



/ Success story

In-Store Object Recognition with ML, EDGE Computing & Computer Vision

Our multinational retail client sought to implement innovative store technology for customer convenience. VirtusLab closely collaborated with the client's data scientists and operational leaders, providing support in three areas: creating a necessary infrastructure, real-time analysis of video feeds, and maintaining software for accessing data from in-store cameras. VirtusLab's know-how and experience improved customer experience within the stores.



The challenge

Our client faced significant challenges needing an in-store computer vision system that could operate in an EDGE computing environment and integrate smoothly with its existing information systems. The retailer required a highly specialised and technically advanced solution to achieve this.

The system needed to provide real-time inference on numerous video feeds with varying quality levels and strikingly different lighting conditions. This baseline scenario created a highly complex and challenging environment for the system. The system also needed to operate in a low-latency infrastructure and deal effectively with unexpected interruptions, a far cry from the idealised data centre or cloud environment.

Additionally, the client needed to ensure a smooth rollout and adoption of the solution throughout its organisation. This endeavour required regular engagement with numerous departments, which posed a significant logistical and communication challenge. That was the moment when our client reached out to VirtusLab for collaboration.



The solution

VirtusLab successfully developed and implemented an in-store computer vision system from design to proof of concept and through to a working solution for use within hundreds of stores. It operated in an EDGE environment and seamlessly integrated with the client's existing information systems. To facilitate frequent updates, our computer vision team equipped the system with workflow and infrastructure maintenance capabilities such as a DevOps environment with custom CI/CD pipelines.

VirtusLab designed a solution to function effectively in non-optimal operational environments, ensuring consistent performance. Additionally, the team provided a dashboard to project managers and stakeholders, offering visual data on application performance and an alerting mechanism to notify the team of any issues.



The results

The retailer achieved several benefits with the computer vision solution:

- Captured video streams from multiple cameras and performed live inference on them.
- Messaging allowed seamless integration between the system and the client's other information systems.
- Support of data scientists to quickly deploy models for increased security and fraud recognition, visual product recognition, improved customer experience, and greater workforce efficiency.
- Monitored checkout queues and parking queues.
- Ensured GDPR compliance for data security and retention.



The tech stack

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Database

- Nvidia DeepStream

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CI/CD

- Python
- C

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Infrastructure

- Ansible for DevOps



About VirtusLab

At VirtusLab, we aim to lead in software technology, working consistently to enhance efficiency. Our profound commitment to research and development and a dedicated focus on emerging trends and inspirations fuels an innovative culture. This ethos precisely guides advancing our cutting-edge solutions, inviting collaboration to expand the boundaries of software technology collectively. We welcome you to be a part of this transformative journey.

Let's connect

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