



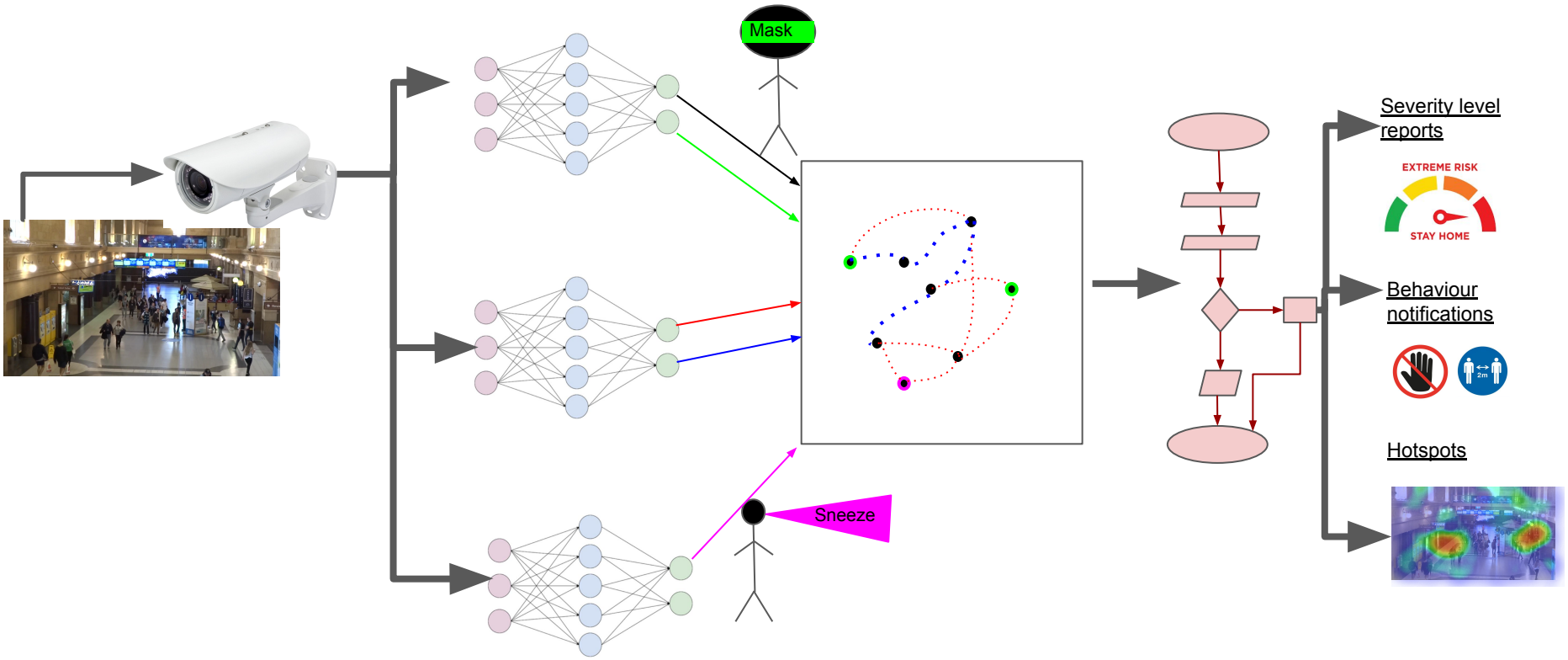
Computer Vision System to Mitigate COVID-19 Spread

University of Peradeniya : COVID Research Group

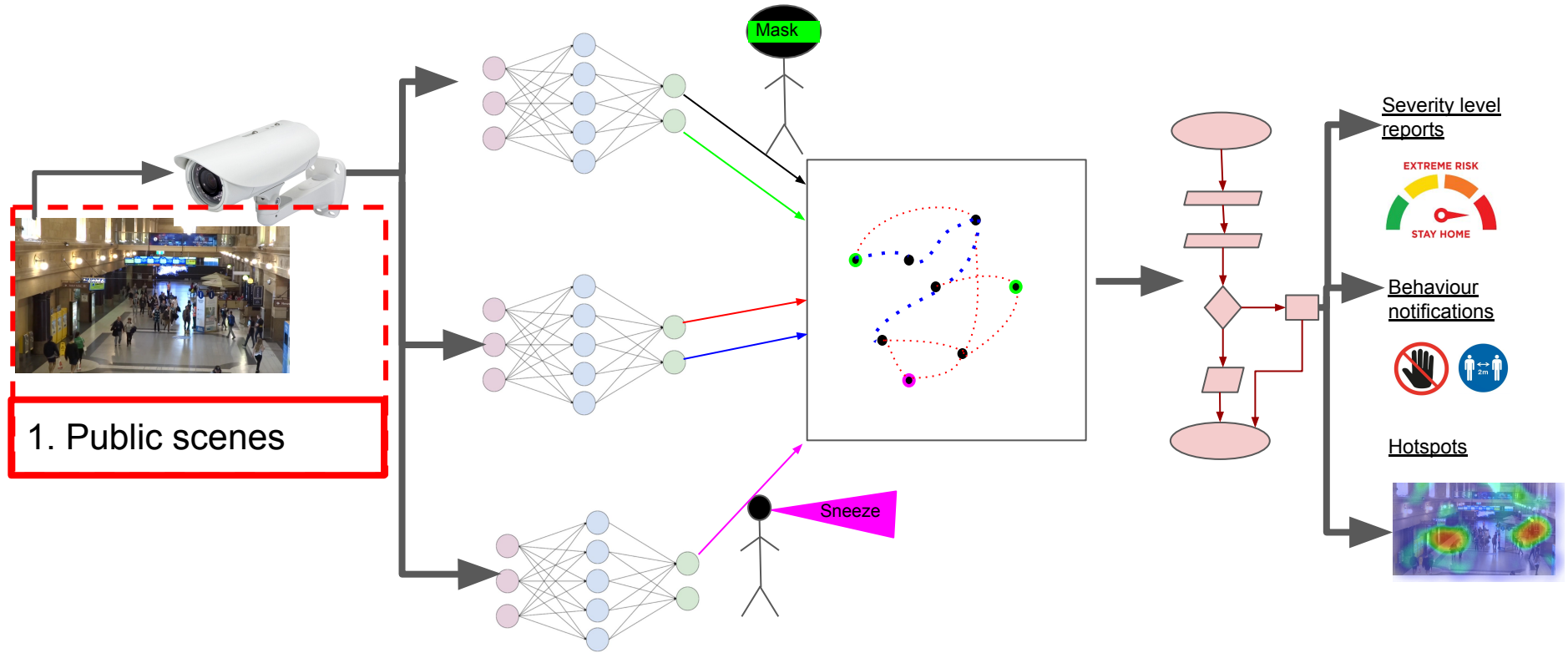
<https://covid.eng.pdn.ac.lk>

2021-01-14

System Diagram



System : 1

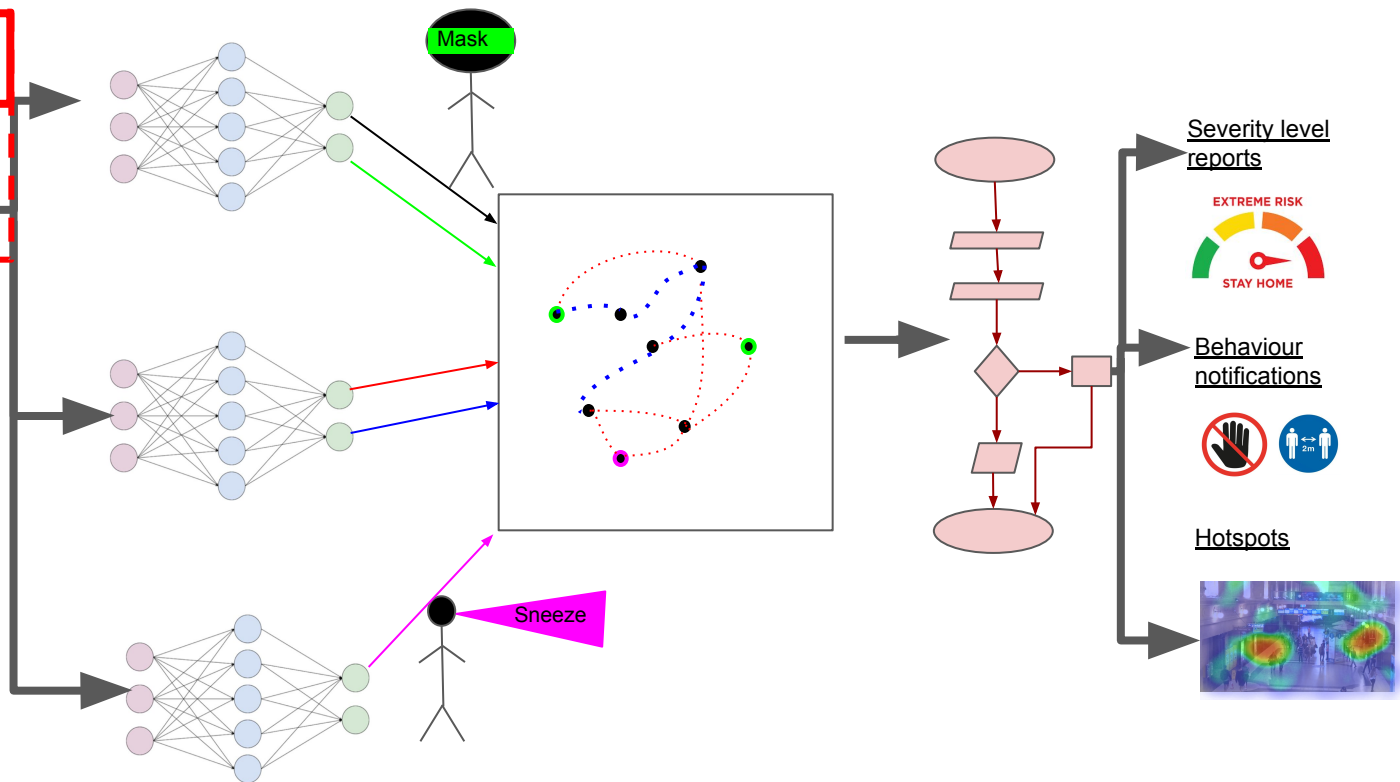


System : 2

2. CCTV surveillance



1. Public scenes

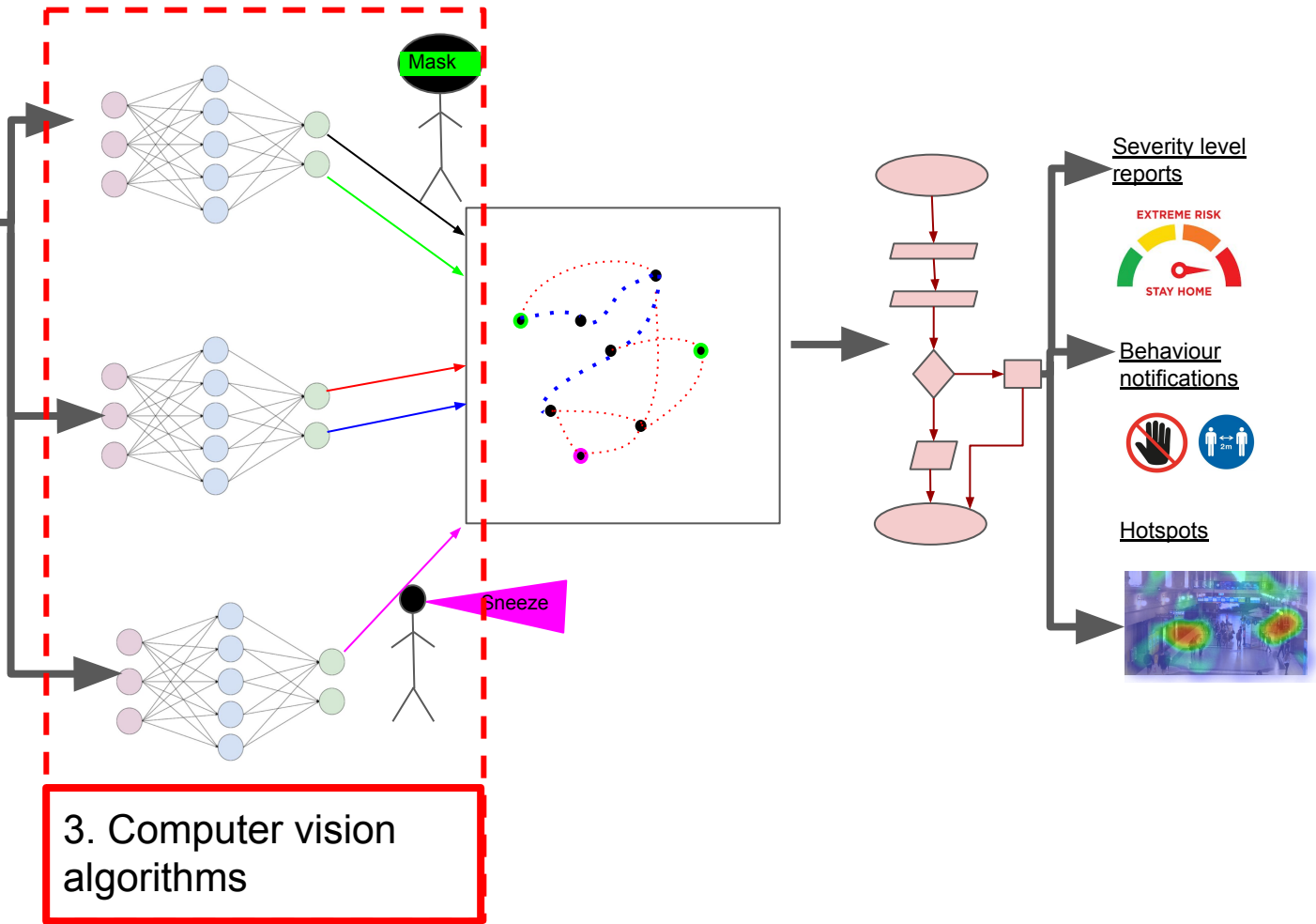


System : 3

2. CCTV surveillance



1. Public scenes



3. Computer vision algorithms

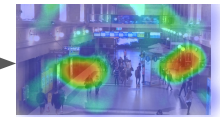
Severity level reports



Behaviour notifications



Hotspots

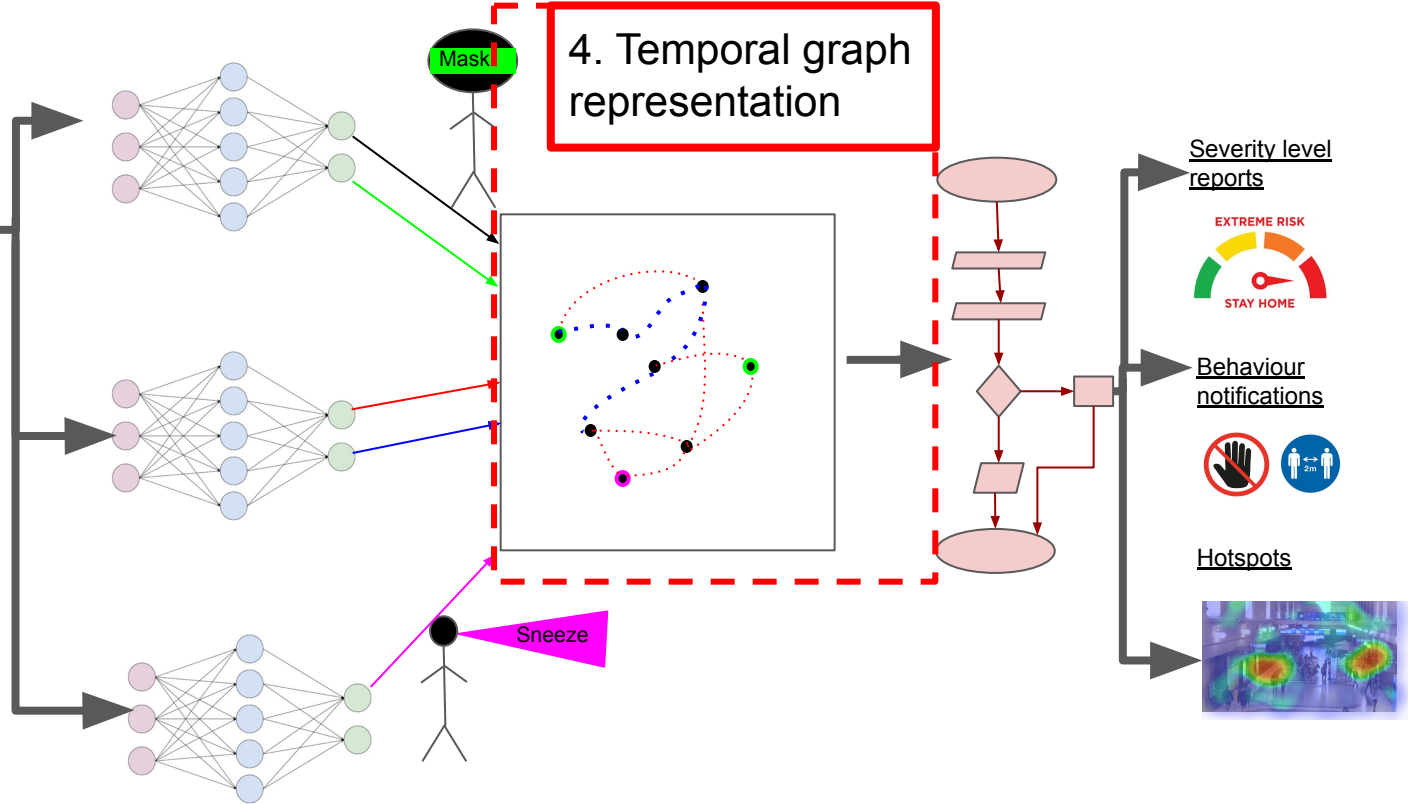


System : 4

2. CCTV surveillance



1. Public scenes

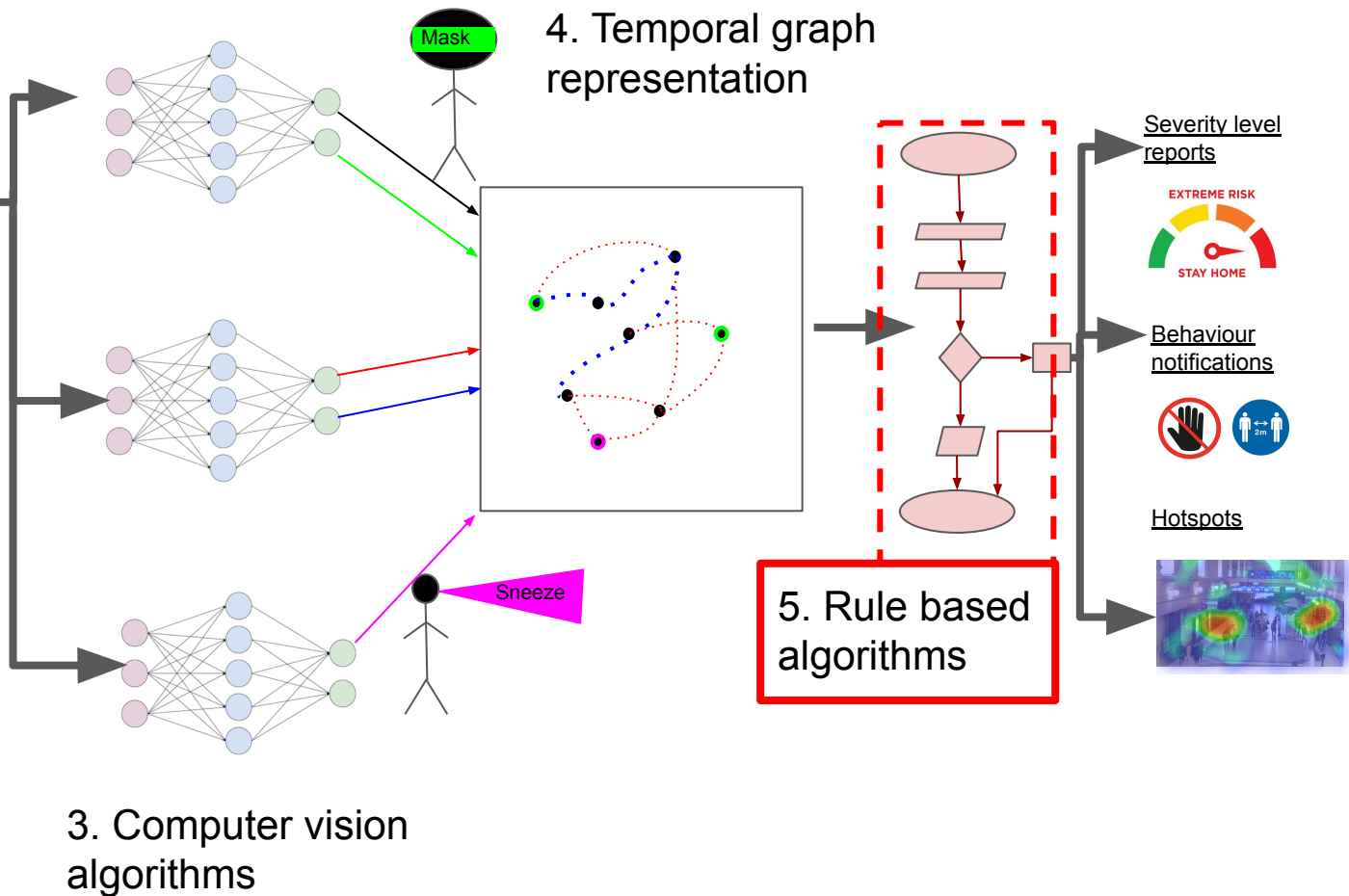


System : 5

2. CCTV surveillance



1. Public scenes

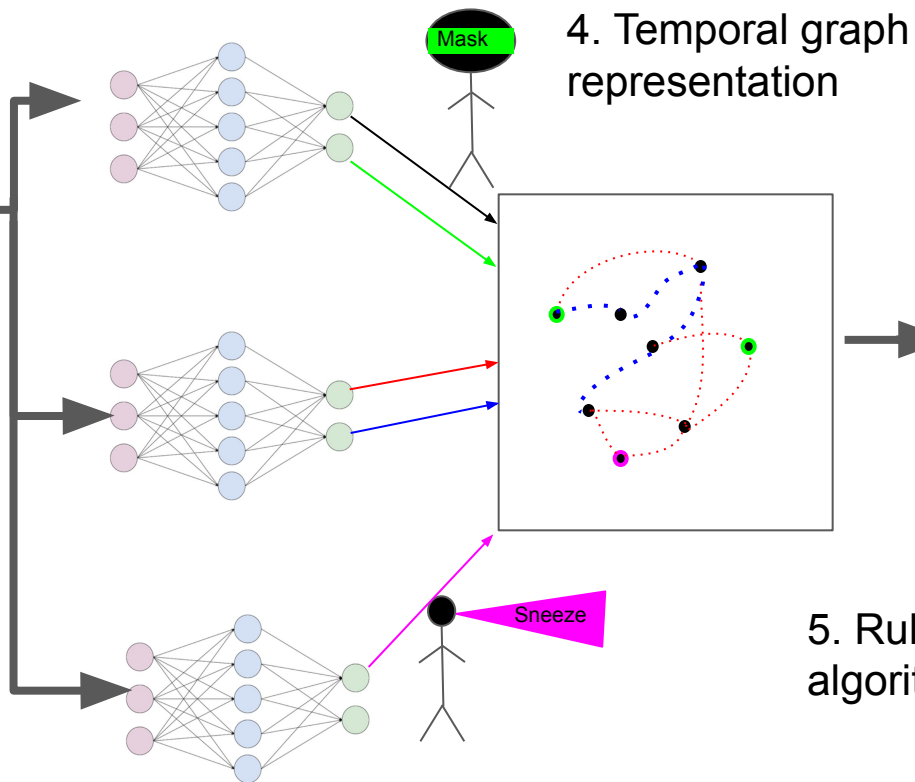


System : 6

2. CCTV surveillance



1. Public scenes



6. Outputs

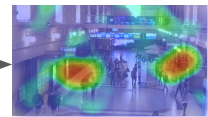
Severity level reports



Behaviour notifications



Hotspots



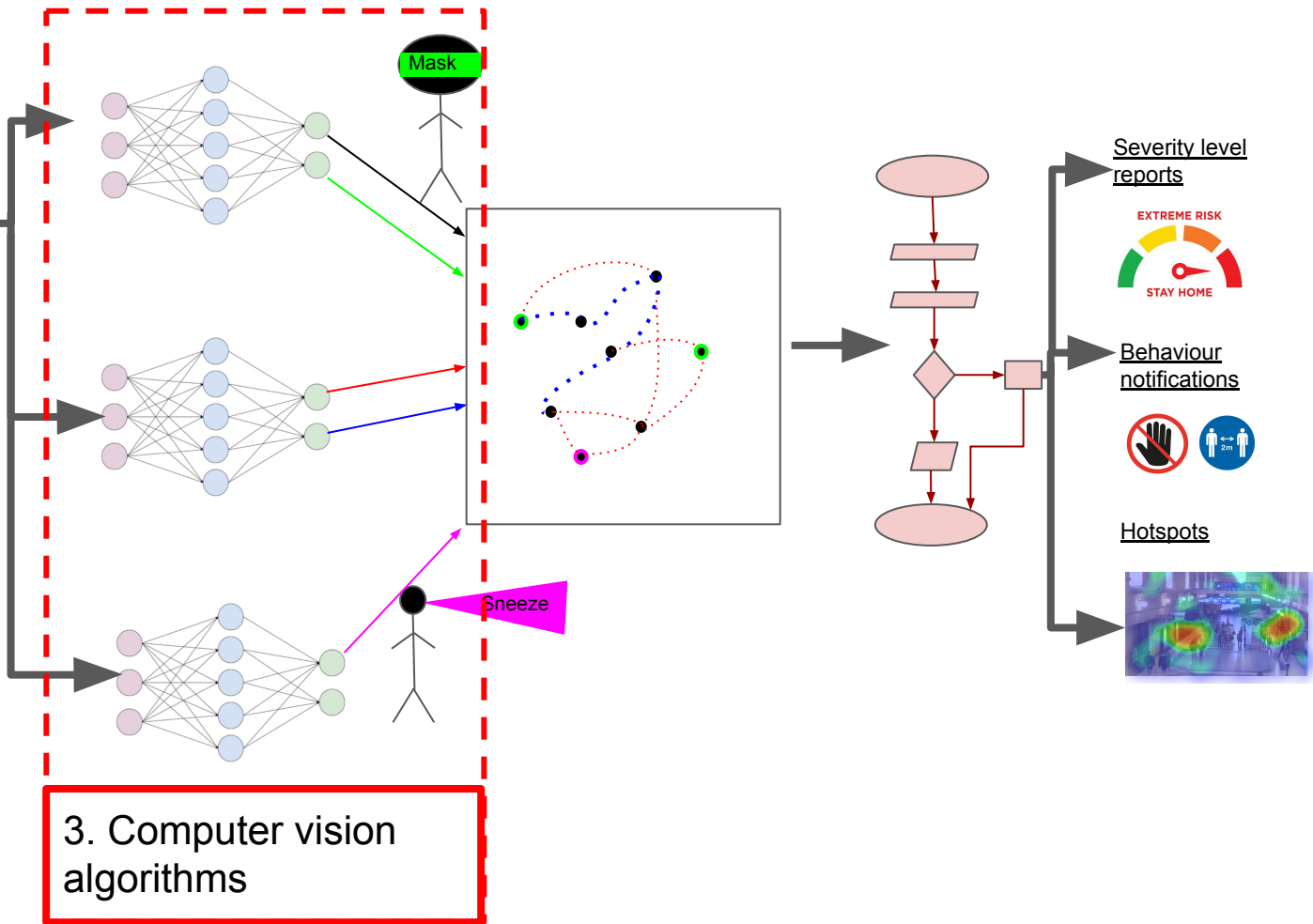
Computer vision algorithms
and
Temporal graph representation

System : 3

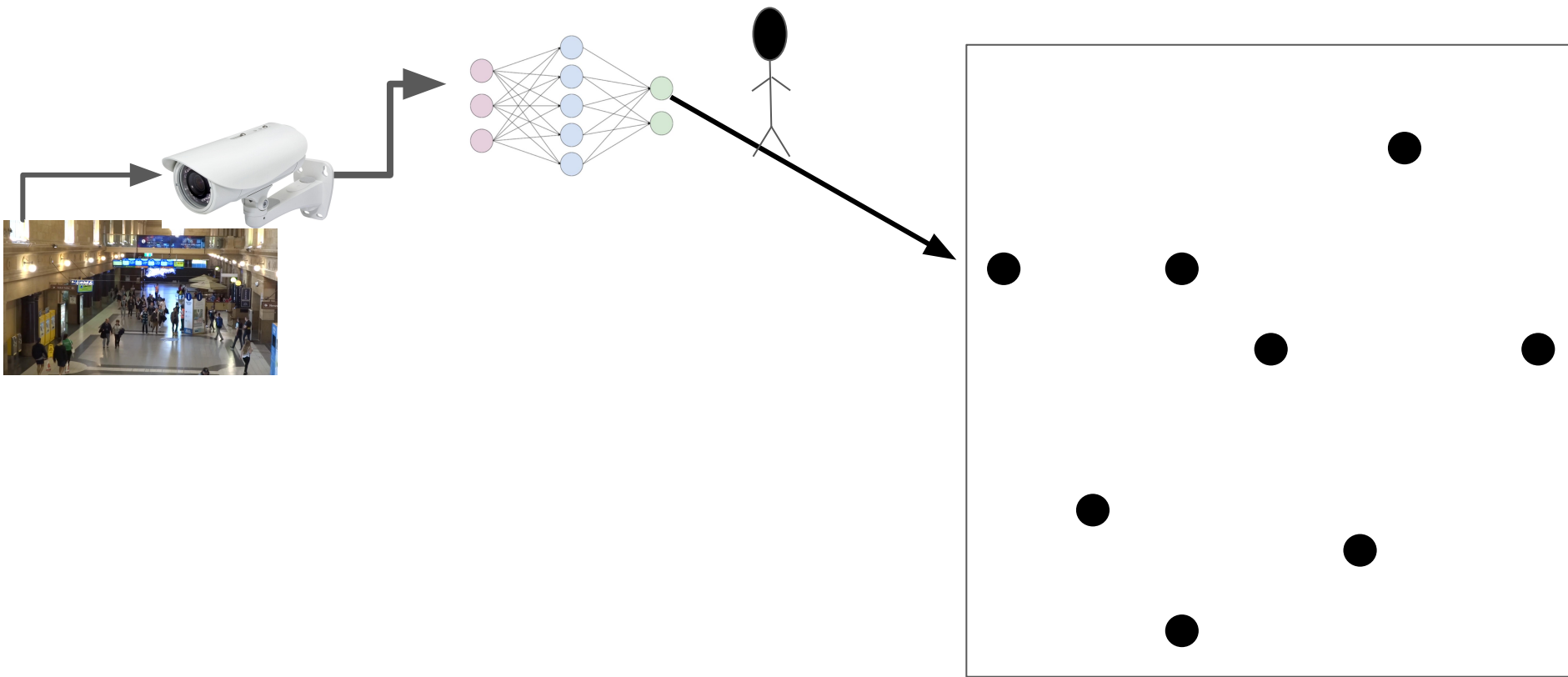
2. CCTV surveillance



1. Public scenes

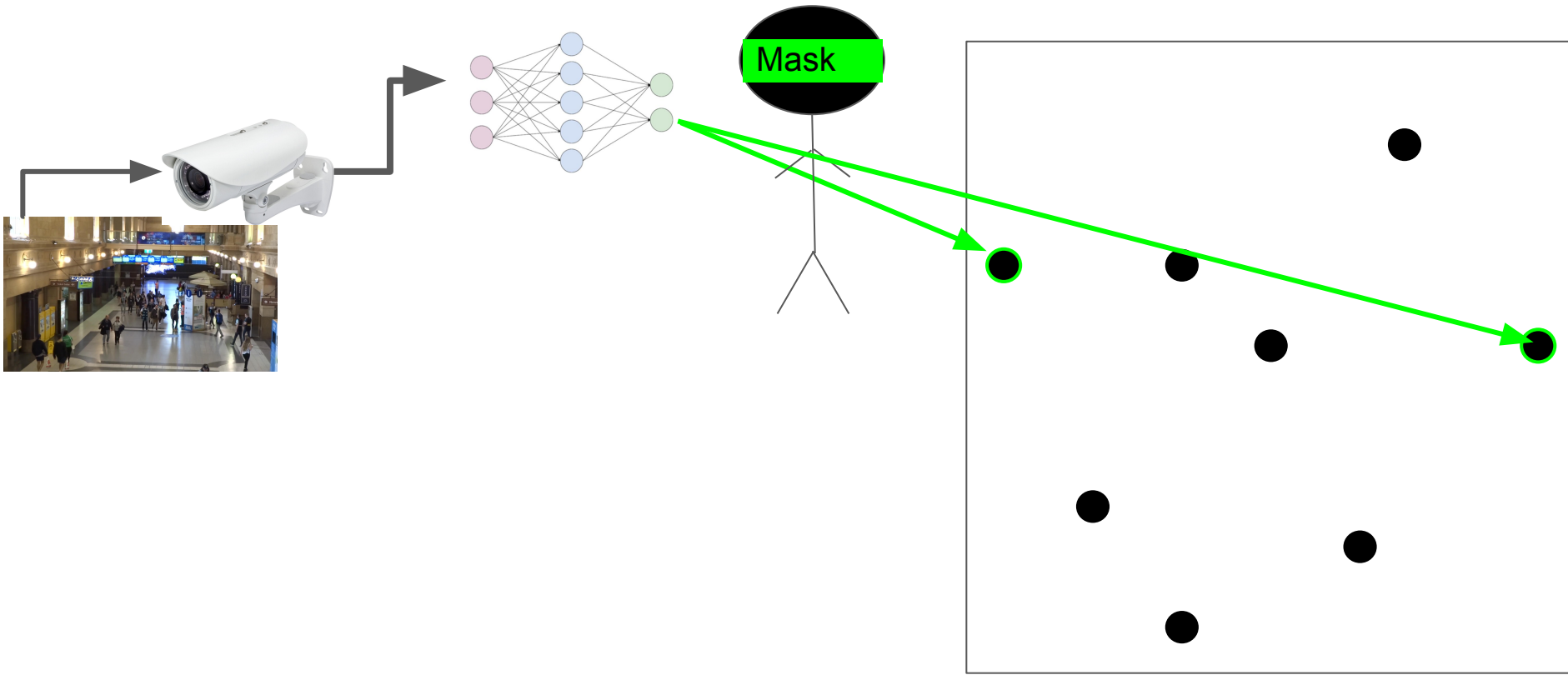


Computer vision algorithms (NN / Signal processing)



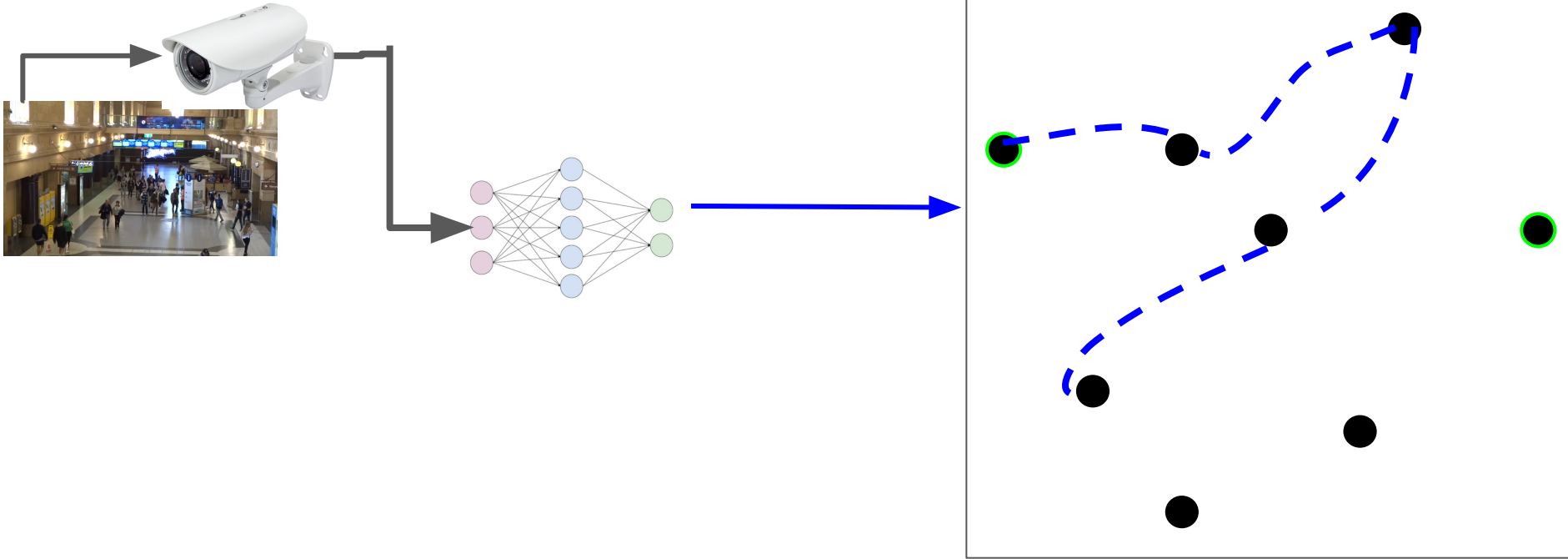
Identifying people and representing them by graph nodes.

Computer vision algorithms (NN / Signal processing)



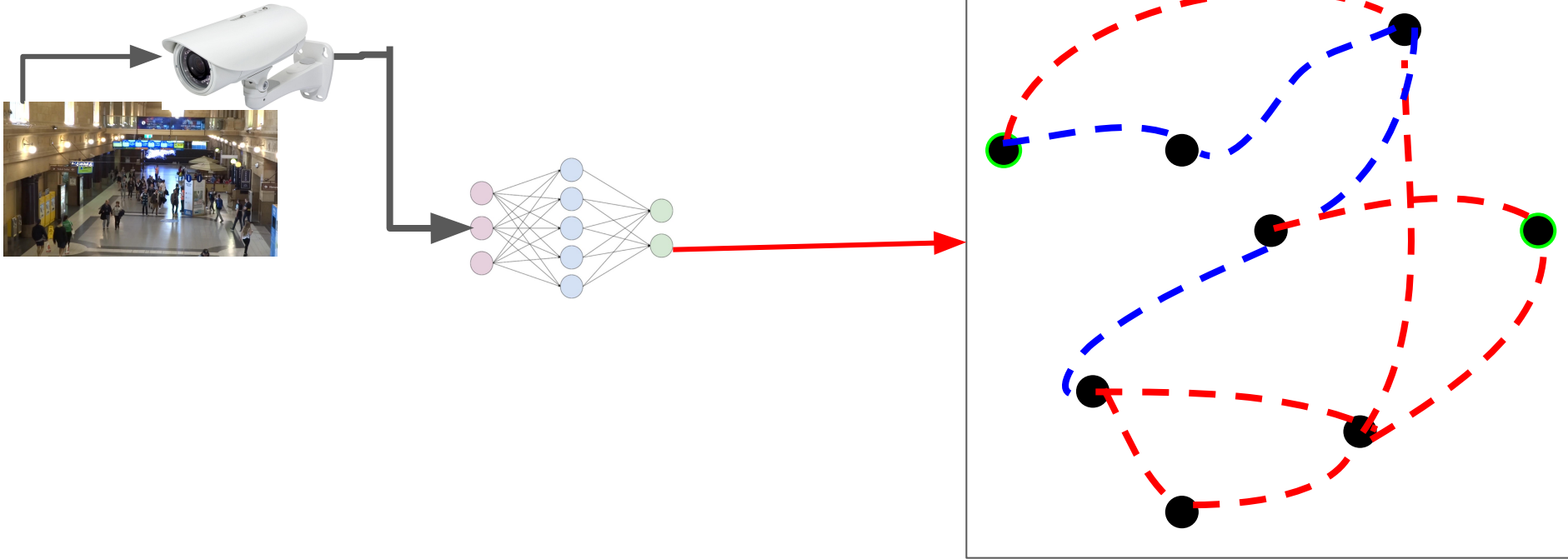
Identifying people with masks and adding that property to graph nodes

Computer vision algorithms (NN / Signal processing)



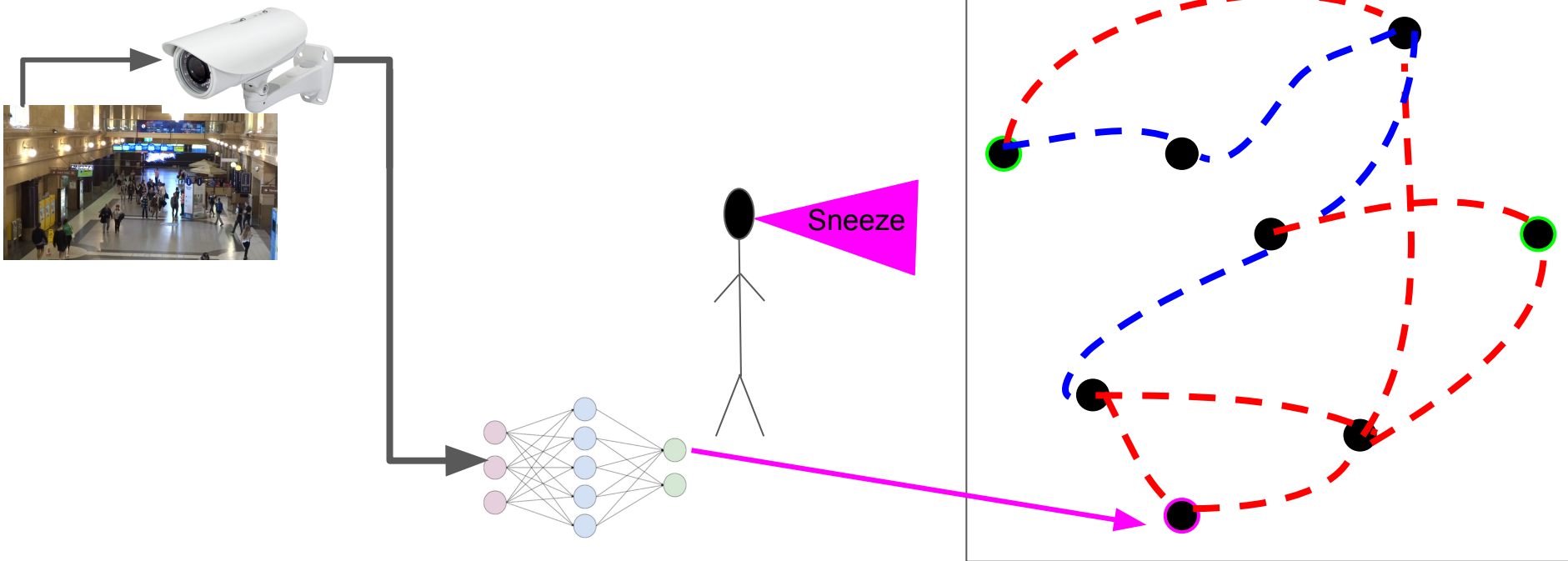
People's interactions such as talking is represented by graph edges

Computer vision algorithms (NN / Signal processing)



People's group behaviour is encoded in graph edges

Computer vision algorithms (NN / Signal processing)



People's activities are recorded as node properties

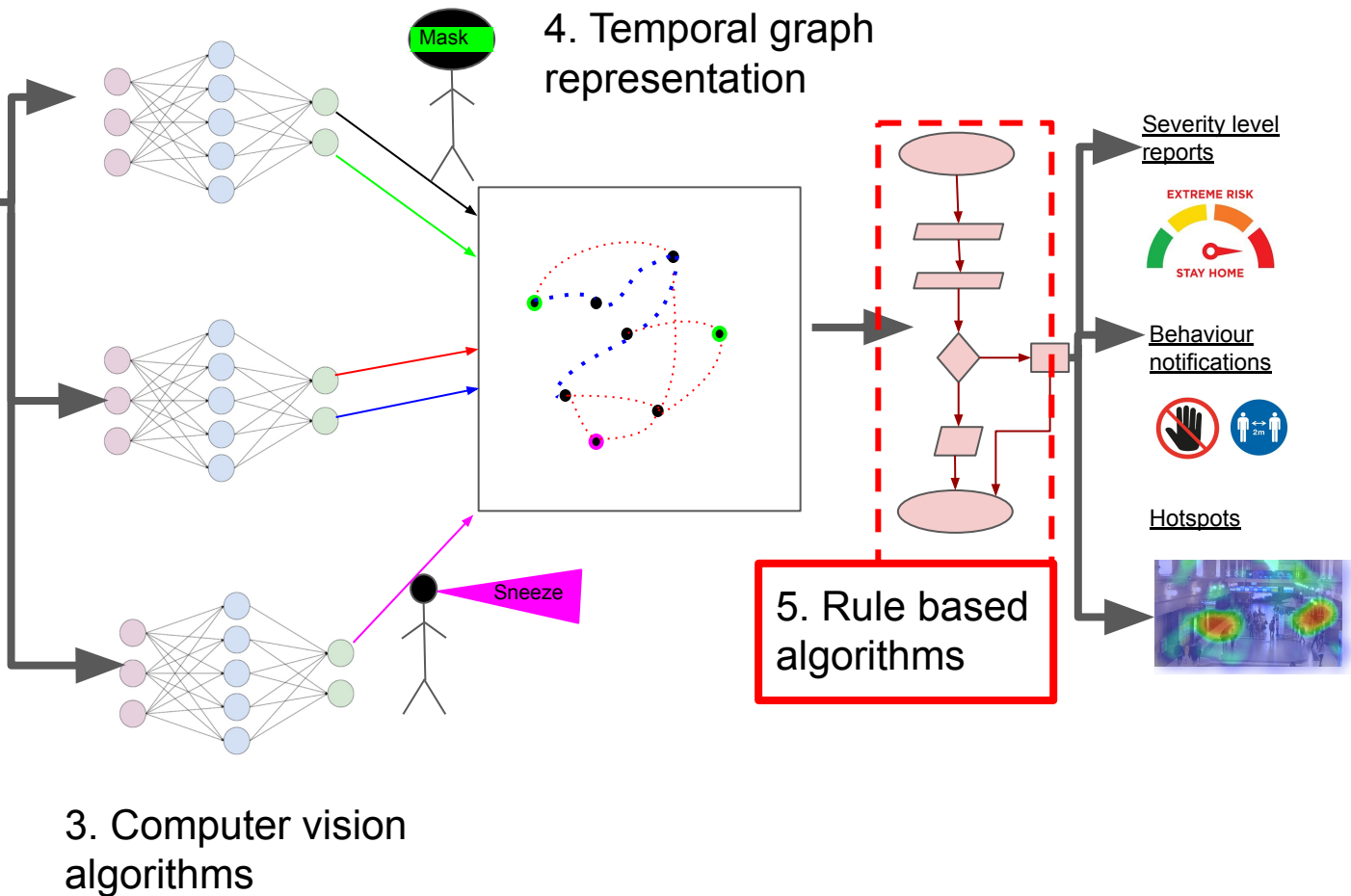
Interpreting the temporal graph for COVID-19 insights

System : 5

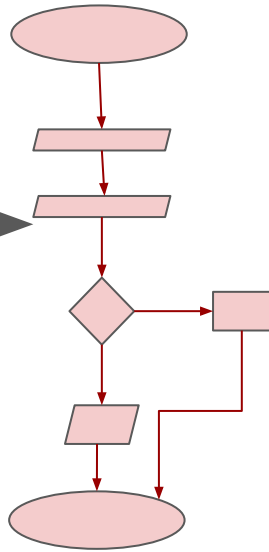
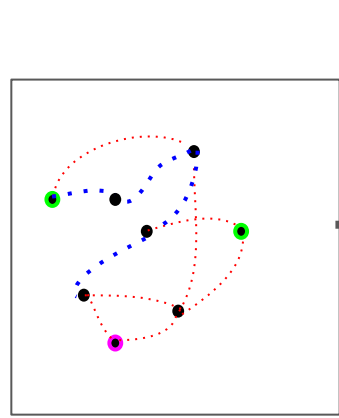
2. CCTV surveillance



1. Public scenes



System : 5 Generating insights from the graph representation



Severity level reports



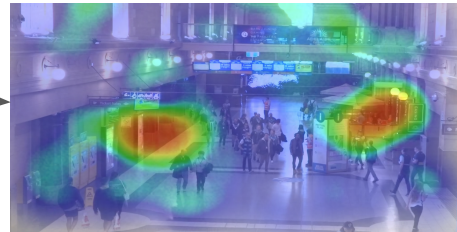
- Is the venue safe enough to operate?
- Should we reduce people coming in?

Behaviour notifications



- Individual level notifications when people violate safety instructions.

Hotspots



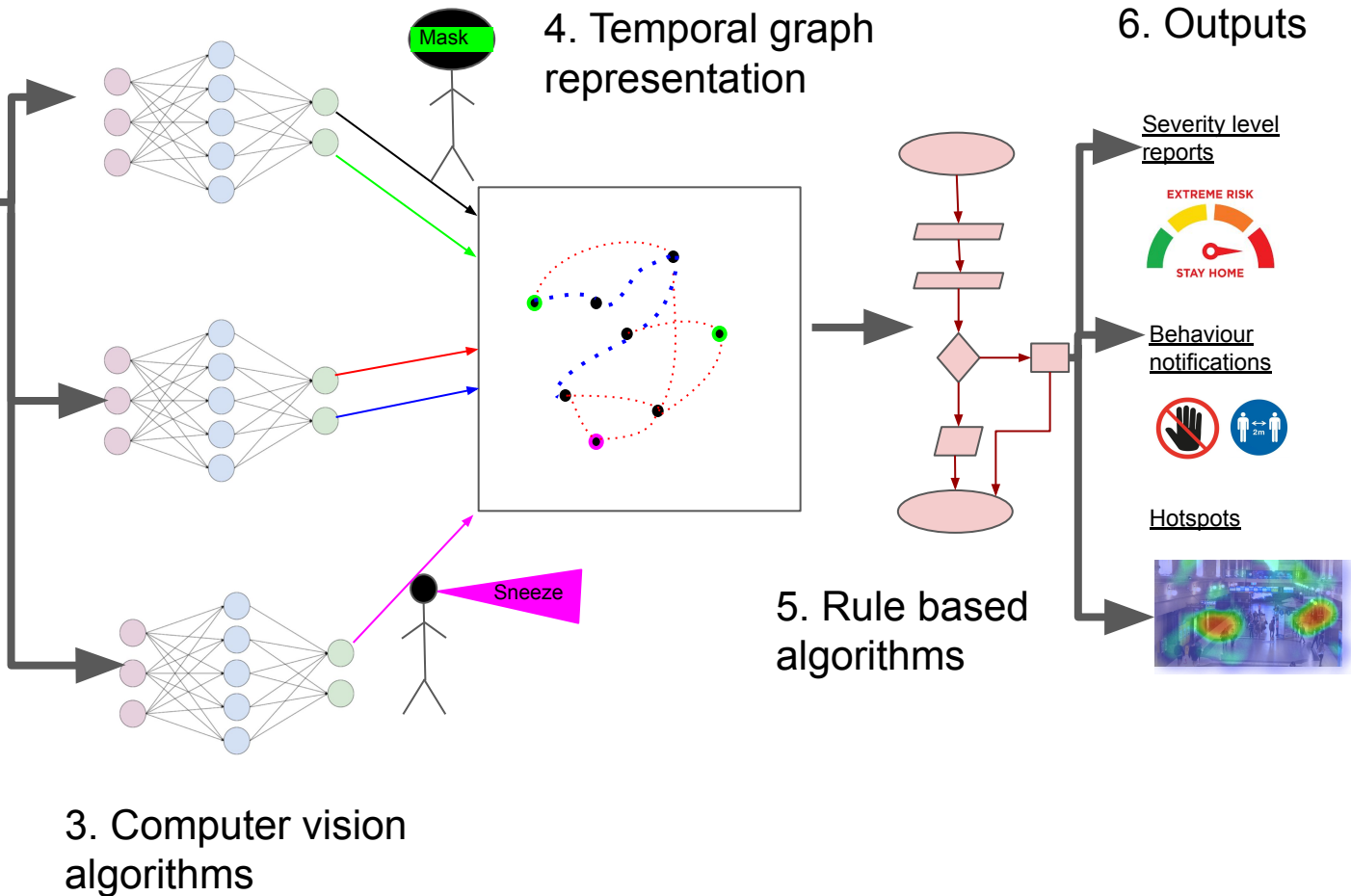
- Which areas of the venue are COVID-19 hotspots?

Summary

2. CCTV surveillance



1. Public scenes



Thanks!

All questions : <https://covid.eng.pdn.ac.lk/contact/>