

Webpage Redesign

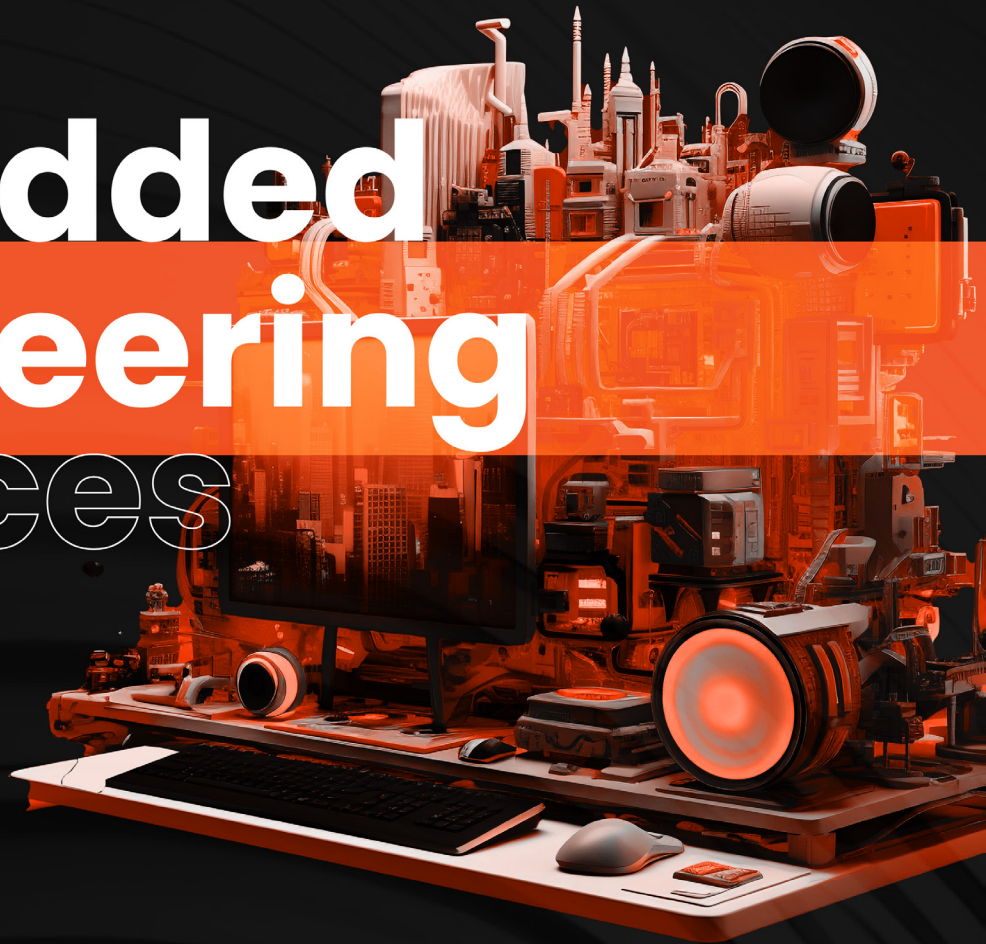
Redesign for a new service vertical

Following latest trends of 3D figures, AI image generation, and a bold look.

Bridging the Gap Between
Hardware and Software Through


Embedded Engineering Services

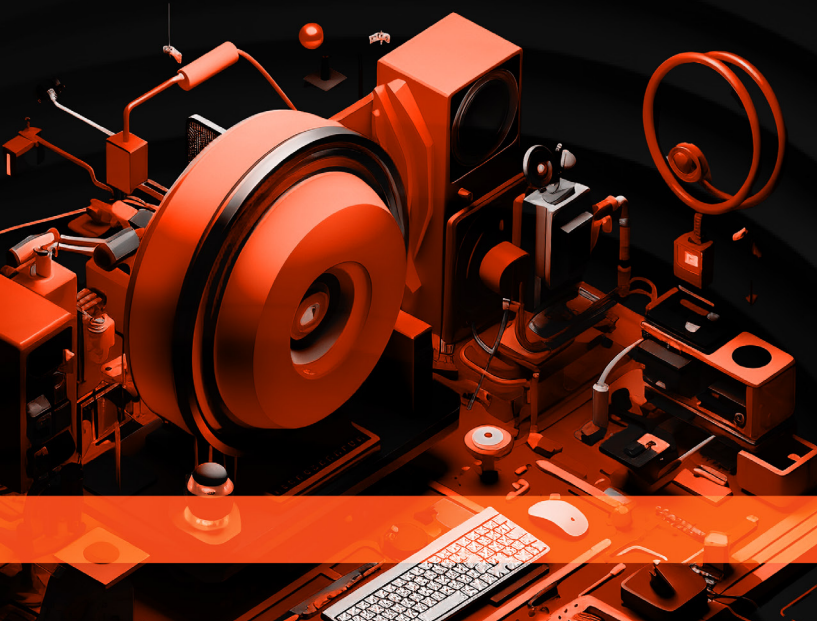
Empowering Innovation Through
Custom Embedded Systems &
Software Solutions for Your Hardware.




Industry Vertical Embedded Systems & Software Development

In the dynamic landscape of embedded engineering, challenges abound—from the integration of cutting-edge technology to the necessity of ensuring robust, secure, and efficient solutions.

At  we excel in navigating these complexities. Our journey in embedded software development, coupled with our strong foundation in IT software development and consulting, positions us uniquely to tackle industry-specific and technology-agnostic challenges.

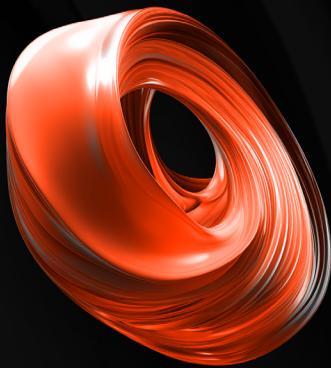




hurdles in embedded engineering, such as real-time performance demands, power and memory constraints, and the need for seamless hardware-software integration.

We leverage our expertise in diverse technologies and our culture of continuous upskilling to deliver tailored solutions that not only meet but exceed expectations.

Service Offerings



Embedded Systems Product Development



Skills and Expertise

At [REDACTED], our team possesses a broad blend of skills and expertise in embedded engineering, enabling us to deliver sophisticated and customized solutions across various domains.

Advanced Application Development

We specialize in developing complex applications, utilizing controllers like the ESP32 and Atmel SAMD32. Our expertise in integrating a range of sensors, such as Dallas DS18B, DHT22, and Lora RF signals, allows us to create versatile and reliable monitoring and control systems.

Sensor and Component Proficiency

Our team is adept in leveraging a wide array of sensors including temperature, humidity, water level, and light sensors, alongside essential electronic components such as resistors, regulators, transistors, and capacitors. This knowledge is crucial for designing systems that are both efficient and durable.

Embedded Systems Design Tools

Utilizing top-tier design tools like Eagle and Cadence, we craft precise PCBs and schematic diagrams. This precision is complemented by our proficiency in IDEs such as VS Code and Arduino, enabling us to develop software that is robust and optimized.

Communication Protocols and Testing

Our expertise extends to mastering protocols like HTTP and MQTT, ensuring effective communication in our embedded systems. Additionally, our commitment to quality is evidenced by our rigorous approach to automated testing and unit testing, ensuring the reliability and functionality of our solutions.

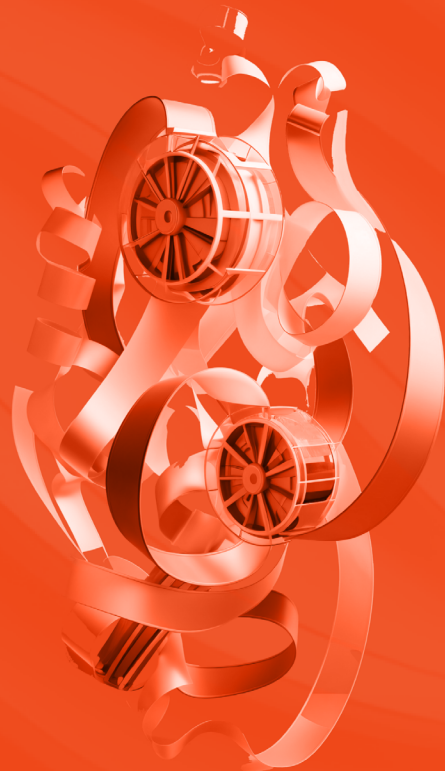
Comprehensive Technology Expertise

Our team's capabilities encompass a wide technological spectrum, including STM32 processors, Jetson Nano for AI applications, Raspberry Pi for versatile computing, and technologies such as UART, USB, WiFi modules, and OTA technology. This diverse expertise enables us to develop systems that are not only innovative but also highly adaptable to various requirements.

Our Approach

Navigating Challenges

Embedded Engineering faces distinct challenges, from integrating complex software with diverse hardware to ensuring security in interconnected systems. Our team, fueled by a curious and inquisitive mindset, not only addresses these challenges but turns them into opportunities for growth and innovation. We adhere to industry standards while maintaining our flexibility and pragmatic approach, ensuring our solutions are not just compliant but also ahead of the curve.



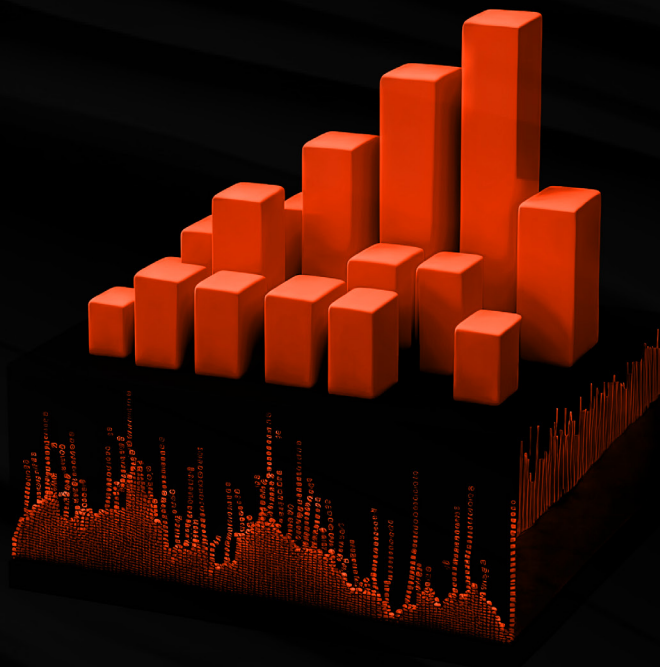
Empowering Industries With Tailored Solutions

We apply our embedded engineering expertise across various sectors, industries and specific to use cases. Our commitment to caring about each project ensures solutions that are not just technically sound but also aligned with the unique needs of each industry. At **Embedded Engineering** – we are partners in your journey towards innovation and excellence. Our team of mindful nerds is ready to explore, create, and deliver solutions that not only meet today's demands but also pave the way for a smarter future.

Why Partner With Us?

Proven Track Record

With years of experience and a portfolio of successful projects spanning 2 decades, our expertise is proven in the field.

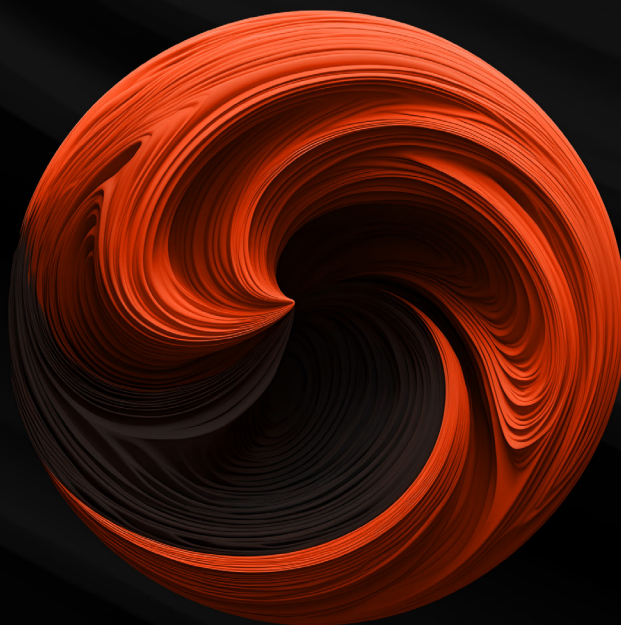


Dedicated Support

Our team is committed to your success, offering ongoing support and consultation to keep your systems running smoothly.

Industry-Leading Innovation

We stay at the forefront of technology, ensuring our solutions are cutting-edge and future-proof.





Get in Touch!

Interested in learning more about our services or discussing a potential project? Contact us today!

Follow Us!

Stay updated with our latest innovations and company news.



Optimizing Water Management with Embedded Systems Technology

The Challenge

Operating in a sector where precision in resource management is crucial, managing water levels in their storage tanks – Residential and commercial – was leading to water wastage, inconsistent supply, and excessive manpower. This process, reduce waste, and ensure a stable water supply.

The Objective

The aim was to engineer a simple yet robust system capable of autonomous operation. The system needed to align with the client's requirement for high accuracy and reliability. The system needed to be reliable, accurate, and capable of integrating with existing systems technology.

The Solution

Our engineered system, leveraging the ESP32 controller, was not only designed to track power and water usage comprehensively throughout the year. A multi-sensor system was implemented to monitor water levels, temperature, and vibration.

- **ESP32 Controller**- Served as the central processing unit, managing data collection and analysis.
- **Float Sensor**- Continuously monitored the water level, providing real-time data to the system.
- **The ESP32 controller** was programmed to record not just water but energy usage, allowing for a comprehensive analysis of resource utilization.
- **Integral to our solution** was a data analytics module. This module analyzed usage times, and potential inefficiencies in resource utilization.
- **By integrating these insights** into the system's operational logic, we were able to optimize the process, making it not just automated but also energy-efficient.
- **The system's architecture** was deliberately designed to be scalable, allowing for future modules to further enhance data collection and analysis capabilities.

The Impact

The implementation of our solution brought about transformative changes in the client's water management process, leading to significant improvements in efficiency and cost reduction.

- The automated mechanism led to a significant reduction in water wastage, helping the client meet their sustainability goals.
- The system's ability to track and analyze usage patterns of both water and energy, over the year led to significant improvements in energy optimization. This intelligent use of data not only ensured efficient water level management but also

Implementing Predictive Maintenance in Industrial automation



The Challenge

Our client, operating in the dynamic sector of manufacturing, was contending with a critical industry-wide challenge: the unpredictability and frequency of machinery failures. These failures were not just routine technical hitches but complex breakdowns stemming from a myriad of factors such as wear and tear, operational stress, and undetected faults in system components. This unpredictability led to substantial unplanned downtime, severely disrupting production schedules.

The Objective

Our aim was to develop a solution that encompasses an embedded system for monitoring and analysing the performance of industrial machinery. The aim was to transition from a reactive to a predictive maintenance model, using OEM energy and performance curves as benchmarks to assess the optimal functioning of the machinery.

The Solution

- **Integration of Diverse Sensors**- Alongside the ESP32 controllers, we deployed a variety of sensors tailored to the specific requirements of industrial machinery.
 - **Temperature Sensors** like thermocouples for their wide range and durability, and RTDs for high accuracy and stability we used.
 - **Vibration Sensors** like Accelerometers and piezoelectric sensors were used for their sensitivity to vibration and pressure changes.
 - **Current Sensors** like INA219 shunt resistor-based sensor were chosen for their high accuracy in current measurement, crucial for identifying electrical anomalies in machinery. The INA219 sensor's high-precision measurements, coupled with its digital output and programmable calibration, played a critical role in the accurate monitoring of machinery performance by comparing the reading with OEM data.
- **Data Analytics and Predictive Algorithms**- We developed proprietary algorithms to analyze the data from these sensors. By comparing real-time readings against established OEM performance curves, our system could predict potential machinery faults before they lead to breakdowns.

The Impact

- **Reduction in Unplanned Downtime**- The adoption of the predictive maintenance system led to a significant decrease in unplanned machinery failures. This downtime reduction improved immediate productivity and contributed to a more stable and predictable production schedule.
- **Optimization of Periodic Maintenance Schedules**- One of the most notable impacts was on the annual and other periodic maintenance schedules. With the predictive insights provided by our system, the company could strategically plan maintenance activities during less disruptive periods, thereby minimizing the impact on production cycles.
- **Cost-Effective Maintenance and Increased Equipment Longevity**- The precise monitoring and early fault detection allowed for targeted maintenance interventions. This approach prevented minor issues from escalating into major repairs, extending the lifespan of machinery and leading to substantial cost savings over time.
- **Overall Operational Efficiency**- The integration of advanced sensor technology and predictive analytics not only enhanced the machinery's performance but also played a crucial role in optimizing resource allocation and workforce for maintenance activities. This holistic improvement in maintenance operations directly bolstered the firm's operational efficiency and bottom line.

Other Case Studies



Optimizing Water Management with Embedded Systems Technology