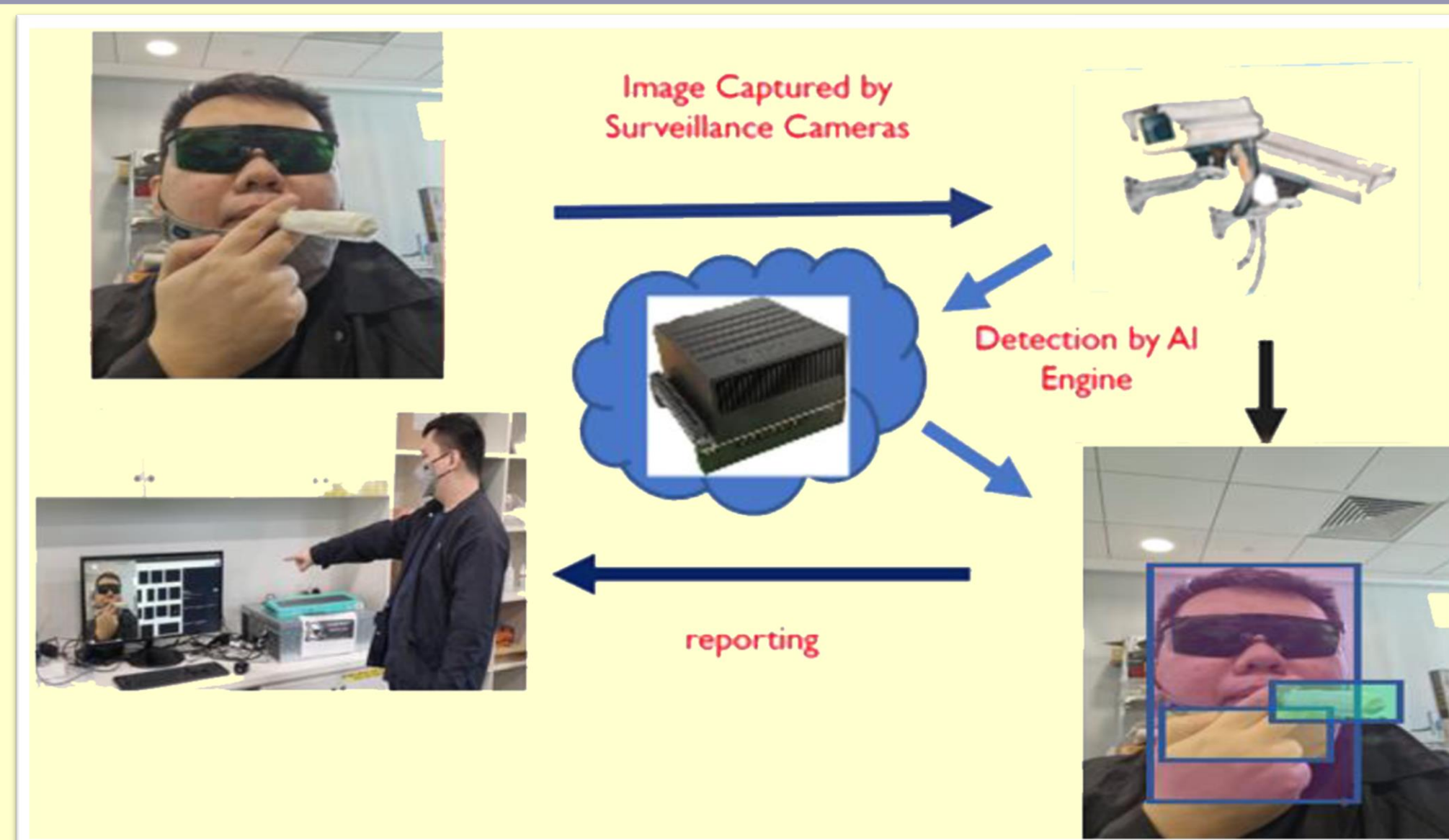# ICIEA22-000227
YOLO Based Thermal Screening Using Artificial Intelligence (AI) for Instinctive Human Facial Detection

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Developed System for facial detection & Thermal Screening

A simple system integrated for daily surveillance using AI

The paper is motivated to provide an application of YOLOv5 for Thermal Screening in COVID-19 checkpoints to reduce the exposure of the coronavirus to crowd in public areas. The application of the model can be extended to a wider scope with a combination of extra features to the hardware and software to make it pertinent to other crowded places such as schools, factories and cinemas. While the proposed system focuses on a specific problem, it could be easily extended to be applied on many other scenarios as follows:

- Safety Measure at Workplace
The system could be used to make sure that in high-risk areas, workers are wearing their PPE (Personal Protective Equipment) properly and alert the workers and their supervisors accordingly if any abnormal behavior is detected.

- Improvement in Environment Friendliness
Due to the devastating effects of second-hand smoking, the law on smoking could be enforced using the system, where it could be used to detect and make sure that smokers smoke in confined areas with least crowd in the registered area.

Summary
A Versatile model YOLOv5 is utilised to implement automatic thermal screening application. The utilisation of this new application of the model has the potential to reduce the manhour work for the manual checking of human face temperatures and at the same time adds extra security to make sure basic rules are being followed. With the approach of combining Artificial Intelligence for Object detection, the application could be potentially be extended to be used to deploy Improved safety measure for workplace and increase the compliance of smoking in secluded places as the training for such cases has readily done with the current trained mode.
As the first step, this implementation has won Lee Hsien Long Competition, Singapore.