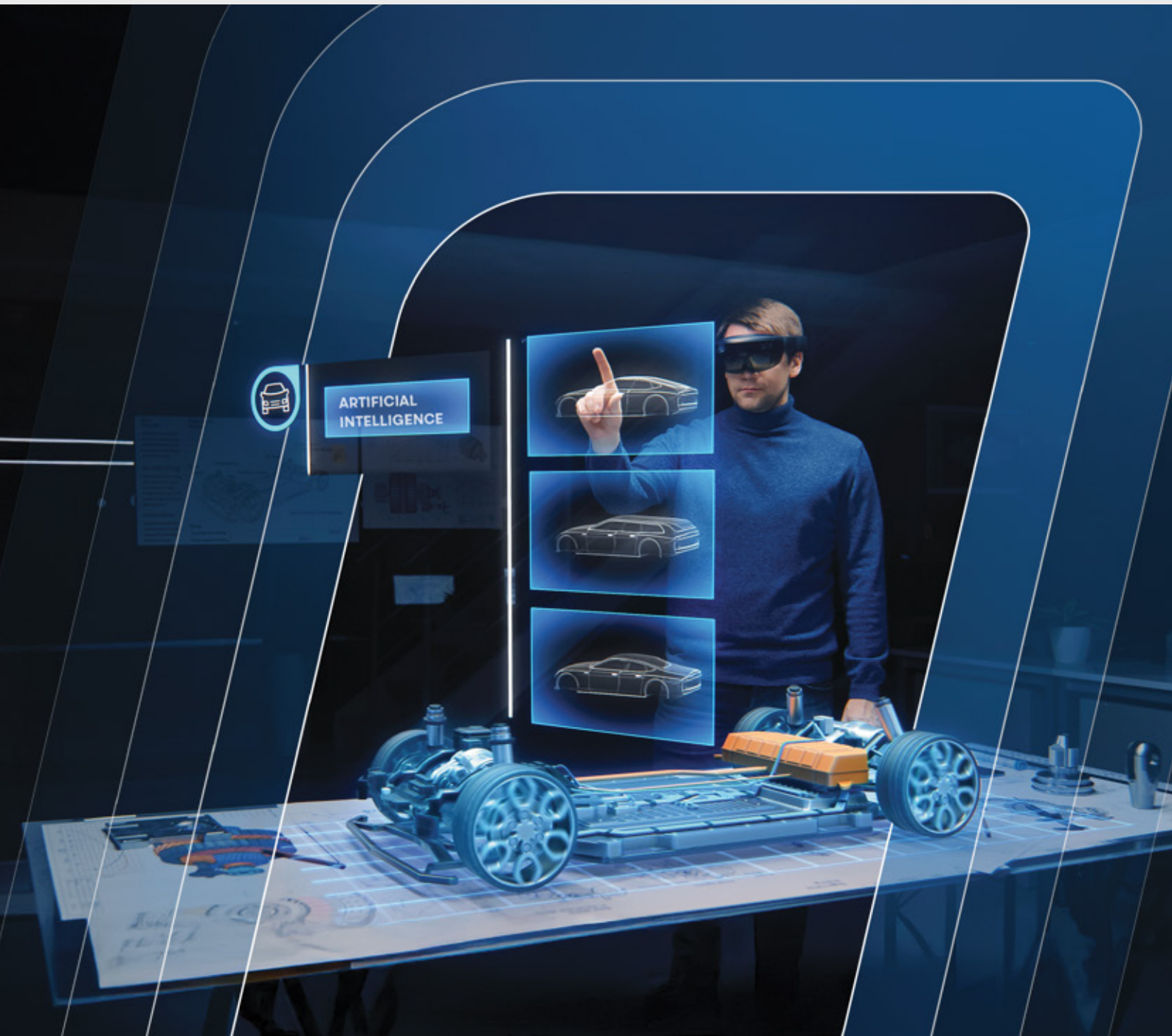


AI FOR ENGINEERING

UNLOCKING ENGINEERING EXCELLENCE WITH ARTIFICIAL INTELLIGENCE



Automotive engineering involves the design, development, manufacture, and operation of motor vehicles. It encompasses various fields such as mechanical, electrical, safety, software, and industrial engineering, playing a key role in ensuring efficiency, safety, sustainability, and performance.

AI technologies are increasingly integrated into the automotive industry, enabling smarter, safer, and more efficient vehicles.

- **AI and Autonomous Vehicles:** The global autonomous vehicle market is expected to grow from \$54.23 billion in 2023 to \$328.16 billion by 2030, at a CAGR of 32.7%.
(<https://market.us/report/autonomous-vehicles-market/>)
- **AI in Manufacturing:** Automotive manufacturers are using AI-driven robots for assembly lines, significantly reducing production costs and time. For example, BMW has implemented AI-driven robots that increase efficiency by 30%. (<https://www.bmwgroup.com/en/news/general/2023/aiqx.html>)
- **Predictive Maintenance:** The use of AI to predict car part failures before they occur is expected to reduce maintenance costs by 30%. (<https://aislackers.com/ai-predictive-maintenance-in-automotive-guide/>)
- **ADAS Market Growth:** AI-powered Advanced Driver Assistance Systems (ADAS) are anticipated to reach a market value of \$29.5 billion by 2027, driven by increased safety and convenience features. (<https://www.futuremarketinsights.com/reports/adas-market>)

AI for Engineering - The New Era of Innovation

AI for Engineering is the application of artificial intelligence to optimize and automate engineering tasks across multiple domains-mechanical, electrical, software, manufacturing, and systems engineering. Unlike traditional engineering, which relies heavily on human-driven processes, AI empowers engineers to leverage:

- Machine Learning for pattern recognition and prediction,
- Deep Learning for complex data modeling,
- Generative AI for producing new designs, code, or documentation,
- Computer Vision for automated inspection and spatial analysis,
- Natural Language Processing (NLP) for processing unstructured data like manuals or customer feedback.

AI-Driven Design	AI-Enhanced Software Engineering	AI-Powered Production and Quality	Legacy System Modernization
AI uses simulation and optimization algorithms to generate thousands of design variations, reducing prototyping cycles.	Platforms like CodeVista transform software engineering by assisting in real-time coding, debugging, and documentation generation.	Solutions like I2 Intelligent Inspection combine 2D/3D vision, sound, and sensor data to detect manufacturing defects with up to 99% accuracy, far surpassing human inspection capabilities.	With XMainframe, FPT provides AI-powered modernization for COBOL-based legacy systems, a \$100B+ global challenge.

FPT Powerhouse in AI-Powered Solutions

I Infrastructure

Data Center & Cloud Service

NVIDIA DGX H100

Full scale Cloud based AI Service

On-premises, hybrid, multi cloud, or at the edge-
create secure, future-ready cloud solutions

Invest \$200 Million USD. NVIDIA Hopper GPU accelerators deliver up to **400 teraflops** of performance



Global AI Talent Human Resources

1,000+ AI Professionals

50+ AI Scientists

400+ AI Engineers

180+ Data Analysts

500+ Subject-matter experts



I Product and Platform Ecosystem

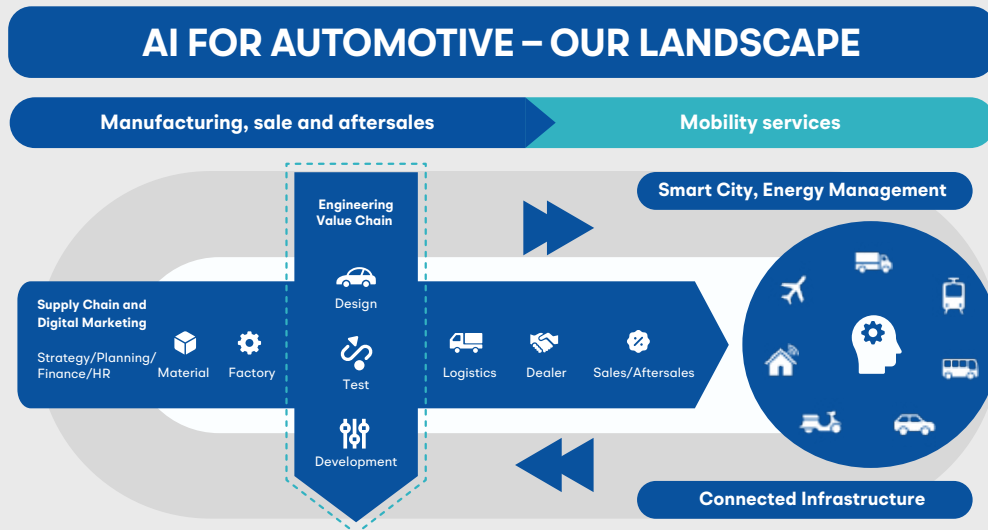
- CodeVista: Enterprise-grade coding assistant with secure context-aware AI for large projects.
- Semikong: The world's first domain-specific LLM for semiconductor manufacturing.
- I2 Intelligent Inspection: Integrated quality control platform using computer vision, sound, and sensor data.

I Strategic Partners and Institutions



FPT's AI for Automotive

Driving Innovation with Intelligent Solutions



FPT Automotive leverages cutting-edge AI technologies to redefine automotive engineering across multiple critical domains-**Embedded AI Systems, Advanced Driver Assistance Systems (ADAS), Autonomous Driving, and In-Car Virtual Assistants**. These innovations enable safer, smarter, and more connected vehicles, accelerating the evolution toward software-defined and AI-first cars.

- 01 **Embedded AI** integrates powerful machine learning algorithms directly into vehicle Electronic Control Units (ECUs) and sensor modules, enabling real-time decision-making with minimal latency. FPT develops AI-powered software optimized for constrained automotive hardware, ensuring low power consumption, high reliability under automotive-grade conditions, and compliance with safety standards such as ISO 26262 for Functional Safety.
- 02 **AI in Advanced Driver Assistance Systems (ADAS)** enhances driver safety and convenience through:
 - **Computer Vision and Deep Learning:** Detecting pedestrians, vehicles, lane markings, and obstacles using high-definition cameras and LIDAR data.
 - **Sensor Fusion:** Combining radar, camera, ultrasonic, and GPS inputs for robust environment awareness.
 - **Predictive Analytics:** Anticipating road hazards, driver fatigue, and traffic patterns to issue timely warnings.

Our proven ADAS stack integrates AI algorithms validated with large-scale datasets, achieving high accuracy in object recognition and behavior prediction, enabling features such as adaptive cruise control, automatic emergency braking, and lane-keeping assistance.
- 03 Our AI solutions also support **Autonomous Driving** at the forefront of self-driving:
 - **Perception Modules:** 3D point cloud processing from LIDAR with patented group-equivariant convolutional neural networks to improve object recognition from limited viewpoints.
 - **Decision Making and Path Planning:** Reinforcement learning algorithms optimize driving strategies under dynamic traffic conditions.
- 04 **Digital Twin Simulation:** AI-driven virtual replicas of vehicles and environments facilitate training and validation of autonomous functions, drastically reducing real-world testing requirements.

Success story

GPT for Factory Management powered by GenAI

A Japanese manufacturer with operations across Vietnam, Mexico, and other regions needed to modernize its factory management system without disrupting legacy infrastructure. The challenge was to create a multilingual, conversational AI system that allowed floor supervisors to access operational and maintenance data—such as machine downtimes, shift rosters, and production stats—without writing SQL queries or navigating dashboards. FPT delivered a lightweight, on-premise GenAI-powered assistant built on Llama 3, fine-tuned for domain-specific factory knowledge. The system integrated seamlessly with SQL-based legacy systems, offering real-time, natural language access to structured data. As a result, the company achieved a 60% reduction in information retrieval time, improved anomaly detection, and unified data access across departments—ultimately cutting maintenance costs and boosting factory productivity.

Accelerating Quality Control with I2 Intelligent Inspection

Business Challenge

One of the world's leading car manufacturers needed to accelerate and improve the accuracy of door panel inspections. Traditional manual X-ray checks took 1–3 minutes per unit and were prone to human error in identifying issues such as missing fasteners, misaligned screws, and incorrect parts.

AI-Powered Solution

FPT addressed this with its I2 Intelligent Inspection solution, combining 2D/3D computer vision, acoustic and vibration sensing, and AI-powered classification models capable of detecting defects within milliseconds.

Key Results

- 99% task automation, eliminating nearly all human inspection errors.
- 70% labor cost reduction at the final QA station.
- Inspection time reduced to 3–5 seconds per unit, unlocking faster production throughput.

Technical Fleet

- Integration with existing BV Max X-ray imaging systems.
- AI model training on tens of thousands of defect samples, improving detection across 24 specification checkpoints.
- Real-time deployment on edge devices for in-line inspection without disrupting production.



ABOUT US

FPT Corporation (FPT) is a globally leading technology and IT services provider headquartered in Vietnam and operates in three core sectors: Technology, Telecommunications, and Education. Over more than three decades, FPT has consistently delivered impactful solutions to millions of individuals and tens of thousands of organizations worldwide.

Committed to elevating Vietnam's position on the global tech map and delivering world-class solutions for global enterprises, the Corporation focuses on five strategic areas: Artificial Intelligence, Automotive, Semiconductor, Digital Transformation, and Green Transformation. In 2024, FPT reported a total revenue of USD 2.47 billion and a workforce of over 54,000 employees across its core businesses.

For more information about global IT services, please visit <https://fptsoftware.com>