

WICMIC PFE BOOK OVERVIEW

2026



About us

Who We Are

Founded in 1991, **WICMIC Group** is a **Tunisian-based international textile manufacturer** specializing in the design and production of high-quality denim and jeans. Over more than three decades, we've built a reputation for reliability, creativity, and excellence in textile craftsmanship.

Innovation & Technology

From automated production systems to digital fabric tracking, innovation drives our progress. We collaborate with global partners to implement smart manufacturing solutions that enhance quality, transparency, and productivity ensuring WICMIC remains at the forefront of the denim industry.

Our Promise

At WICMIC Group, we believe that style and sustainability can go hand in hand. Our promise is to create denim that inspires confidence made with respect for people, planet, and the generations to come.





 **WICMIC**
Weaving and Interweaving International Company

Oversize fit
Accordion zip expandable



TOPICS

IT

#01

Project 1: AI-Powered Visual Similarity Search System for Denim Product Identification and Style Matching

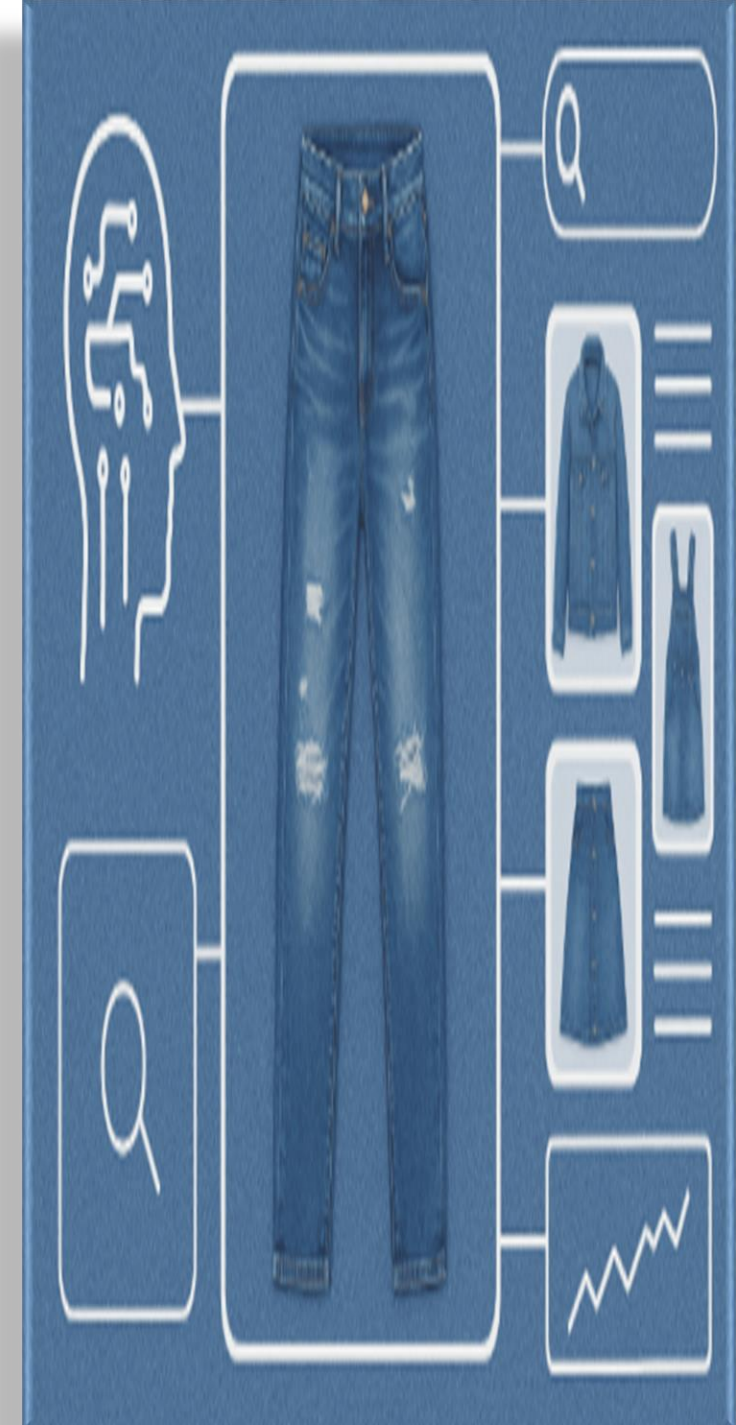
Project Description:

This project develops an advanced image similarity retrieval system that can analyze and compare denim apparel (jeans, jackets, overalls, skirts) with high precision.

The system extracts and interprets fine-grained visual features such as laser patterns, whiskers, abrasions, ripping styles, stitching details, fabric texture, and color shades.

Tools:

DINOv2, CLIP, Segment Anything Model, FAISS, PyTorch, Python, FastAPI



#02

Project 2: AI-Based Visual Quality Control System for Denim Pants Using Image Similarity and Defect Detection

Project Description:

This project aims to develop an intelligent computer vision system capable of comparing each denim pant in a production batch against a predefined standard model. The system evaluates visual conformity in terms of color, texture, wash effects, shape consistency, and potential defects. It generates a global acceptance score (0-100%) and provides a detailed analytical report highlighting deviations and defect locations. The solution helps automate quality inspection, reduce human subjectivity, and improve production consistency.

Tools:

Python, PyTorch, TensorFlow or Keras, OpenCV, scikit-image, Anomalib , ResNet/CLIP, NumPy, Pandas, Matplotlib



#03



5 Interns

6 MONTHS

Project 3: Automated Intelligent Robotic System for Fabric Roll Retrieval in a Textile Warehouse

Project Description:

This project focuses on developing an automated robotic system capable of identifying and retrieving fabric rolls stored in a textile warehouse. The robot moves along a guided rail, scans QR codes for verification, and lifts rolls weighing up to 80 kg. A team of five engineering interns (Mechanical, Mechatronics, Industrial Automation, Computer Vision & Robotics, and Software Engineering) collaboratively designed and integrated the system.

Requirements:

- 1 Mechanical Engineer:** Design of the rail-mounted robotic structure and lifting mechanism.
- 1 Mechatronics Engineer:** Integration of motors, motion control, and end-effector (gripper) systems.
- 1 Industrial Automation Engineer (PLC/SCADA):** Development of the control logic, safety management, and industrial communication interfaces.
- 1 Computer Vision & Robotics Engineer:** Implementation of QR code reading, camera integration, and ROS2-based robotic navigation.
- 1 Software Engineer (Full Stack):** Design of the warehouse management dashboard, scheduling interface, and database connectivity.



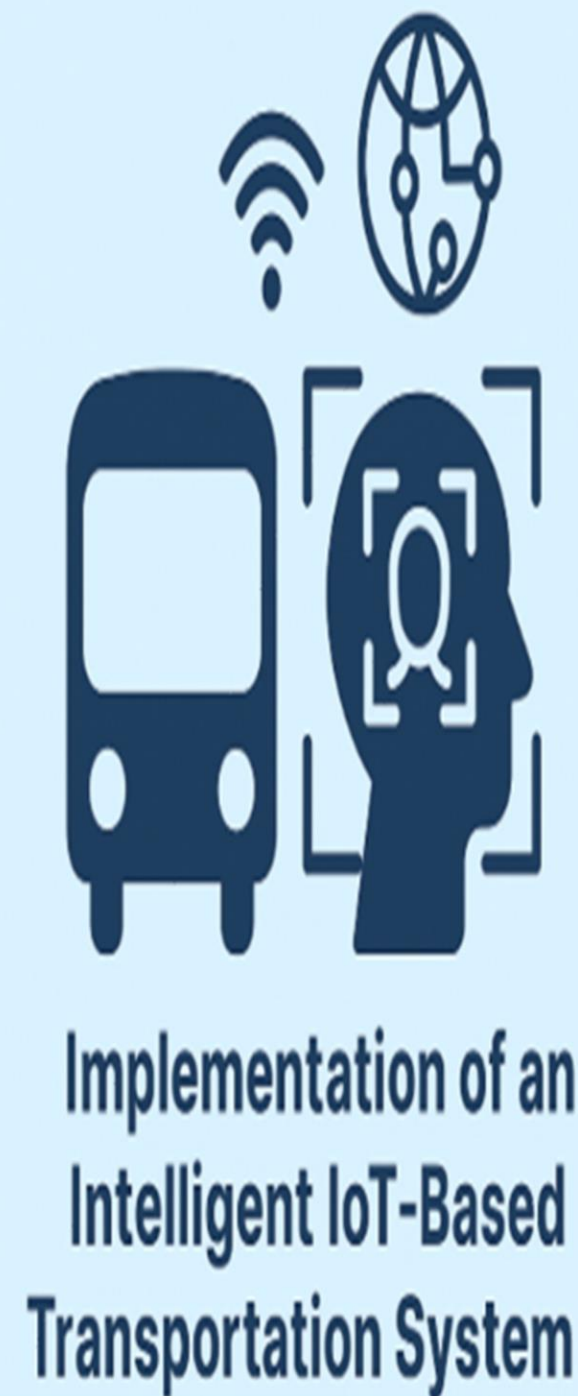
Project 4: Implementation of an Intelligent IoT-Based Transportation System Integrating Facial Recognition for Bus

Project Description:

This project aims to design and implement a smart IoT transportation system that enhances the security and efficiency of bus access management through facial recognition technology. The system utilizes the ESP32-S3 CAM module, which provides both computing power and camera functionality, to identify and authenticate our employees in real-time.

Tools:

Arduino IDE or PlatformIO (VS Code), OpenCV (Python)





1 or 2 Interns

4-6 MONTHS

#05

Project 5: Computer Vision for Denim Wash Effect Analysis

Objectives:

- Build a denim wash image dataset (before/after).
- Train CNN model to detect wash effects (fading, contrast, wear).
- Automate style comparison (stone wash, vintage, bleach).
- Standardize quality evaluation through visualization dashboard.

Tools:

Python, OpenCV, TensorFlow/PyTorch, CVAT, Streamlit





1 or 2 Interns

4-6 MONTHS

#06

Project 6: AI-Powered Simulation of Denim Washing Results

Objectives:

- Collect raw fabric, recipes, and final wash images.
- Train generative model (GAN/Diffusion) to simulate results.
- Build tool to visualize predicted wash look from recipe.
- Reduce physical testing and promote eco-efficiency.

Tools:

Python, PyTorch/TensorFlow, Diffusers, OpenCV, Gradio/Streamlit



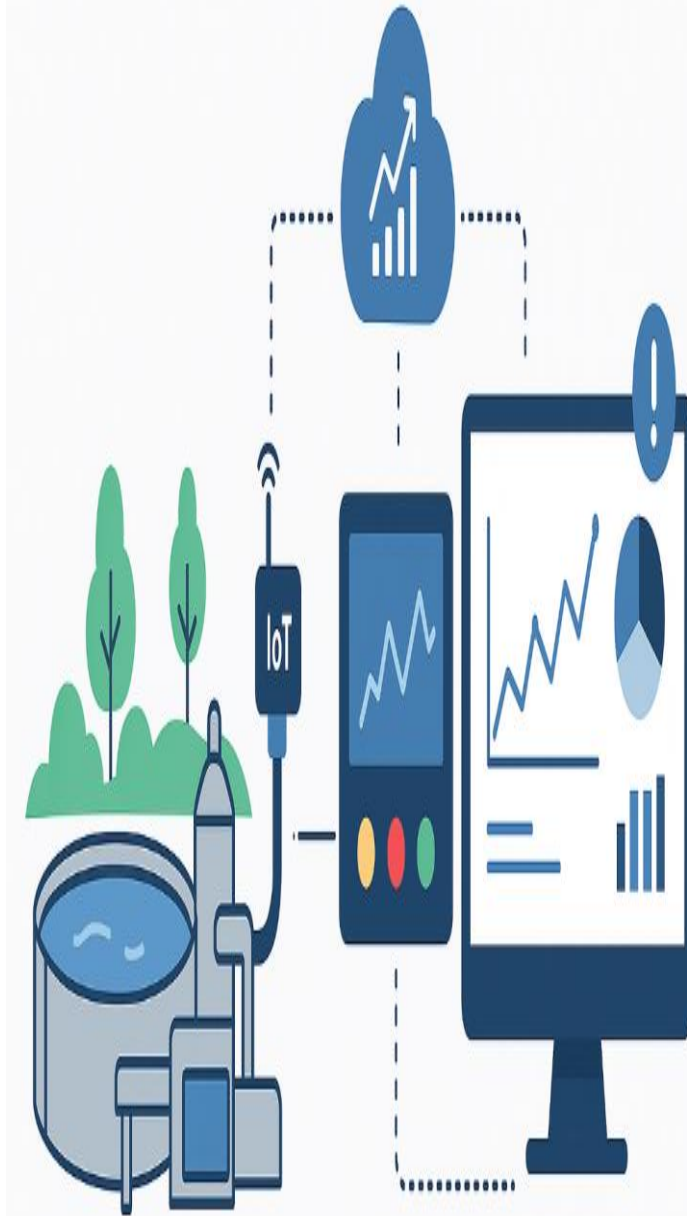
#07

Project 7: Digitalization of the wastewater treatment plant's performance monitoring system

This project focuses on digitalizing the wastewater treatment plant through an intelligent monitoring and analysis platform.

IoT sensors continuously collect real-time data on key parameters such as pH, turbidity, and flow rate. The data is processed using AI algorithms to detect anomalies, predict system performance, and optimize treatment efficiency.

A web-based dashboard provides visual insights and automated alerts, enabling smarter decision-making, reduced operational costs, and improved environmental sustainability.



TOPICS

SUSTAINABILITY



1 or 2 Interns

4-6 MONTHS

#08

Project 8: Implementing ISO 26000 for corporate social responsibility

Objectives:

- Develop a structured diagnosis of CSR commitments and practices
- Identify areas for improvement and to sustainably embed social responsibility in the company's strategy through a continuous improvement approach.



#09

Project 9: Implementing an energy management system according to ISO 50001

Objectives:

- Enhance environmental responsibility
- Identify areas where energy consumption can be reduced without compromising productivity or quality.
- Reduce energy costs



“ **Our leadership** consistently places innovation at the core of its vision, valuing the creativity and fresh perspectives brought by young talents.

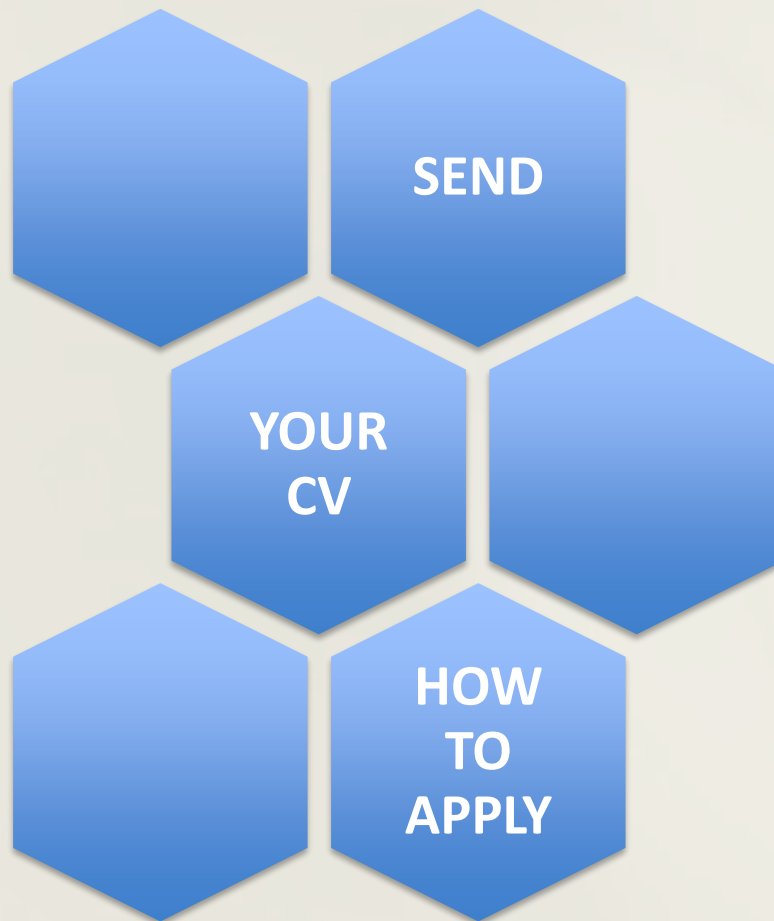
The ongoing collaboration with universities enables ideas to evolve into real, impactful industrial solutions.

The successful PFE projects completed within our company stand as proof of this strong synergy between expertise, learning, and a shared ambition for the future. ”



FUTURE CONSIDERATIONS

WICMIC Group strives to foster sustainable innovation through ongoing learning, technological advancement, and proactive alignment with emerging industry trends.



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