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Infopulse Solutions

Public Safety Control: AI-Powered Mask Wearing Detection Solution_

Ensuring Infopulse Premises Safety with Computer Vision

Industry: Healthcare / Public Sector / Enterprise

Client Background

To ensure strict adherence to safety measures meant to control/prevent the COVID-19 virus spread, Infopulse Cognitive Competence Center developed a simple and effective computer vision solution for our premises, which would help monitor mask usage among office visitors.

Status: Implemented for Infopulse premises.

Also available as a solution offering.

Business Challenge

After the announcement of the nation-wide lockdown in March 2020, Infopulse promptly transitioned to remote work. However, some of the projects require our experts to be occasionally present on-premises, leading to potential health risks. Since Infopulse pays close attention to the health and wellbeing of our colleagues as well as to the public health, we obligated every office visitor to use personal protective equipment and maintain distancing.

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Solution

How It Works

The Mask Wearing Detection solution relies on the real-life streaming protocol of the surveillance cameras to transfer and process data, which does not require high computing power or voluminous data storage. An eye-level camera scans every approaching person, detecting their face and the presence of a mask with the minimum recommended effective frequency of two frames per second. The scanning frequency is tuned to correspond to the environmental conditions and enhance the system performance and can be further adjusted if required.

In the case of the absent cover, the snapshot of a bare-faced person is sent to the pre-selected communication channels.

Solution

Technology Behind the Solution

The Mask Wearing Detection solution was envisioned as an innovative yet accessible response to the pandemic restrictions. To achieve the desired ease of use, affordability, and effectiveness of the project, Infopulse specialists decided to utilize open-source software: **OpenCV** — an open-source computer vision library, and **PyTorch** — an open-source machine learning library, paired with cloud technologies to ensure failure-proof performance.

Face Recognition Feature

To enhance the solution, the Infopulse team embedded facial recognition feature using **Microsoft Face API.**

Upon connecting **Microsoft Cognitive Service** to the database of regular visitors (with personal data including photos, names, and emails), the solution could identify a company specialist without a face cover once they entered the premises.

Notifications

After detecting and recognizing an office visitor without a mask, the solution automatically takes a snapshot of a violator. The image is then delivered to an incident team via Microsoft Teams. A dedicated group in **Microsoft Teams** includes a restricted number of users bound to respond to the recorded incident. Such an approach allows for better security and complies with the company's data protection policy. The Teams channel will also serve

as a log file storage for ease of access and improved data management. Other communication channels can also be connected to the solution instead of Teams.

Cloud Deployment

While the Mask Wearing Detection solution allows for different deployment models, Infopulse decided to utilize the capabilities of the Microsoft Azure cloud platform. By opting for the cloud, we could deploy the solution in a matter of days, received a capability to operate it remotely, and didn't require additional machines or equipment to set up the system. In case of need, Azure allows for seamless scaling to cope with the changing demand.
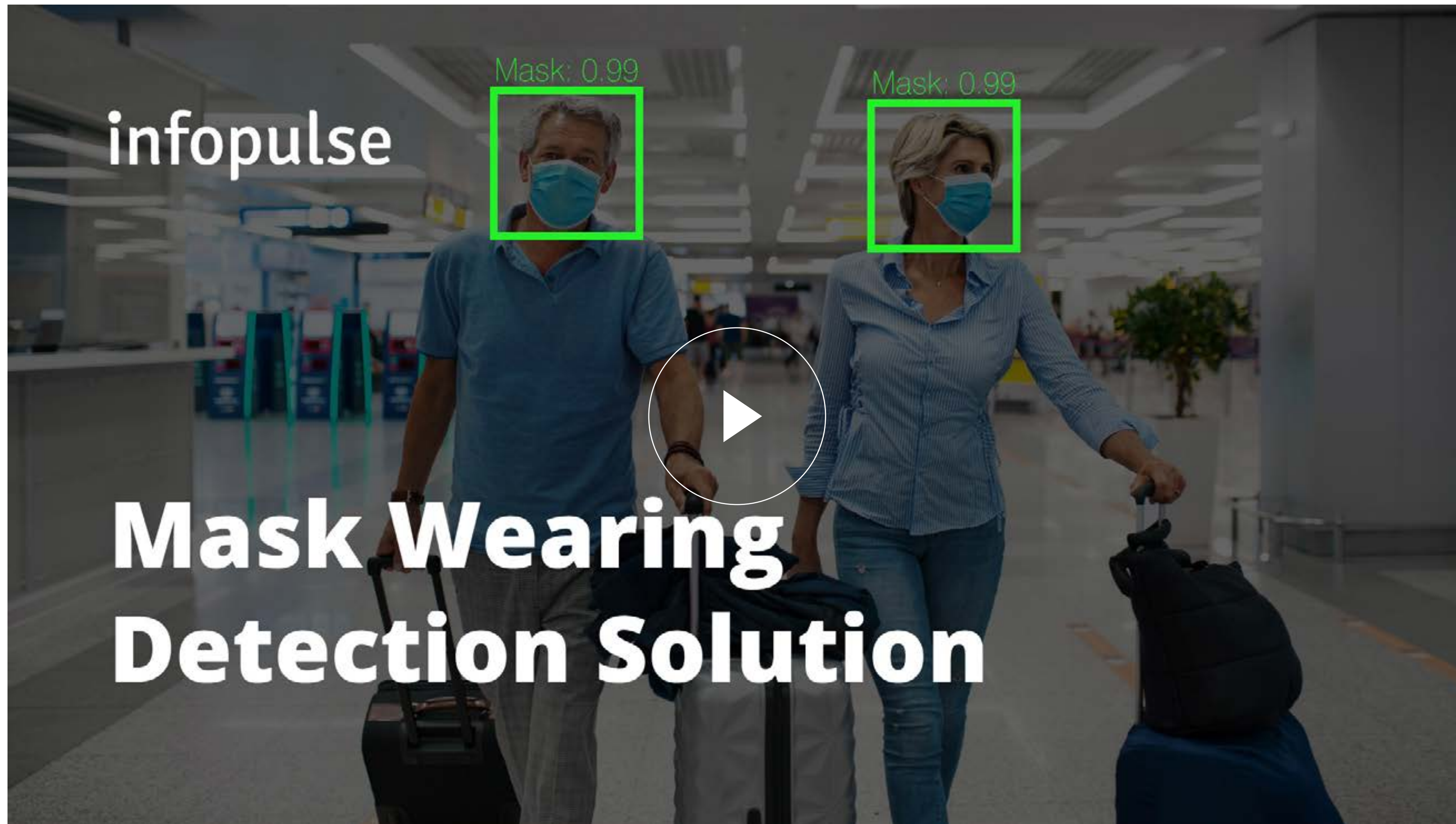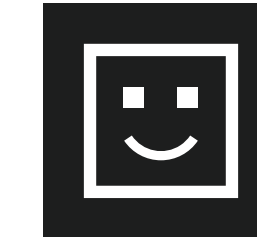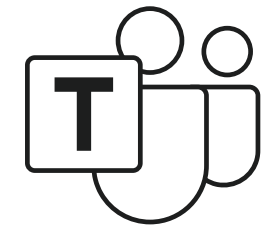
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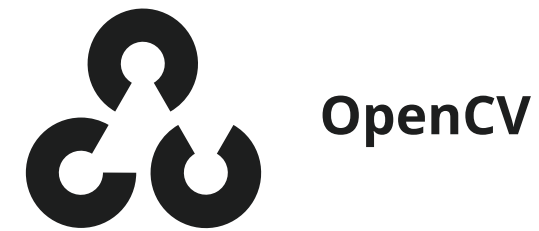
OpenCV

PyTorch

Microsoft Azure

Microsoft Face API

Microsoft Teams

Business Value

The Mask Wearing Detection became another piece in a holistic approach to safety and security adopted by Infopulse. The implemented solution allowed for:

○ Enhanced office safety with 24/7 automated monitoring and face recognition.

○ Up to 98% accuracy for mask detection and up to 95% for face recognition.

○ The cost-efficient system was put into effect with minimum investments in equipment, data processing and storage services.

○ Fast and straightforward deployment process helped reinforce the safety of the premises in a matter of days.

○ Data protection with customized notifications and restricted user access management.

○ Capability to scale the solution utilizing the Azure cloud platform.

With the Mask Wearing Detection solution, Infopulse intends to eliminate any safety risks for office workers and ensure strict adherence to safety guidelines to prevent COVID-19.

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About Infopulse

Infopulse, part of the leading Nordic digital services company Tietoevry, is an international vendor of services in the areas of Software R&D, Application Management, Cloud & IT Operations, and Cybersecurity to SMEs and Fortune 100 companies across the globe. Founded in 1991, the company has a team of over 2,300 professionals and is represented in 7 countries across Europe and the Americas.

Infopulse is trusted by many established brands, such as BICS, Bosch, British American Tobacco, Credit Agricole, Delta Wilmar, ING Bank, Microsoft, Offshore Norge, OLX Group, OTP Bank, SAP, UkrSibbank BNP Paribas Group, Vodafone, Zeppelin Group, and others.

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