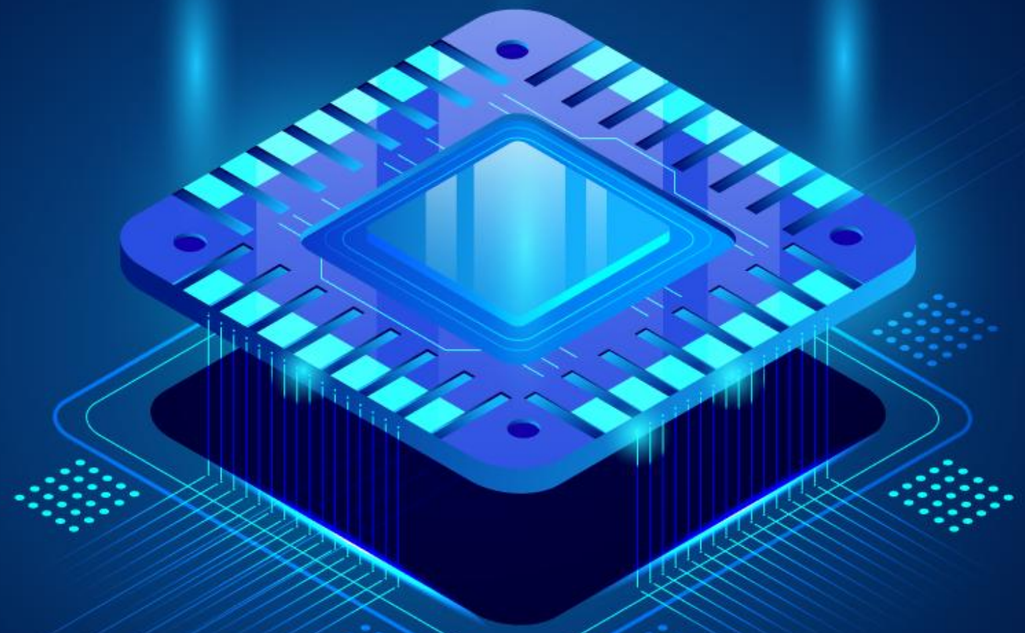
NURTURING TALENT - LEADING INNOVATION

VERON R&D



AI SEMICONDUCTOR

VERON

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ABOUT US

VERON R&D, a subsidiary of VERON Group, is a semiconductor technology company specializing in comprehensive hardware solutions, including analog and digital circuit design. Building on this foundation, VERON R&D leads the way in semiconductor-based solutions and applications, such as Edge AI on FPGA, AI chips, and SBCs.

Challenges

Initial Deployment

Integrating AI models with devices

- Data sent via API
- Data format difference
- Requires complex client-side software

STAGE 1

Configure stable network connection

- Unstable network, poor coverage
- Lack of support for retry mechanisms, offline cache

Operational

Latency in response

- Network transmission speed
- Server processing load

Security and Privacy

STAGE 2

Server overload or API rate limit

- Server is congested, not responding in time
- Limited by cloud service plan (API rate limit)

Expansion and Maintenance

High operating costs

- Cloud service costs increase with the number of devices and frequency of access.

STAGE 3

Difficult to scale

- Distributed server infrastructure is required

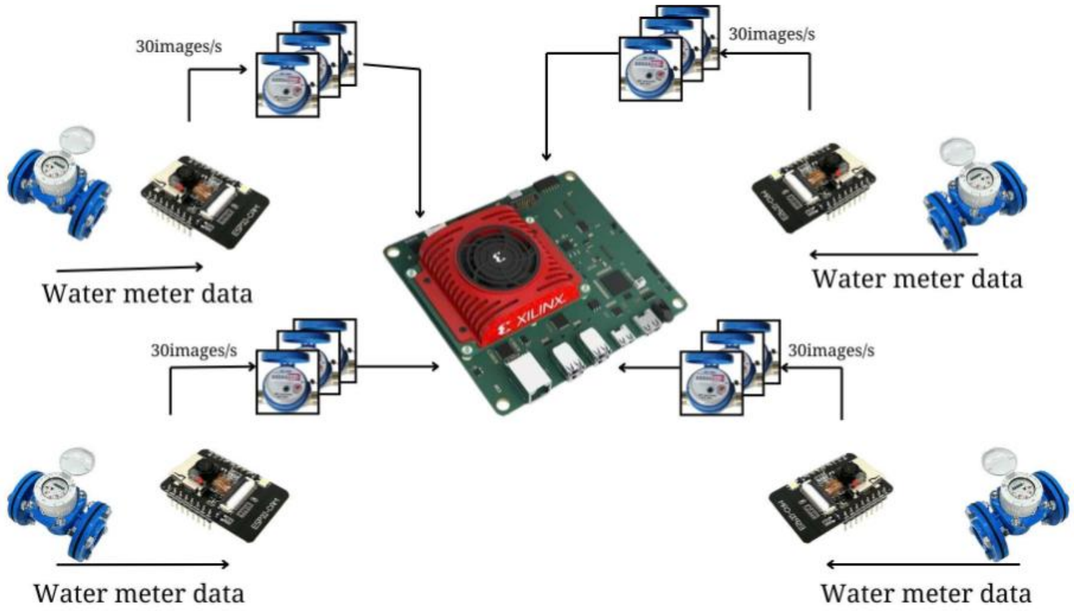
Depends on third party platform

- Devices using external AI servers

Technology

1. FPGA DPU Edge AI

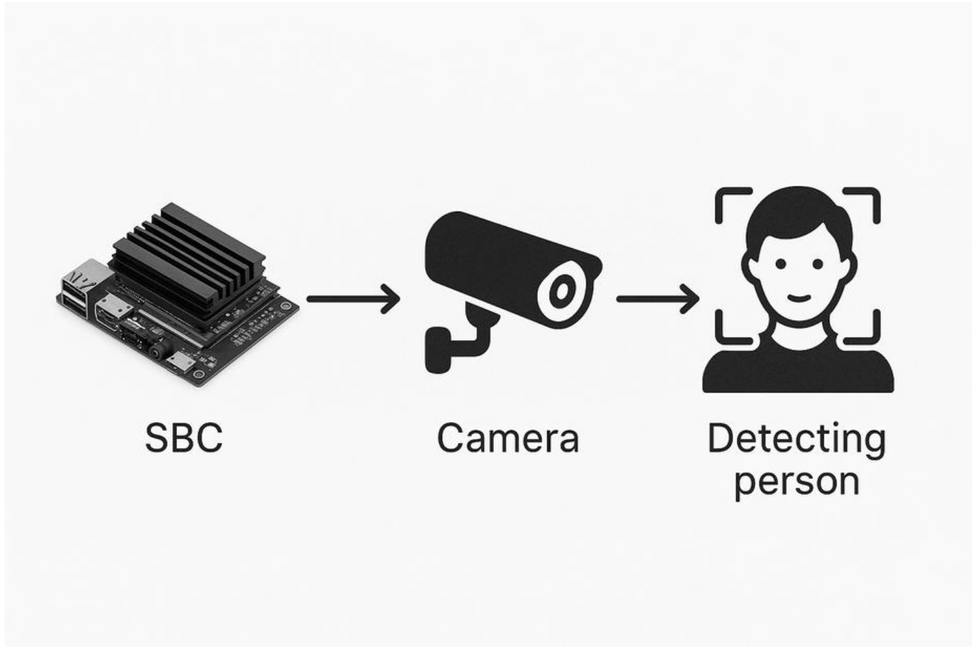
- Flexible configuration
- Allows for the optimization of AI circuit performance
- Simultaneously handling multiple task in real time
- Customize models through SDK



Technology

2. SBC Edge AI

- On-site AI processing with rapid response ability
- Independent task execution
- Compact, cost-effective and swift deployment



Technology

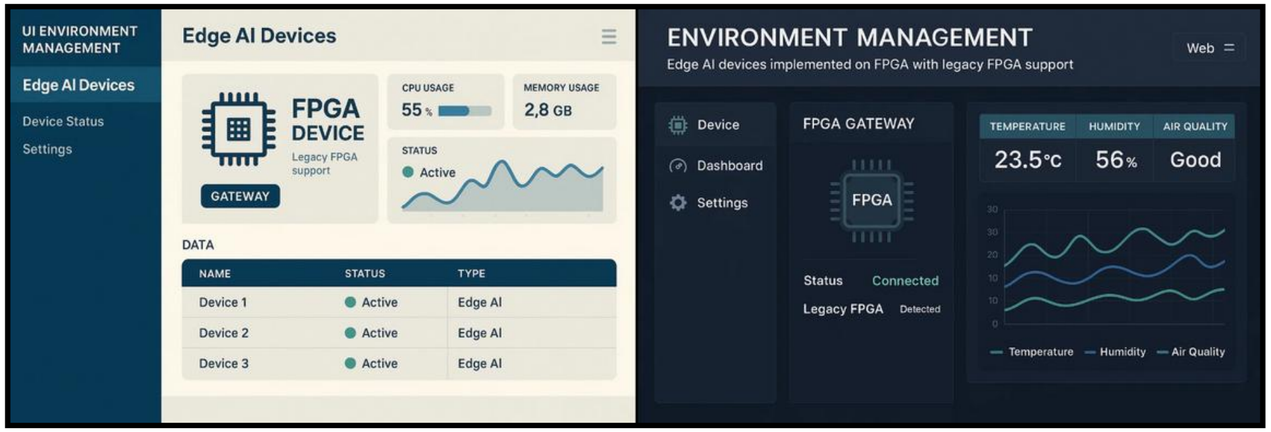
3. AI Chip

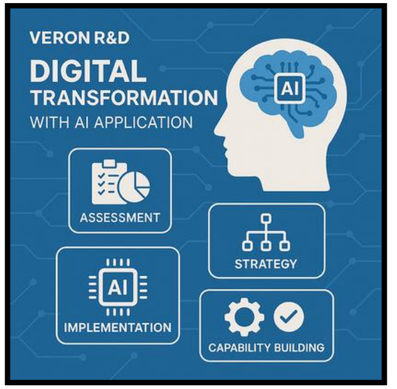
- Exceptional performance in executing AI algorithms
- Rapid, low-latency inference for complex neural networks
- Optimal operation even in power-constrained environment

Solutions

From the IP core DPU integrated on the FPGA board or SBC board, we can get the following solutions :

- **Enviroment Quality Management**
- **Traffic smart management**
- **Puplic security smart management**
- **Digital transformation powered by AI**





Benefit

01 Reduce latency

02 Network Independence

03 Security & Privacy

04 Save operating costs

05 More scalable, more flexible

06 Power & Resource Optimization

07 Multi-model Deployment

08 AI Safety & Failover

09 Dynamic Reconfiguration

10 Remote Monitoring & Debugging

Benefit

	DPU-FPGA	GPU	ASIC	CPU
Performance	High, AI optimized, powerful parallel processing	High	High	Not dedicated to AI
Energy consumption	Low	High	Low	Low
Flexibility	Highly scalable and upgradable	Limited hardware power	Cannot be changed after production	Diverse but not optimized for AI
Security	Data processed at source, not sent to cloud	Need additional security solutions	Good but flexible design	Good but vulnerable to software attacks
Integration	Easy to integrate into existing systems	Requires large space and heat dissipation	Difficult to integrate into diverse systems	Available in most systems
Long term costs	One time investment, affordable cost	High upgrade costs	Large initial investment, not flexible	Cheap but low performance

Evaluating technologies in AI tasks

DPU Smart Water Box

Water's quality smart management system

A Water's Quality Smart Management System is an integrated solution that leverages advanced sensors, IoT connectivity, and artificial intelligence to continuously monitor, analyze, and manage the quality of water in real-time

THIEN AN TECHNOLOGY

THIEN AN TECHNOLOGY INVESTMENT CORPORATION

Website: www.tacorp.vn

The challenges

- Optimizing Energy Consumption for Edge AI
- Reliable & robust for outdoor use
- Optimizing AI Models for the Edge (FPGA)

Solutions

- Multi-sensor hardware integration on FPGA
- Optimizing AI models for the Edge
- Manage and transmit data with IoT transmission standards
- Manage, control, update remotely with OTA supported firmware
- Optimize energy and durability

Application

- Monitor water meter readings
- Water quality management in industry
- Pond and aquaculture monitoring

The Result

- Monitor water usage and water quality
- Save energy, reduce latency
- Real-time operations

Technology Transfer

Scope

- Technical Documents
- Firmware, Sotfware
- Hardware
- Design process

Transitional stages

- Stage 1: Transfer Planning
- Stage 2: Survey, Deployment, Installation
- Stage 3: Acceptance and Evaluation

Post-transfer support

- Software updates, bug fixes, regular upgrades
- Performance evaluation, system optimization
- Expansion, integration, improvement consulting
- Provide support team, online knowledge base, regular maintenance packages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Smart Traffic Box

Traffic smart management system

The Traffic Smart Management System is a solution that integrates sensors and Edge AI hardware to monitor, analyze and control urban traffic in real time. The system helps identify Vietnamese vehicle's license plate in many place like parking lot in hospital, mall or in the crossroads section

The challenges

- High-speed multi-stream processing of image/video data
- Integrated multi-communication, signal synchronization

Solutions

- Design of multi-threaded, distributed systems
- Optimizing Hardware and AI Models for the Edge

Application

- Automatic vehicle and license plate recognition in parking lot
- Identify car license plate and calculate the violation cause at the crossroads.

The Result

- Save operating costs, easy expansion
- Optimize resources
- Increase the efficiency of traffic monitoring and management

Technology Transfer

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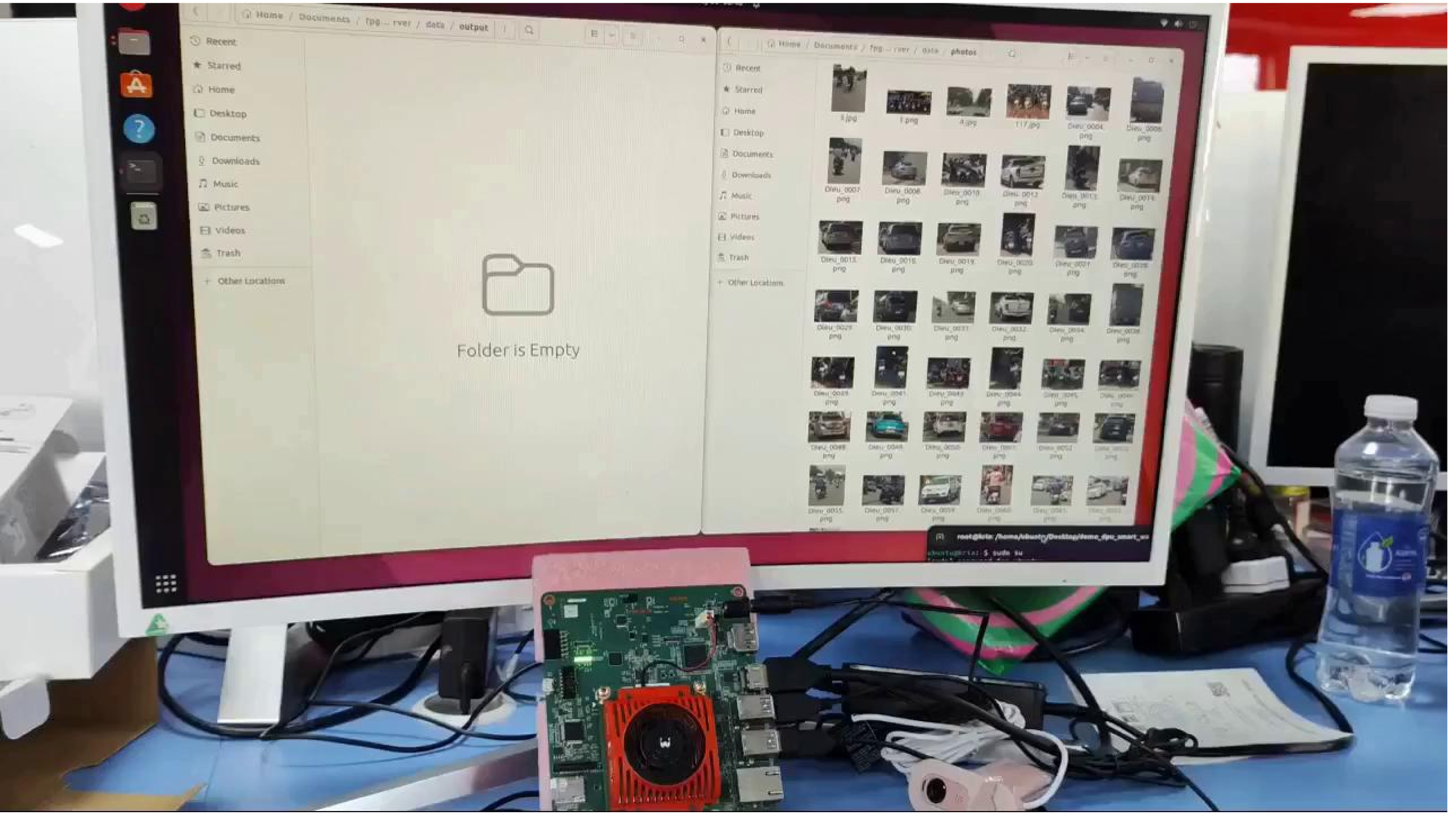
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Recent
Starred
Home
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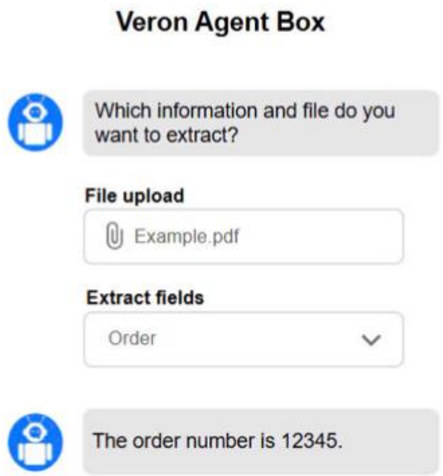
Documents
Downloads
Music
Pictures
Videos
Trash
Other Locations

AI Chat Box

Smart Profile Management System in the form of AI Chat Box

The intelligent profile management system in the form of AI chatbot allows users to easily look up, update and manage profiles through an automated chat interface, helping to simplify operations, personalize the experience and increase information management efficiency.



The challenges

- *Understand user intent correctly*
- *Security and Privacy*
- *Ensure accuracy and updates*

Solutions

- *Flexible integration API*
- *Automatic verification and validation mechanism*
- *Multi-factor authentication and data encryption*
- *Cloud computing infrastructure*

Application

- *Personnel records management in the enterprise*
- *Support online public services*
- *Automated customer care*

The Result

- *Simplify records management and retrieval processes*
- *Save time and operating costs*

Technology Transfer

Scope

- *Technical Documents*
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- *Hardware*
- *Design process*

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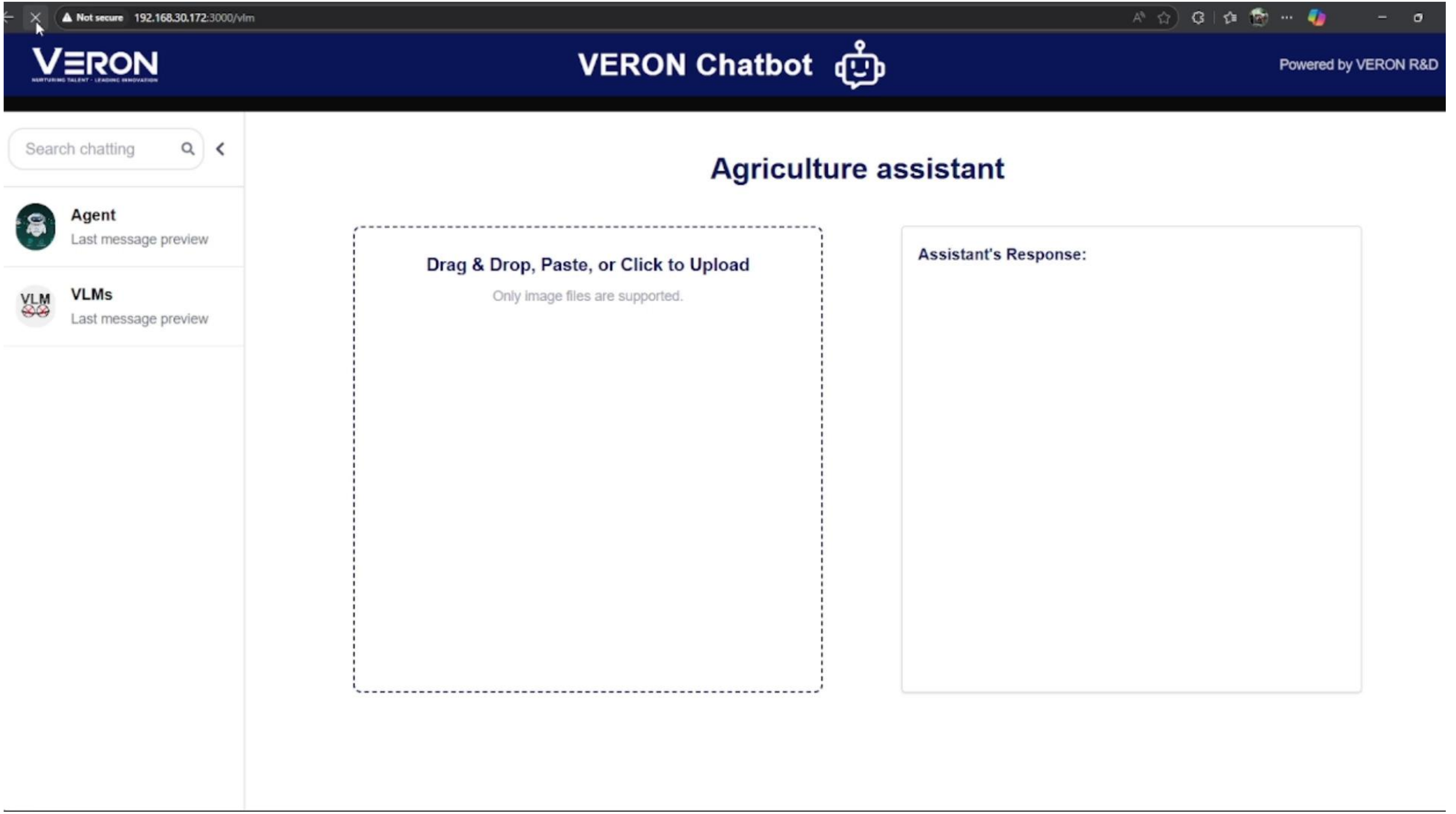
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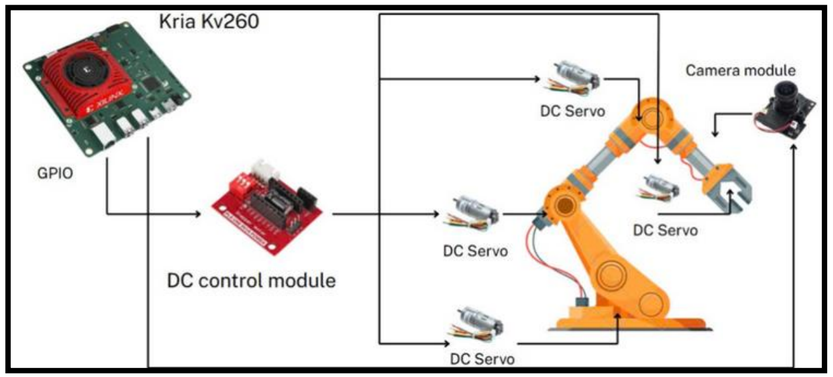
VERON
VERON Chatbot
Powered by VERON R&D
Search chatting
Agent
Last message preview
VLMs
Last message preview
Agriculture assistant
Drag & Drop, Paste, or Click to Upload
Only image files are supported.
Assistant's Response:

Robotic arm system with Edge AI

AI Box for robotic arm system with Edge AI (FPGA) is a dedicated hardware device, integrating AI models on the FPGA platform, used to process, control, and optimize the operation of robotic arms right on the field (Edge). The system allows image recognition, sensor signal processing, and quick movement decisions without depending on the cloud or central server.



The challenges

- Multi-sensor and communication integration
- Ensure real-time response
- Security and operational safety

Solutions

- Deploying specialized AI models on FPGA
- Building a sensor data processing pipeline
- Integrated industrial communication standards
- Multi-layered security

Application

- Automatic production line
- Product classification and packaging
- Medical or laboratory support
- Logistics and smart warehouse

The Result

- Increase processing speed and response
- Increase automation and flexibility
- Easy to integrate and expand

Technology Transfer

Scope

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- Software updates, bug fixes, regular upgrades
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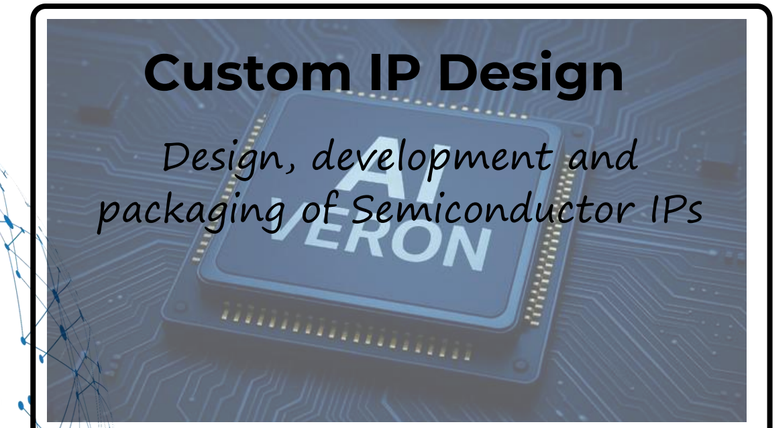
Capability

Custom AI models

Develop suitable AI models based on requirements

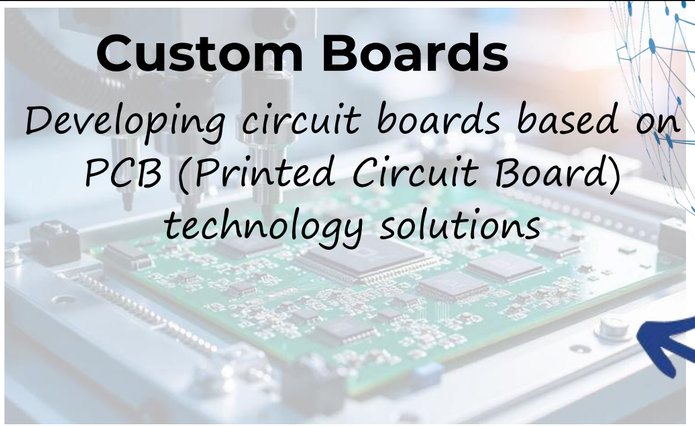
Custom IP Design

Design, development and packaging of Semiconductor IPs

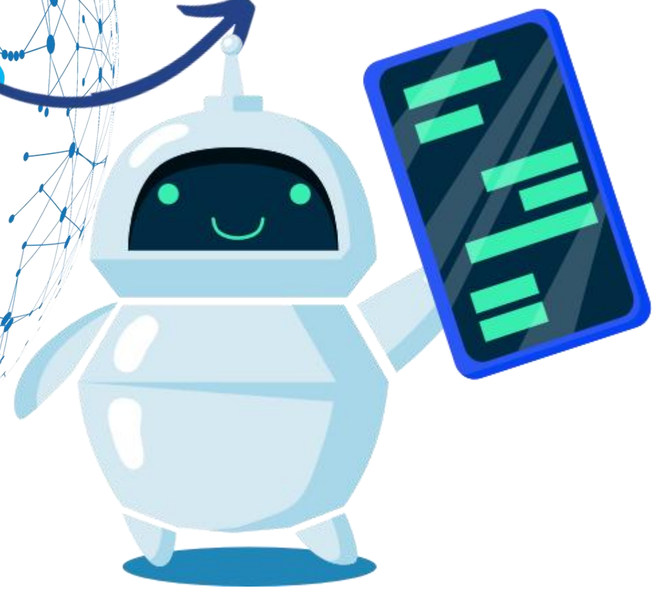


Custom Boards

Developing circuit boards based on PCB (Printed Circuit Board) technology solutions



Customer Solutions



THANK YOU!

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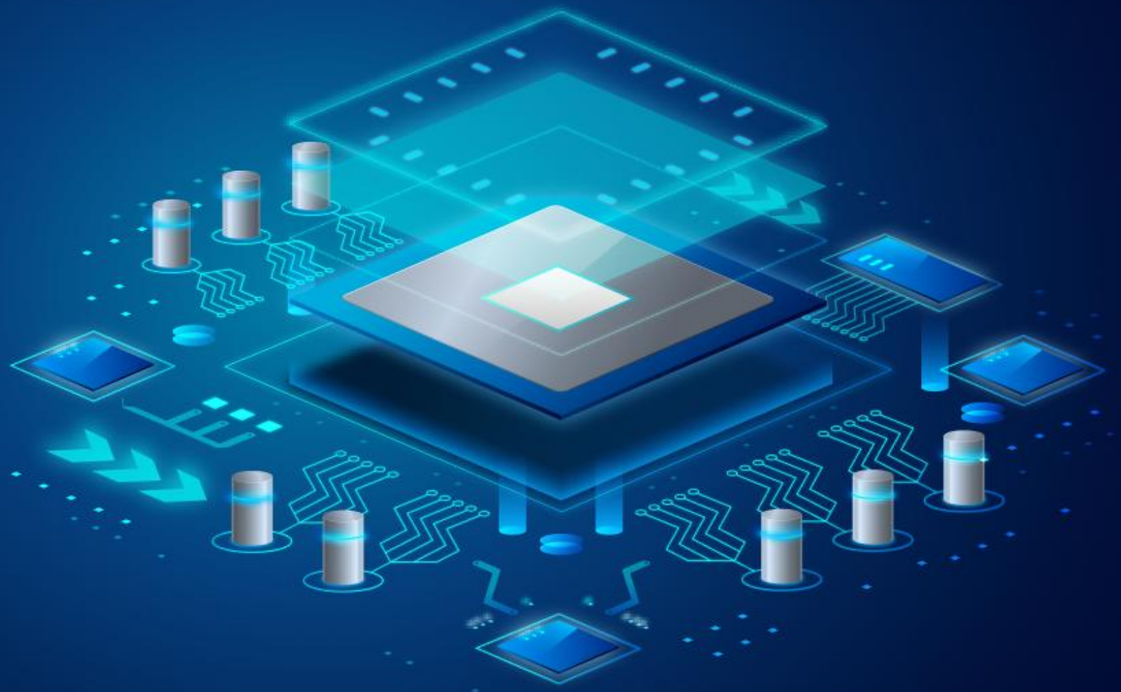

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