



University of
BRISTOL



Smart technologies for public security

Smart City is a place where people should feel safe

Intelligent security system and surveillance

Smart City Safety

Intelligent Technology for Improving Citizen Safety in Smart Cities

Given the critical importance of security in cities, innovative advances in wireless communication systems are increasingly improving the safety of city inhabitants. New services such as audio and video monitoring of public areas and automated municipality rule infraction detection allow a quicker response to threats. Based on this context, the Smart Internet Lab at the University of Bristol has been deploying a Smart city safety use case as a proof of concept. This is designed to identify suspicious activities in the city. A bike rider helmet, a Raspberry Pi and a 360-degree camera with audio are the basic components required. These items are all joined to the internet via a WiFi Interface.

How do we demonstrate this?

The bike rider carries his helmet, which has a Raspberry Pi attached and 360-degree camera. Here the video and audio are capturing and sending data via WiFi to the Mobile Edge Computing (MEC) or Cloud for processing. Once the audio and video has been processed and any suspicious activity has been detected, a notification is generated and sent to the different security agents.

Many of today's municipalities are becoming test beds for Smart city experimentation where technological capabilities are addressing daily needs. This services can include parking, water treatment and city security. The University of Bristol is working to provide the 5GinFIRE platform, a Smart city safety use case, through utilising open-source frameworks (i.e. OpenStack, OpenDayLight, etc).

We are using two key technologies for the video processing:

1. Network Function Virtualisation: a Virtual Network Function (VNF) video transcoder. This is designed, specified and deployed at Bristol's Network Function Virtualisation Infrastructure (NFVI) via OSM MANO orchestrator.
2. Machine Learning: a face detection programme that has been trained and deployed at the NFVI.

Smart Internet Lab

The Smart Internet Lab at the University of Bristol is a hub for internet research, which aims to address grand societal and industrial challenges. We perform cutting edge research on optical and wireless communications, offering a unique holistic approach to hardware and software co-design, solving critical problems in the global internet evolution.

5G Research

We are world leaders in fibre, wireless, and 5G convergence research. We have created a unique 5G Trial Test-Bed for a Smart City, Campus, Region and Telecom Industry.



5G for **improving** people's **safety**

Immersive and
360-degree **video**
monitoring



Department for
Digital, Culture
Media & Sport



European
Commission

Horizon 2020
European Union Funding
for Research & Innovation

5GUK Testbeds and Trials
Programme



5GINFIRE