical implementation with user-oriented functionality and real-world application value.*
- *Prioritized development features and guided iterative platform evolution based on real-world testing insights, performance metrics, and validation outcomes, ensuring continuous improvement aligned with system objectives.*
- *Designed the overall system architecture, integrating perception, localization, control, and safety logic across embedded hardware and real-time software components.*
- *Integrated and optimized multi-sensor pipelines (LiDAR, camera, RTK-GPS), enabling reliable perception and navigation in real-world operating conditions.*
- *Designed, trained, and deployed a custom neural-network-based steering controller, responsible for real-time steering actuation under embedded and safety-critical constraints.*
- *Owned the full AI lifecycle of the steering system, including dataset engineering, MLP/LSTM model training, TensorFlow / TensorFlow Lite C++ deployment, and iterative validation through live track testing.*
- *Designed and implemented safety-oriented control strategies (fallbacks, recovery maneuvers, risk minimization) to ensure controlled experimentation during field trials.*
- *Led CAN network integration and coordinated the development of microcontroller-based control and actuation modules.*
- *Planned and managed development iterations, testing campaigns, and platform evolution, prioritizing features based on validation insights and system performance outcomes.*
- *Authored technical documentation, ensured traceability of design decisions, and managed reporting and notarization to support future scaling and reuse.*
- *Established and maintained collaborations with partners in embedded systems, autonomous vehicles, and V2X technologies.*
- *Actively contributed to European R&D proposal preparation, positioning GoCAV as a reusable platform within multi-partner consortia.*
- *Defined an exploitation and productization pathway toward full-scale electric vehicles, including applications in accessible mobility and emergency-response scenarios.*

➤ **Senior Embedded Systems Engineer (CERTH, FLEXIndustries – Horizon)**

**Jan 2023 – Dec 2024**

FLEXIndustries is a large-scale Horizon Europe Innovation Action delivering TRL7 validation of AI-driven Decision Support Systems (DSS) and digital twin platforms across seven energy-intensive industrial sectors.

I served as Co-Technical Manager for Work Package 5 (WP5), sharing responsibility for the technical leadership, coordination, and delivery of AI-enabled operational decision-making and optimization solutions across seven industrial demo sites, involving 15+ partner organizations and heterogeneous IT/OT environments.

**Scope & Leadership:**

- *Shared leadership of WP5 technical execution, delivery planning, and deployment readiness, acting as a technical authority across partners, demo sites, and engineering teams.*
- *Coordinated cross-partner engineering activities, tracked milestones and inter-dependencies, and ensured alignment between technical implementation, validation objectives, and project-level governance.*
- *Contributed to technical reporting, reviews, and coordination activities with the Project Coordinator and the European Commission.*

**Key Contributions:**

- *Co-led the design and technical oversight of AI-driven DSS architectures, integrating digital twins, AI-based forecasting (energy demand, prices, production constraints), and multi-criteria decision logic.*
- *Held joint responsibility for predictive and condition-aware operation activities, including predictive maintenance strategies and anomaly-aware monitoring of industrial energy and process assets.*
- *Coordinated the integration of AI-enabled control and optimization solutions in complex industrial environments spanning automotive, pharmaceuticals, cement, steel, polymers, biofuels, and fertilizers.*
- *Ensured AI engineering outputs met TRL7 validation requirements, including deployment readiness, operational safety, and traceable performance metrics across demo sites.*
- *Drove architectural consistency, reliable data flows, and structured deployment practices across multiple partners and heterogeneous industrial infrastructures.*

➤ **Senior Embedded Systems Engineer (CERTH, AE3vAO – National)**

**Oct 2022 – Dec 2024**

The AE3vAO project focuses on the design and deployment of an AI-enabled digital platform for intelligent food waste management, addressing the environmental and economic impacts of food loss through smart recycling infrastructure and circular-economy practices.

The project delivers an intelligent monitoring platform for anaerobic digestion bins, enabling real-time monitoring of filling levels and operational status, and applying machine learning and deep learning techniques for predictive maintenance, anomaly detection, and operational

inference. The platform also supports Bluetooth/NFC-based multi-user identification for personalized usage tracking.

The solution is built on a Raspberry Pi-based embedded architecture with sensor integration, backend data storage, and web/mobile access. It is validated in real urban deployment environments to assess operational reliability and impact.

**Scope & Leadership:**

- *Served as Technical and Delivery Lead, with end-to-end responsibility for system design, implementation, integration, validation, and delivery.*
- *Led and coordinated a team of 6 engineers and one external industrial partner, managing execution timelines, integration dependencies, and validation activities.*

**Key Contributions:**

- *Oversaw the development and integration of embedded firmware, sensor interfaces, and AI-driven analytics for operational monitoring and inference.*
- *Ensured milestone achievement, delivery readiness, and alignment with project objectives through structured technical reporting and project reviews.*
- *Acted as the primary technical interface between the engineering team, external partner, and project stakeholders.*

➤ **Senior Embedded Systems Engineer (CERTH, SELAS – National)**

**Feb 2022 – Oct 2022**

The SELAS project aims to study and leverage new photovoltaic technologies to power existing highway infrastructure (e.g., guardrails, toll booth structures, parking areas) and reduce their energy needs. Its innovative photovoltaic systems generate electricity 24/7, using ambient light from other sources (e.g., car headlights, highway lighting) at night.

*(Visual documentation available at Photo Gallery – **SELAS NATIONAL PROJECT**)*

**Key Contributions:**

- *Developed and programmed the pilot photovoltaic system, including firmware and control logic*
- *Constructed and installed the pilot unit on-site, ensuring full operational readiness*
- *Integrated the system with the remote platform via 4G/LTE, enabling telemetry and monitoring*
- *Authored technical deliverables and documentation in alignment with project requirements*
- *The system architecture and real-world deployment contributed directly to a peer-reviewed journal publication on autonomous photovoltaic infrastructure integration. (see Publications)*

➤ **Senior Embedded Systems Engineer (CERTH, Renaissance – Horizon)**

**Oct 2021 - Oct 2022**

The Renaissance project is an Innovation Action (IA) that provides a community-based, scalable, and replicable approach for implementing new business models and technologies that support clean energy production and shared energy distribution within local communities.

**Key Contributions:**

- *Contributed technical support to WP4/WP5 activities, providing input on embedded systems, monitoring architectures, and integration considerations for renewable energy and energy community pilots.*

➤ **Senior Embedded Systems Engineer (CERTH, IoTAC – Horizon)**

**May 2021 – Oct 2021**

The IoTAC project aims to provide an innovative, secure, and privacy-friendly architecture for the Internet of Things (IoT) that facilitates the development and operation of more attack-resilient services through (a) monitoring and assessing security throughout the broader lifecycle and development of software, (b) creating an advanced access control mechanism based on an innovative interaction model using integrated cards and private key technology, (c) detailed logging of system execution processes, and (d) providing relevant mechanisms to certify the security of produced applications and systems, based on international security standards, best practices, and the project's research findings.

The results will be demonstrated by implementing four use cases in IoT environments, with fully functional applications developed in a laboratory setting. Finally, one of the project's priorities is establishing certification mechanisms for IoT system security.

**Key Contributions:**

- *Participated in WP6 activities by assessing how IoT security and access-control frameworks could be applied in real pilot deployments within the CERTH smart home laboratory environment.*

➤ **Senior Embedded Systems Engineer (CERTH, ODOS 2020 – National)**

**Apr 2020 – Apr 2021**

ODOS 2020 aims to introduce an innovative technological solution that, through the use of the "Internet of Things" (IoT) and infrastructure-to-vehicle communication technologies, implements collaborative applications in the field of Intelligent Transportation Systems without significant or costly interventions on the roadway, significantly contributing to increased road safety and the safe maintenance of infrastructure. The integrated technological solution will be aimed at all types of vehicles (passenger cars, trucks, motorcycles) and will require minimal to no equipment from the vehicles.

(Explore ODOS 2020 website: <https://odos2020.itigr/>)

(Visual documentation available at Photo Gallery – **ODOS 2020 NATIONAL PROJECT**)

### **Scope & Leadership:**

- *Served as Technical Lead, with responsibility for system architecture, technical coordination, and delivery of the ODOS 2020 Road Side Unit (RSU) platform.*
- *Coordinated engineering activities, tracked technical progress, and ensured alignment between system design, implementation, and project objectives.*

### **Key Contributions:**

- *Technical leadership and coordination of engineering activities*
- *Designed the system architecture for the second-generation RSU platform and its associated IoT infrastructure, building upon prior V2X research and pilot deployments.*
- *Led architectural improvements focusing on energy autonomy, robustness, and infrastructure-to-vehicle communication efficiency.*
- *Designed and supervised the development of an autonomous RSU power supply unit, combining battery storage and photovoltaic energy harvesting to enable off-grid operation.*
- *Coordinated development activities and integration efforts across hardware, firmware, and communication layers.*
- *Authored technical deliverables and documentation in alignment with national R&I project requirements.*

### ➤ **Senior Embedded Systems Engineer (CERTH, EXA2PRO – Horizon)**

**May 2020 – Apr 2021**

The goal of the EXA2PRO project is to develop a programming environment that facilitates the improved development of parallel algorithms for solving complex scientific problems on exascale computing systems (1,018 operations per second). It is expected to support a range of scientific applications by providing programming tools to improve the quality of numerical codes, assist in the more efficient and rational management of the heterogeneous structure of modern computing systems at the hardware level, and optimize memory management.

### **Key Contributions:**

- *Contributed to WP5 activities by supporting the evaluation of programmability and performance portability concepts for heterogeneous and exascale computing systems.*
- *Assisted in exploring system-level considerations related to parallel execution, memory management, and hardware heterogeneity, providing technical input aligned with embedded and systems-level engineering expertise.*

### ➤ **Senior Embedded Systems Engineer (CERTH, SAFESTRIP – Horizon)**

**Jul 2017 – Aug 2020**

SAFE STRIP aims to introduce a disruptive technology that will enable the embedding of C-ITS applications in existing road infrastructure, including novel I2V (Infrastructure-to-Vehicle) and V2I (Vehicle-to-Infrastructure) functions, as well as VMS (Variable Message Sign) and VSL (Variable Speed Limit) functions, into low-cost, integrated strip markers on the road.

*(Explore SAFESTRIP website: <http://safestrip.eu/>)*

(Visual documentation available at Photo Gallery – **SAFESTRIP HORIZON PROJECT**)

**Scope & Leadership:**

- Served as Technical Lead for the development of the first-generation V2X-enabled Roadside Unit (RSU) ecosystem, with responsibility for system architecture, implementation oversight, and pilot deployment.
- Coordinated engineering activities, led regular technical reviews, and ensured system consistency across hardware, firmware, and communication layers.
- Contributed to system-level design and proposal preparation from the early stages of the project, supporting Horizon 2020 compliance and consortium coordination.

**Key Contributions:**

- Designed the system architecture for the first-generation Roadside Unit (RSU) and corresponding C-ITS infrastructure interfaces
- Implemented and validated communication protocols (ITS-G5, LTE, BLE) for infrastructure-to-vehicle and vehicle-to-infrastructure services
- Designed the RSU electronic boards (PCB), including power distribution, interfaces, and signal conditioning
- Led the on-road operation and installation of RSU units during pilot tests, ensuring system stability and data integrity
- Authored technical deliverables and documentation, contributing to Horizon compliance and consortium coordination
- The technical outputs of the SAFE STRIP project contributed directly to the grant of a Greek patent related to smart road infrastructure. (see Patent)

➤ **Embedded Systems Engineer (CERTH, myAirCoach – Horizon)**

**Jun 2015 – Jun 2017**

The goal of **myAirCoach** is to develop an integrated mobile health system to help people with asthma and COPD better manage their conditions. The platform combined smart inhaler adapters, portable spirometers, indoor air-quality sensors, activity trackers, and a user-friendly mobile app to provide continuous monitoring, personalized feedback, and actionable insights. By linking clinical data with environmental and behavioral factors, myAirCoach enabled patients to improve treatment adherence, optimize inhaler use, and gain a clearer understanding of how daily habits and surroundings affect their respiratory health. Clinical studies demonstrated significant improvements in asthma control, reduced exacerbations, and higher quality of life, highlighting the potential of connected health technologies for chronic disease management.

**Key Contributions:**

- Developed embedded firmware in C for the TI MSP430 microcontroller, supporting sensor data acquisition and device operation within the myAirCoach ecosystem.
- The system data and experimental results contributed to a peer-reviewed journal publication on airflow characterization and inhaled particle deposition in obstructed pulmonary systems. (see Publications)

➤ **Embedded Systems Engineer (CERTH, Cross-Project Contributions)**

*(Jun 2015 – Jun 2017)*

Contribute to research and industrial projects through electronic circuit and PCB design (*WATT+VOLT “1-phase” & “3-phases” Energy Meters*), object-oriented C++ programming, database design, and system integration. Support proposal preparation, including specifications for the SAFE STRIP project.

➤ **Embedded Systems Engineer (Peripheral Device Libraries with Atmel 89C51AC2)**

*(Jan 2015 - Aug 2015)*

Design and implement a microcontroller-based system that features a graphical LCD, keypad, external RAM, and an RS-232 interface. Develop firmware for data display, keypad input, serial data logging, and memory management, while ensuring modular expansion with digital, analog, and interrupt I/Os for future sensor integration.

*(Visual documentation available at Photo Gallery – **ATMEL MICROCONTROLLER 89C51AC2 & PERIPHERAL DEVICES**)*

➤ **Technical Manager (Brainbox Informatics)**

*(Nov 2012 - Oct 2013)*

Supervisor of the Installation and Maintenance of the automated bike sharing–parking system

**Key Contributions:**

- *Deployed automated bike-sharing systems in Ioannina, Didymoteicho, Komotini, Kavala, Karditsa, Keratsini-Drapetsona, Nafpaktos, and Thessaloniki (~500 bikes, 30+ stations)*
- *Delivered automated bike parking system for OTE–COSMOTE (80 locks across high-traffic Athens sites)*
- *Oversaw procurement, installer training, and remote/on-site technical support; proposed system improvements to international supplier*

*(Visual documentation available at Photo Gallery – **AUTOMATED BIKE SHARING & PARKING SYSTEM**)*

➤ **Military Service (Technical Corps)**

*(Feb 2010 – Nov 2010)*

➤ **Embedded Systems Engineer (Telemetry System)**

*Sep 2007 - Aug 2008*

Design and implement a remote temperature monitoring system for industrial refrigerators using Atmel T89C51AC2 microcontrollers, RS-485, and GSM (Wavecom) communication. Develop master/slave devices with backup power, a custom RS485 data link layer, and SMS-based bidirectional control for alarms, status queries, and configuration. Enable flexible user and installation engineer setup through built-in keypads, supporting up to nine monitored units per master device.

(Visual documentation available at Photo Gallery – **TELEMETRY SYSTEM**)

### ➤ **Automation Engineer (Digintel)**

**Apr 2006 - Sep 2006**

Design and develop embedded and automation solutions by programming microcontrollers and PLCs, integrating hardware, firmware, and communication interfaces to deliver reliable industrial and agricultural systems.

#### **Key Contributions:**

- **Elevator Floor Indicator Lights Controller:** Program ATtiny13 (AVR) to control floor indicator lights.
- **Remote Watering System Supervisor:** Design and implement an ATmega32-based device that monitors and supervises agricultural watering systems consisting of a tractor and hose reel. Develop custom PCB and firmware to calculate hose length, completion time, and instantaneous velocity, with real-time data provided to the user via GSM modem. Implement missed-call/SMS interaction for remote status queries, backup power support, and parameter configuration through an embedded keypad, allowing both installers and end-users to tailor the system to specific field requirements.
- **Canvas Stretching Machine:** Design and build the electrical panel and program the PLC controlling the whole system.

(Visual documentation available at Photo Gallery – **CANVAS STRETCHING MACHINE FOR PAINTING FRAMES**)

## **SOFTWARE - HARDWARE TECH STACK & SKILLS**

### ➤ **AI & Autonomous Systems**

- Custom C++ onboard autonomy and navigation software for embedded safety-critical systems, including steering control, behavior logic, and recovery strategies
- Neural-network design, training, and sequence modeling (MLP, LSTM, RNN) for vehicle control and navigation
- Embedded AI lifecycle: model optimization, TensorFlow Lite deployment (C++ on Raspberry Pi 4/5), and real-time inference pipelines
- Dataset engineering and real-world validation of autonomous performance through structured testing on physical tracks (Drive Park)

### ➤ **Perception & Sensor Fusion**

- LiDAR-based perception supporting real-time navigation and environment understanding
- Integrated and deployed a pretrained vision model into an embedded system, optimizing the real-time inference pipeline for efficient onboard camera perception.
- High-precision localization using RTK-GPS and dead-reckoning
- Multi-sensor fusion integrating LiDAR, camera, RTK-GPS, and IMU for robust localization and perception

## ➤ **Embedded & Systems Software**

- **Programming languages**
  - *C / Embedded C / C++ (OOP), Python, Bash*
  - *Assembly, Verilog, VHDL*
- **Operating systems**
  - *Linux (Debian, Ubuntu, Raspberry Pi OS)*
  - *Windows*
- **Embedded system UI design**

## ➤ **Embedded Hardware Platforms**

- **Microcontrollers (C-based development)**
  - *AVR: ATtiny13, ATmega 8/16/32/328P*
  - *NXP (PHILIPS): LPC2378*
  - *MOTOROLA: 68HC12*
  - *TI: MSP430F5438A*
  - *ATMEL: AT89C51RD2 / AT89C51AC2 / AT89C51CC03*
- **Development Boards**
  - *Raspberry Pi 5*
  - *Arduino Nano / Mega*
  - *i.MX 7Dual SABRE (NXP)*
- **FPGA (VHDL)**
  - *Xilinx Spartan-3E (MicroBlaze)*

## ➤ **Communication & Networking**

- *CAN, RS-485, BLE, LTE, GSM*
- *ITS-G5*

## ➤ **Design, Debugging & Engineering Tools**

- **Electronics & PCB design**
  - *Altium, Proteus, Cadence*
  - *UV exposure & etching devices*
- **Analysis & debugging**
  - *Wireshark, CAN-Bus Analyzer*
- **Documentation & technical tooling**
  - *MS Office, Visio*
  - *AutoCAD*

## ➤ **Project Management & Collaboration Tools**

- *Asana (task tracking, milestone management, coordination)*
- *Slack (team communication, cross-functional alignment)*
- *Nextcloud (secure file sharing, version control, real-time collaboration, private cloud infrastructure, and integrated communication through platform-based calls)*
- *Agile development practices (sprint-based execution, prioritization, continuous delivery), enabling structured iteration and efficient issue resolution*

## **PATENT - PUBLICATIONS**

### ➤ **Collaborative Non-Invasive Road Safety Layout for Smart Road Infrastructures**

Greek Patent No. 1010371, Issued Jan 16, 2023

(Συνεργατική Μη Παρεμβατική Διάταξη Οδικής Ασφάλειας για Ευφυείς Οδικές Υποδομές)

*This invention introduces a groundbreaking, low-cost, and energy-independent technology for road safety enhancement on motorways, without the need for extensive modifications to the road surface. It features a modular pavement layout with encapsulated sensors, communication units, and energy elements, as well as an auxiliary communication portal equipped with advanced wireless connectivity (BLE, LTE, ITS-G5). I focused on the construction, installation, and validation of the auxiliary communication portal, contributing to the system's deployment and validation.*

- A. Dimara, **C. Sougles**, S. Athanasiou, K. Grigoropoulos, P. Sfakianou, A. Papaioannou, S. Krinidis, D. Triantafyllidis, I. Tzitzios, C. N. Anagnostopoulos, A. Karamanidis, V. Saltagianni, D. Ioannidis, D. Tzouvaras. *Holistic plug-n-play autonomous solar system integration: a real-life small-scale demonstration—a practical approach*. **Electrical Engineering**, 105, 2715–2733 (2023). <https://doi.org/10.1007/s00202-023-01830-6>
- A. Lalas, S. Nousias, D. Kikidis, A. Lalos, G. Arvanitis, **C. Sougles**, K. Moustakas, K. Votis, S. Verbanck, O. Usmani, D. Tzouvaras. *Substance deposition assessment in obstructed pulmonary system through numerical characterization of airflow and inhaled particles attributes*. **BMC Medical Informatics and Decision Making**, 17 (Suppl 3): 173 (2017). <https://doi.org/10.1186/s12911-017-0561-y>

## **EDUCATION**

- **MSc, Advanced Microelectronic Systems Engineering** – University of Bristol, UK (Oct 2009, Scholar)

### **DISSERTATION (Controller Area Network – Performance and Traffic Management)**

*The project aimed to evaluate the performance of Event-Triggered CAN (ETCAN) and Time-Triggered CAN (TTCAN). Using two LPC2378 microcontrollers and a CAN analyzer, we implemented various transmission scenarios under different bus loads.*

*Results showed that ETCAN response time to asynchronous events depends on message priorities and transmission order. At the same time, TTCAN performance is largely unaffected by bus load, relying instead on the matrix cycle structure.*

*A key finding was that measuring transmission times directly on the microcontrollers provided accuracy comparable to, and in some cases superior to, that of the CAN analyzer—highlighting a cost-effective advantage given the analyzer's high price.*

- **BSc, Automation Engineering** – ATEI Thessaloniki, Greece (Jun 2007, Highest GPA)

### **THESIS (Telemetry through 8051 and GSM / GPRS Modem)**

*The project focused on designing, building, and programming a remote-control device with the Atmel AT89C51AC2 microcontroller. It controlled eight digital outputs, provided real-time status updates for eight digital inputs, and issued alarms as needed.*

*I designed and built the circuit board and developed the firmware to enable bidirectional SMS communication between the user and the GSM modem. The device recognized a unique SMS format, allowing configuration of a single user defined by their mobile number during the device's setup process.*

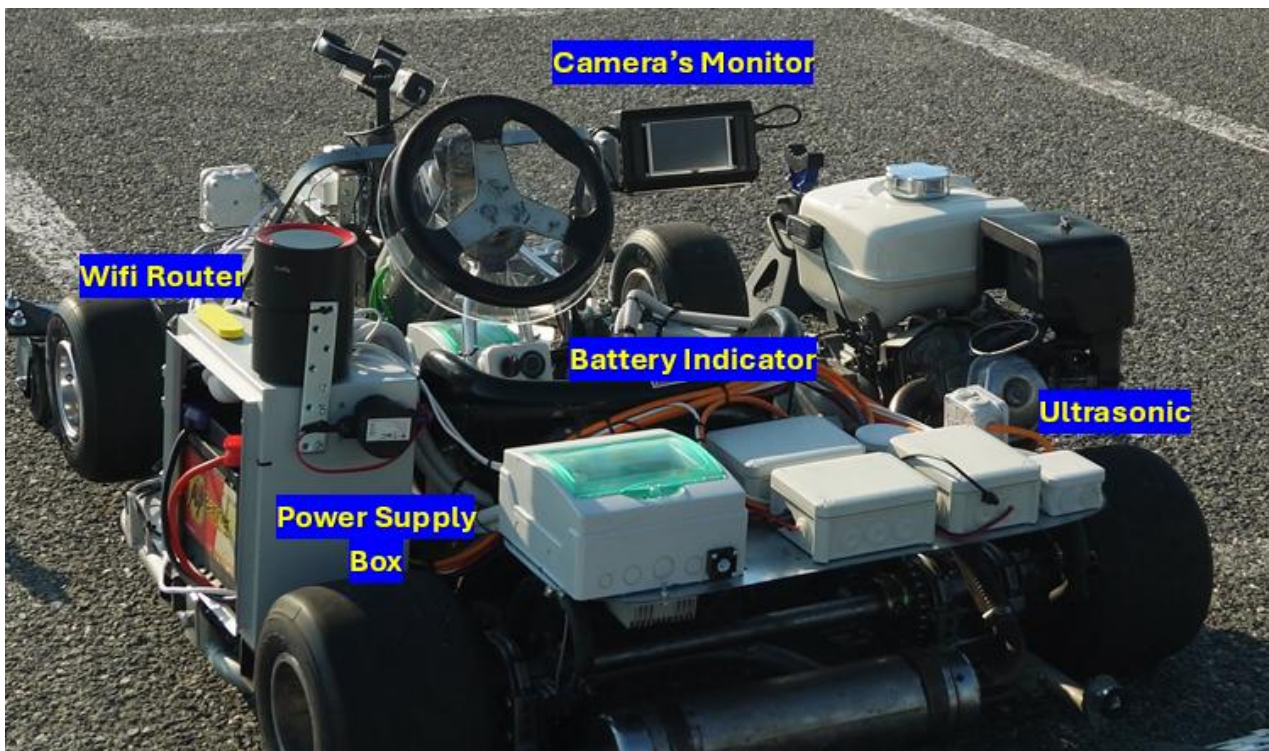
*Developed as my thesis, the system was showcased at the 21st International Technology, Telecommunications, and Digital Technology Exhibition in Thessaloniki (October 2007).*

## **LANGUAGES**

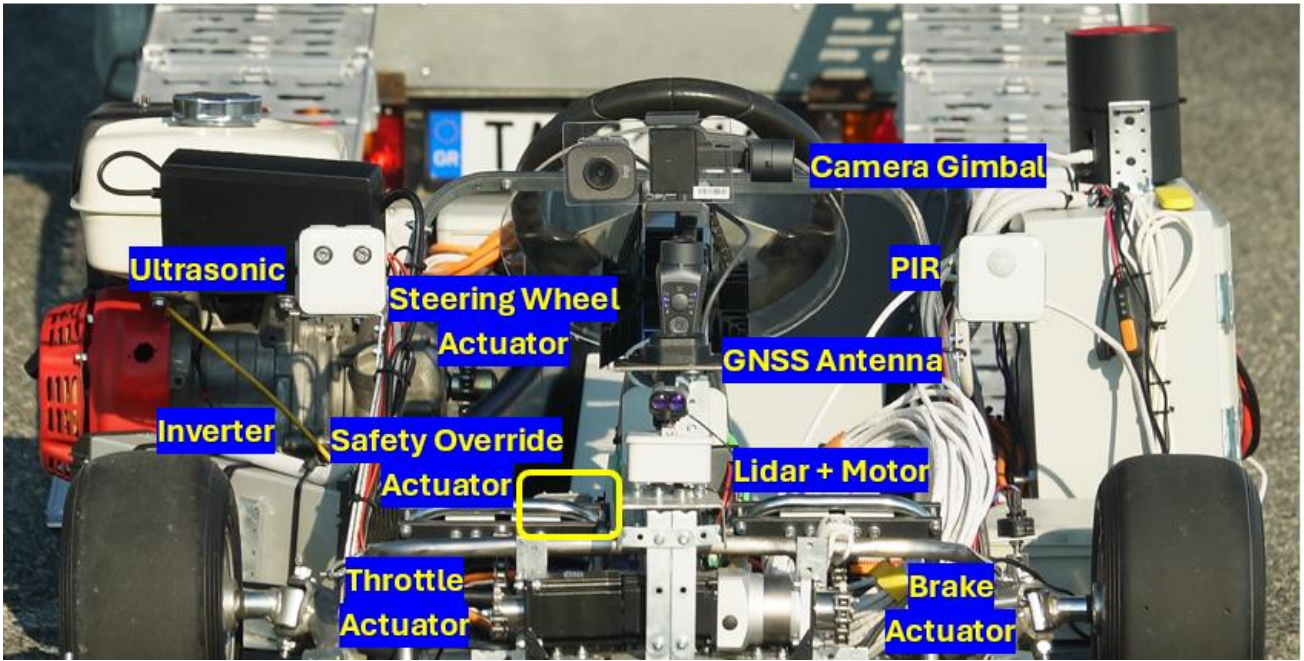
**English (Advanced), Greek (Native)**

## **PHOTO GALLERY**

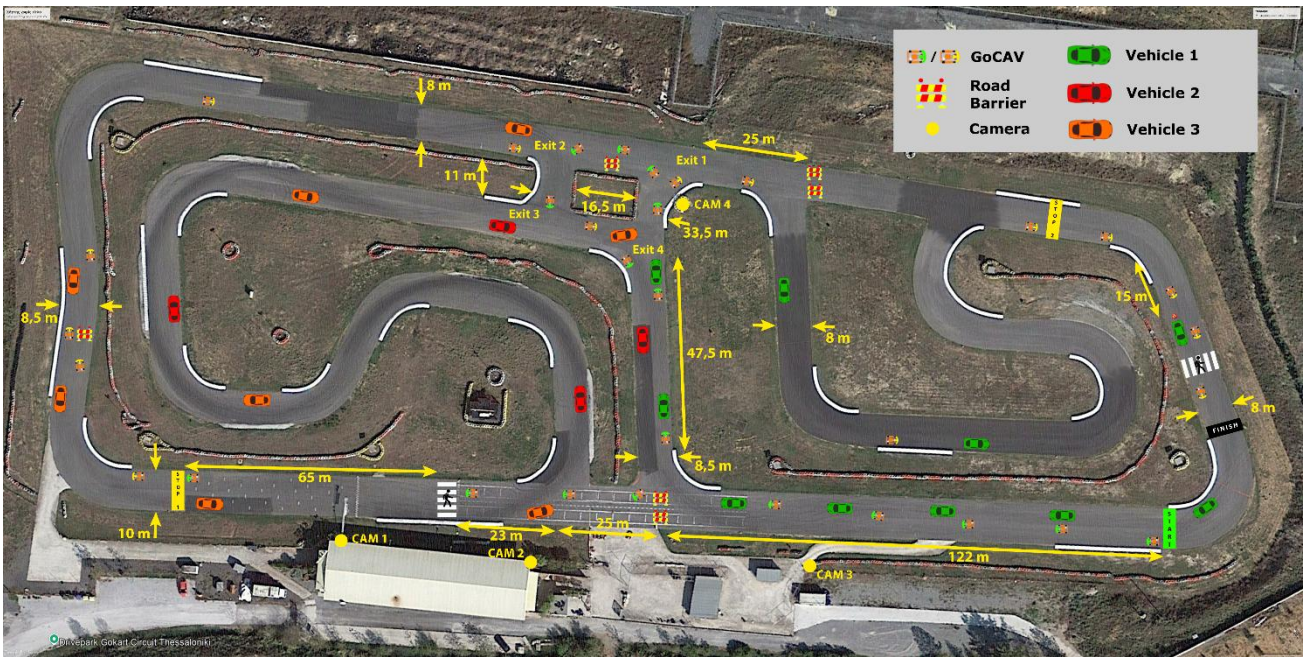
### **GoCAV PLATFORM**



**GoCAV Rear View**



GoCAV Front View

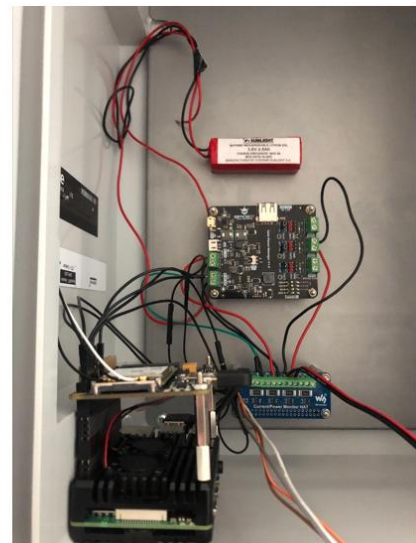


GoCAV Basic Evaluation Scenarios – Drive Park Test Track Layout

# SELAS NATIONAL PROJECT



External View



Internal View



**Under Construction Control Panel for DSSC Photovoltaics**



Power Supply to the Load



**Control Panel of DSSC Photovoltaics – Laboratory Tests**



**DSSC PV - Night Operation of the System**



**Conventional PV System Installation**



**DSSC PV System Installation**

## ODOS 2020 NATIONAL PROJECT



**RSU Power Supply Control Panel**

## SAFESTRIP HORIZON PROJECT

### EXISTING TECHNOLOGY

Information Provided to Vehicles by Road Infrastructure



### SAFE STRIP Proposal

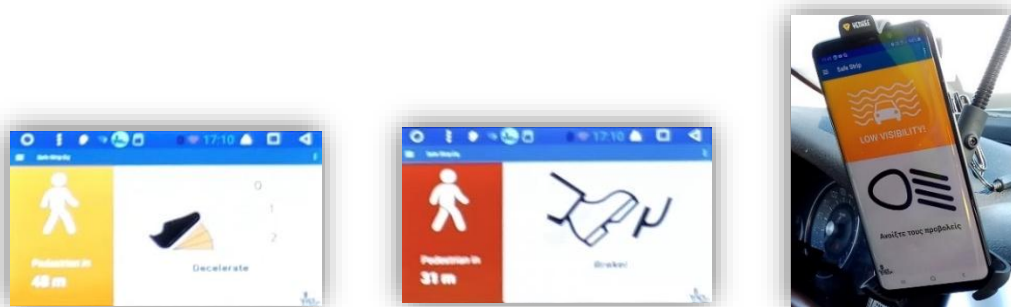
#### Installation

- Reduces the size and cost of the infrastructure
- Reduces installation time
- The system can be installed on the existing road infrastructure



## System Operation

- Information is provided by sensors located on the roadway
- Personalized messages (on the vehicle's screen or mobile device) based on the vehicle's position on the roadway

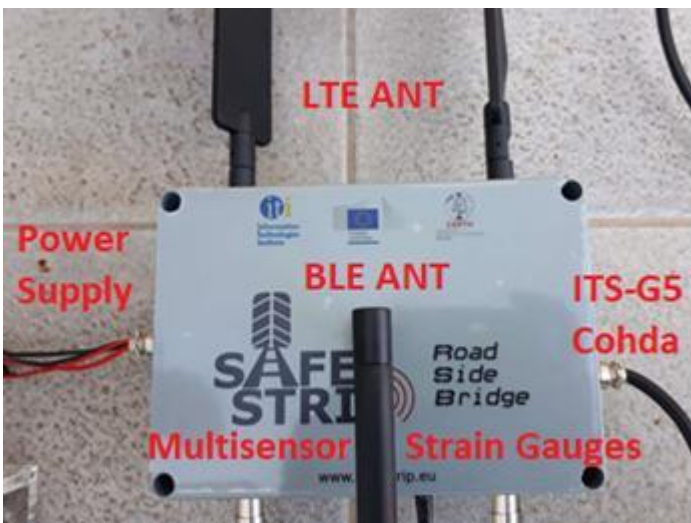


## Scenarios Implemented

- Notification about the presence of a pedestrian on the roadway
- Notification about current road surface conditions
- Notification about road surface wear
- Notification about a vehicle moving in the opposite direction of traffic
- Notification about a stationary vehicle on the road due to a breakdown
- Notification about low visibility conditions
- Notification about ongoing roadworks
- Collision avoidance at intersections
- Notification about the presence of an unguarded railway crossing
- Transmission of information to autonomous vehicles
- Notification about approaching an area with virtual tolls
- Parking space management



**RSB Components**

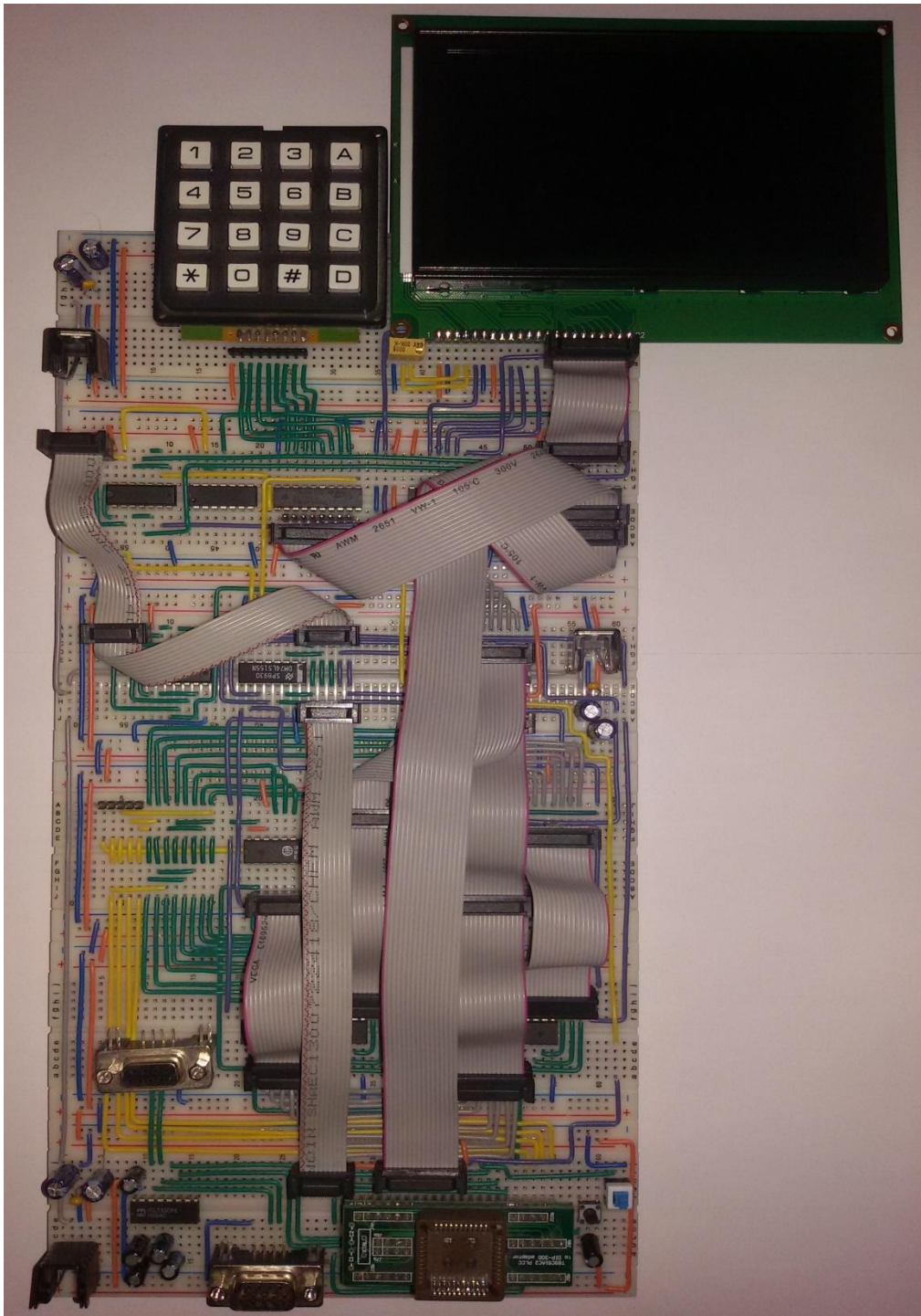


**RSB Central Control Unit**



**RSB Operational Test**

## ATMEL MICROCONTROLLER 89C51AC2 & Peripheral Devices



Development Board

## AUTOMATED BIKE SHARING & PARKING SYSTEM



Automated Bicycle Rental System of Ioannina



Automated Bicycle Rental System of Didymoteicho



**Automated Bicycle Rental System of Karditsa**

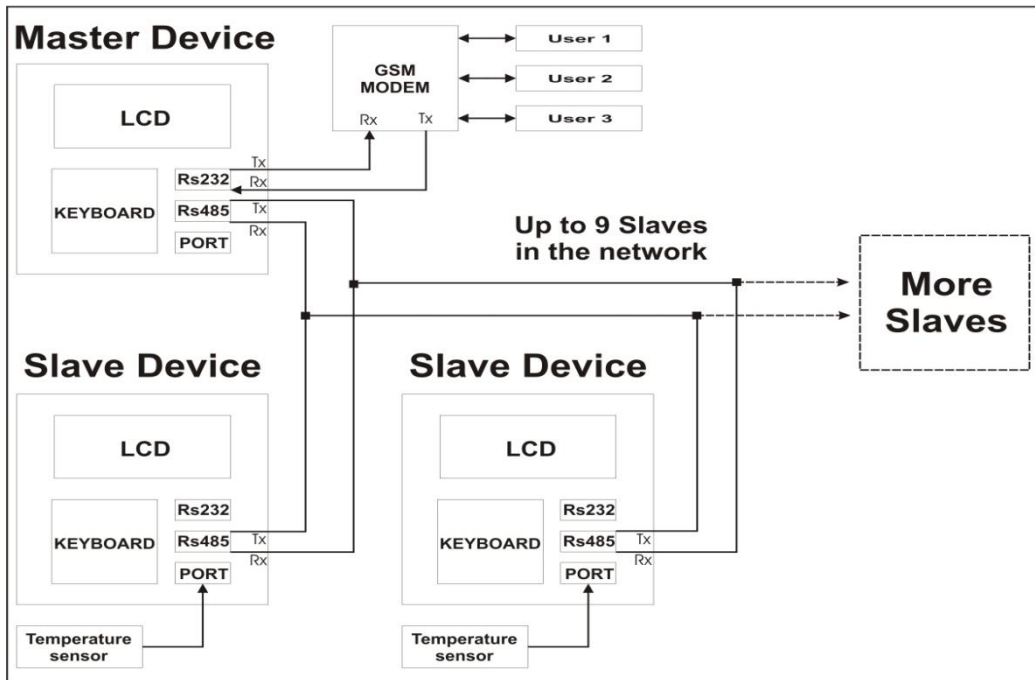


**Automated Bicycle Rental System of Karditsa**

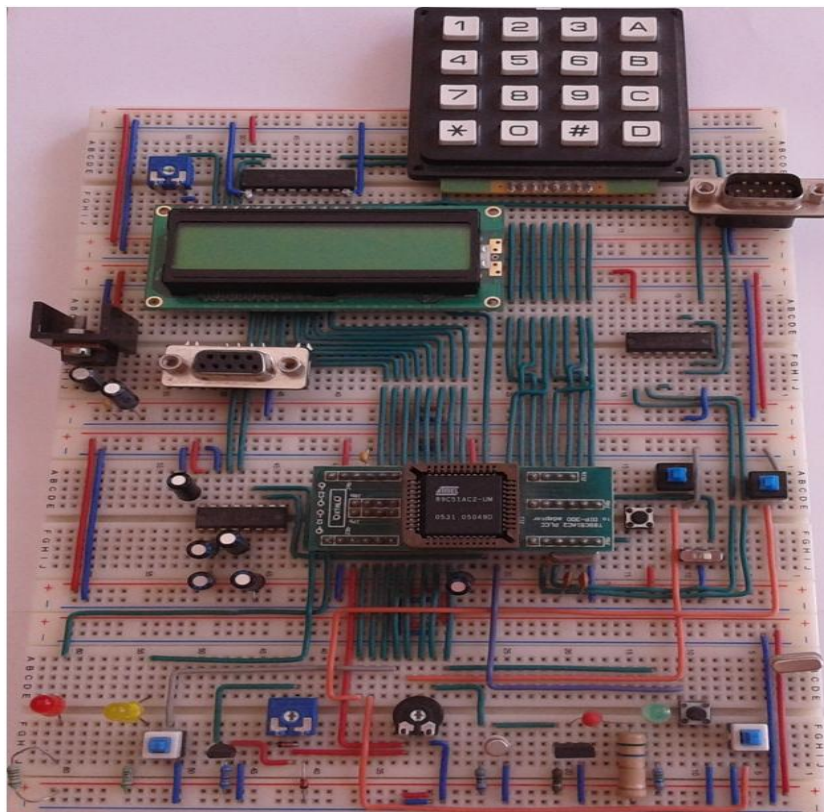


**Automated Bicycle Rental System of Thessaloniki**

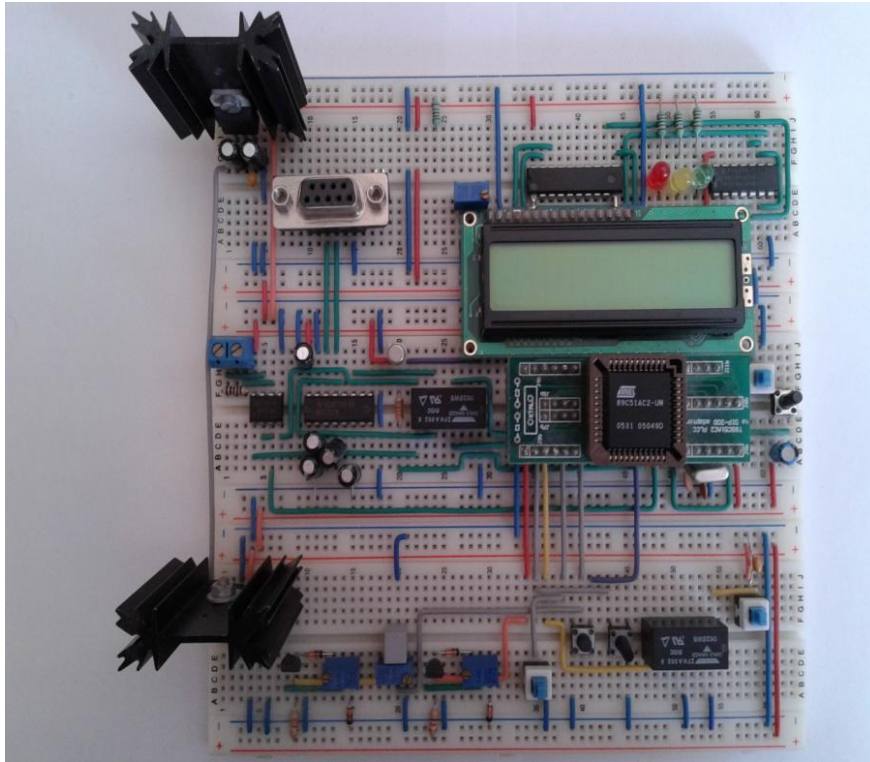
# TELEMETRY SYSTEM



System Architecture



Development Board 1

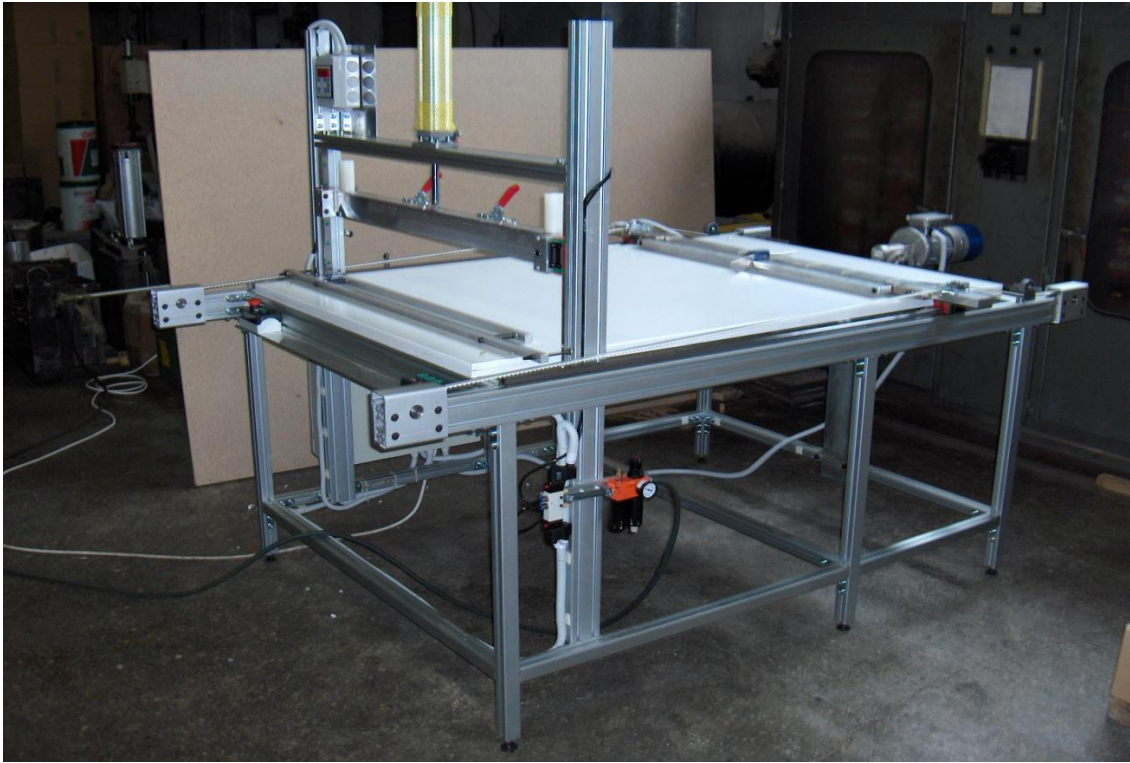


**Development Board 2**

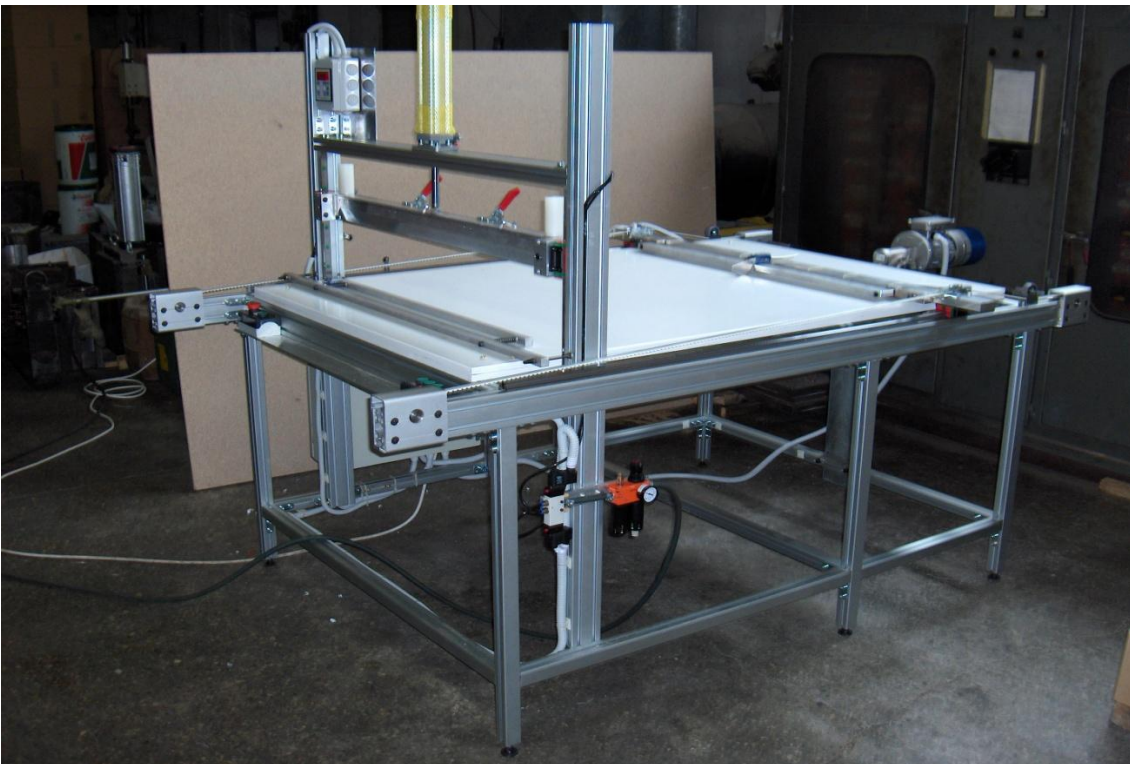


**Analog Temperature Transmitter and Temperature Sensor**

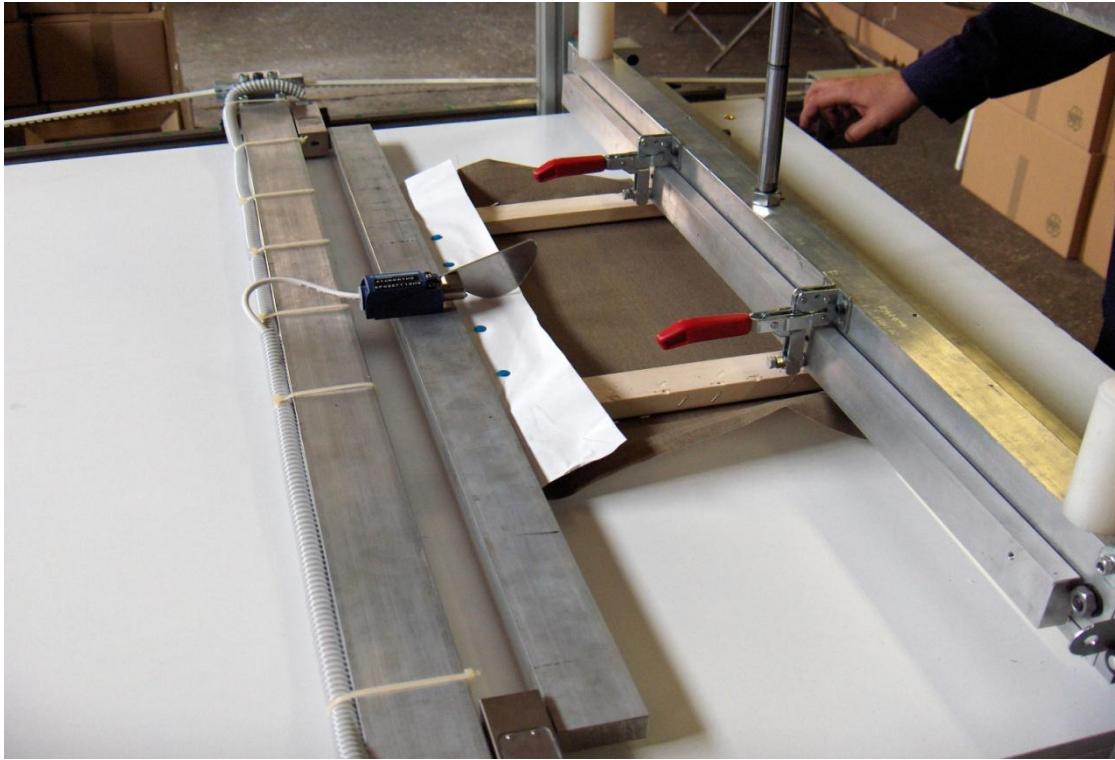
## **CANVAS STRETCHING MACHINE FOR PAINTING FRAMES**



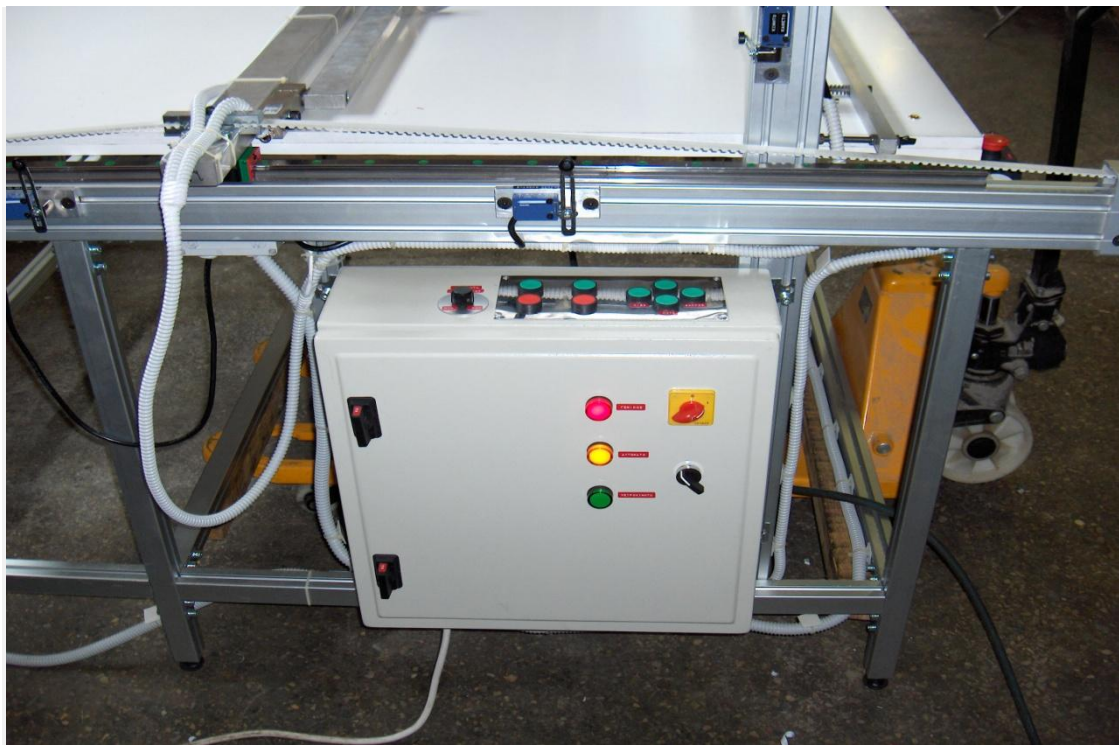
**Canvas Stretching Machine for Painting Frames – View 1**



**Canvas Stretching Machine for Painting Frames – View 2**



**Canvas Stretching Machine for Painting Frames – In Operation**



**External View of Electrical Panel**



**Electrical Panel Construction**

**BRISTOL DISSERTATION**



**IAR LPC2378-SK Development Board**



**CAN Analyser**

**AUTOMATION THESIS**



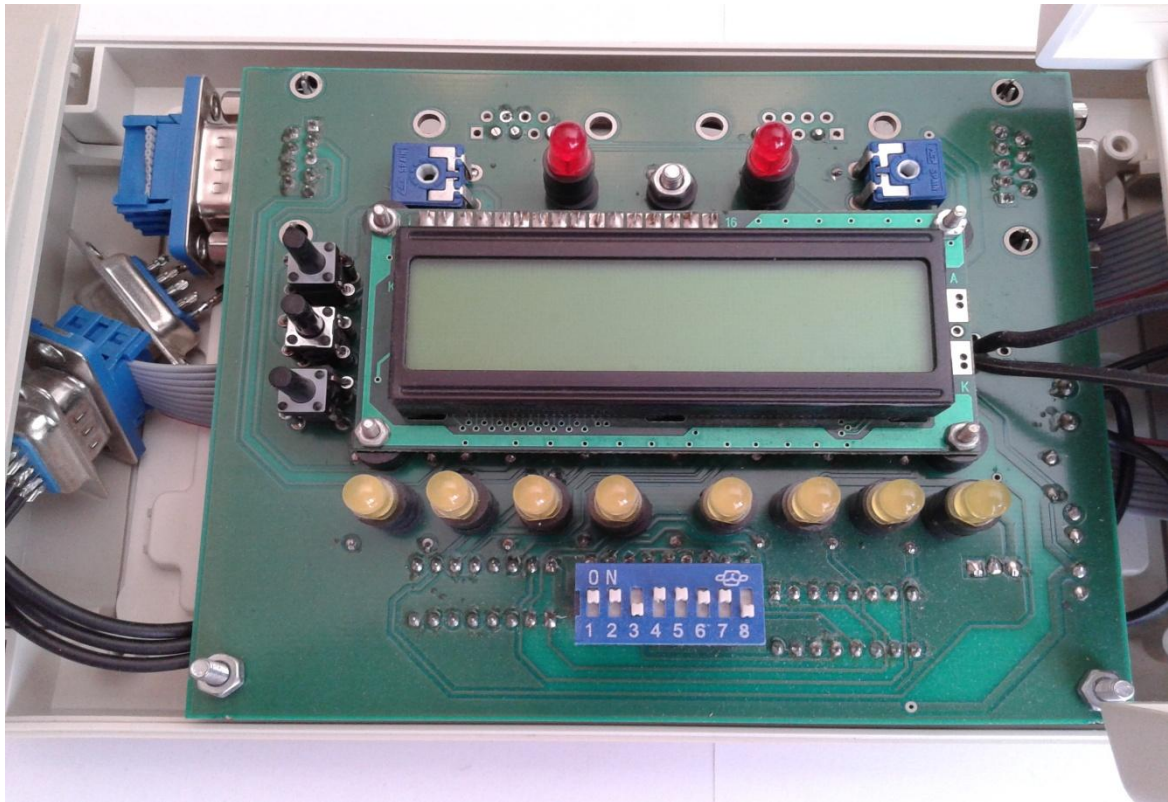
**Remote Control Device - Front View**



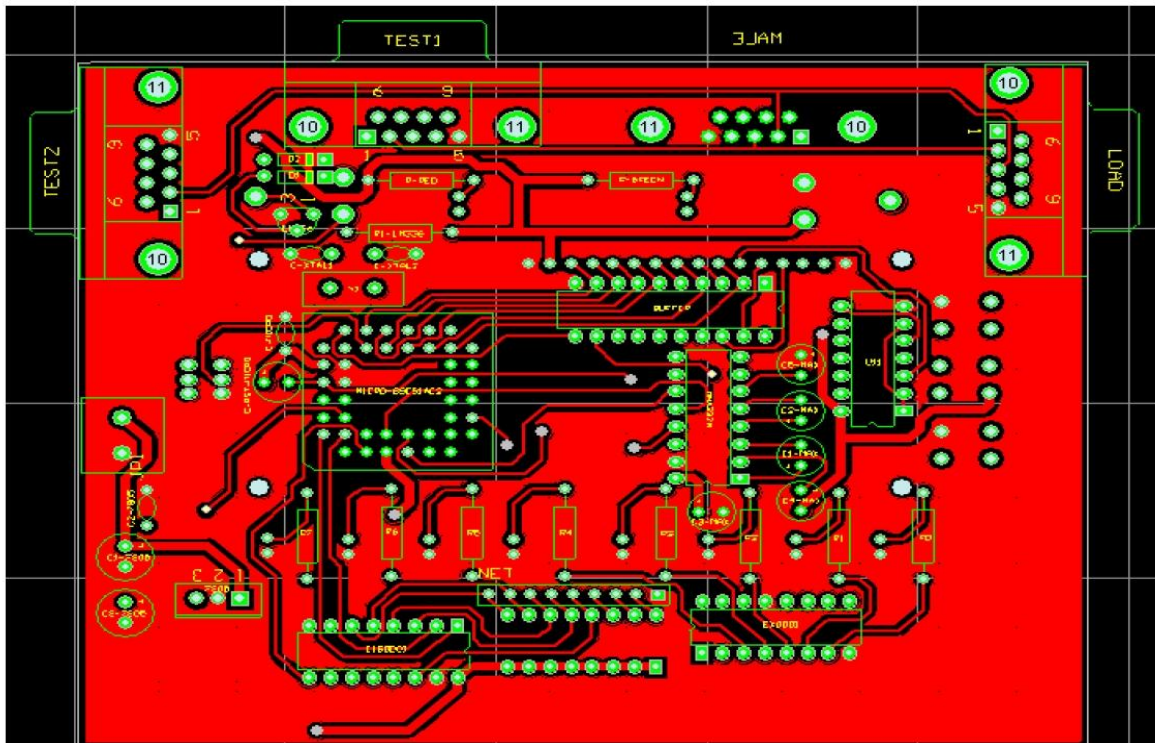
Remote Control Device - Side View



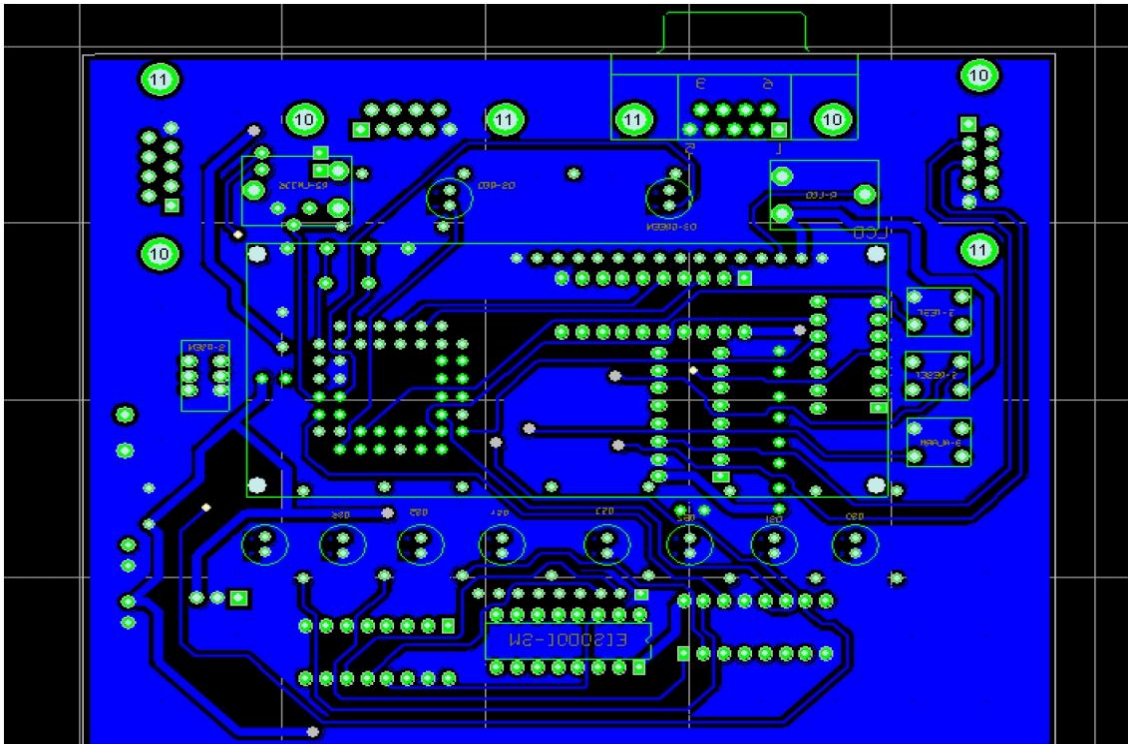
GSM MODEM



Remote Control Device PCB



PCB (TOP LAYER)



PCB (BOTTOM LAYER)