SURF@Education™

Insights on Crowd Density with WiFi

Crowd Detection (WiFi)

Introduction

In most institutions of higher learning with a vibrant campus experience, one would often see people interacting in common areas, or people getting from one point to another in between classes. What happens next when walkways become choke points, or occupancy within common areas or buildings exceed the maximum occupancy load? Indeed, it is inevitable that different areas or buildings would observe varying levels of crowd density, at times warranting a need for effective crowd management control or traffic diversion, be it to facilitate movement or to ensure the safety of the campus population.

Yet, with campuses increasingly wired to the Internet these days to encourage self-learning and foster greater connectivity and interaction online, the existing WiFi infrastructure could be leveraged as well to measure and monitor on the crowd density of key areas at all times.

With NCS' Crowd Detection (WiFi) module, insights on crowd density could be harnessed to measure and monitor crowd density, with heat maps visualised clearly on the interactive floor plan of IntelliSURF™ to aid building and estate managers in establishing a safer and more well-planned campus environment. Here, they may enforce timely crowd management control in times of large-scale events or scenarios or divert traffic in times of congestion when necessary. Hot spots determined could also aid in effective planning for future expansions or amenities such as washrooms, notice boards and ventilation systems, especially given the constraints of space.

Challenges

- Number of video surveillance cameras required to cover a large area is expensive and less cost-effective
- Performance of video surveillance cameras often compromised in poor lighting or weather conditions
- Sudden surges in crowd density might well pose a threat to general safety
- Timely crowd management to be enforced in times of large-scale events or scenarios, planned or otherwise
- Need for close monitoring of congregation around sensitive areas such as server rooms and laboratories
- Optimal building and amenities planning required given the constraint of space

Solution

- IntelliSURF™ and Crowd Detection (WiFi) Module

Key Product Components

Software

- IntelliSURF™
- Crowd Detection (WiFi) Module

Hardware

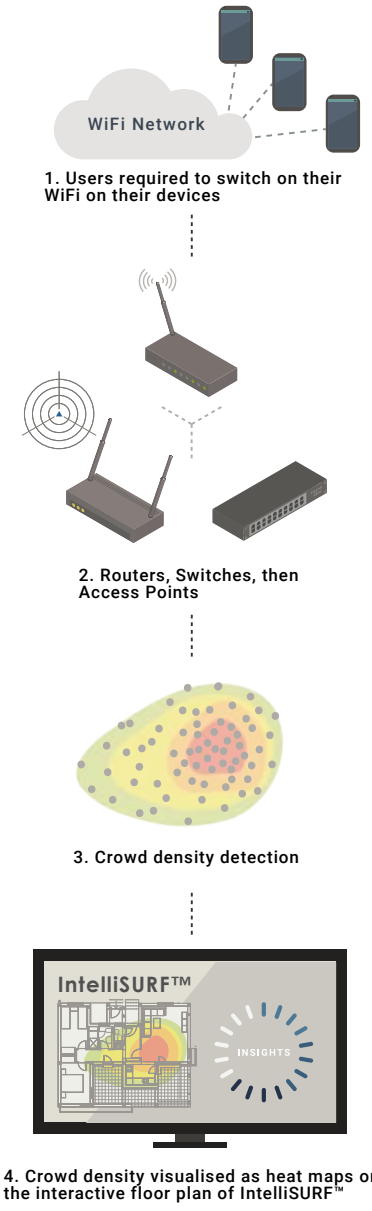
- Routers, Switches, and Access Points

Benefits

- Leveraging on existing WiFi infrastructure to save costs
- Compliance with building/area occupancy guidelines, so as to safeguard the safety of people within your building or campus
- Real-time alert notifications to trigger the need for effective crowd management or traffic diversion when required
- Insights-driven planning of future expansion or installations of new amenities

How It Works

Based on users' devices with their WiFi switched on, the crowd detection algorithm could determine the devices' locations by triangulating the relative signal strength detected by the access points in the wireless local area network. This method determines the devices' locations by probing signals emanating from the users' WiFi devices. With the information of the devices' location, the data could then be transferred via API to IntelliSURF™, and subsequently be mapped onto the interactive floor plan. Historical data could also be represented to show the crowd density over a period of time.



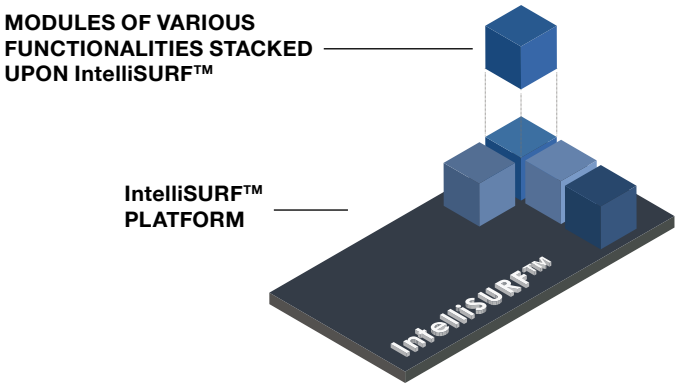
Features and Benefits

	FEATURES	BENEFITS
SAFETY AND BUILDING PLANNING	Visibility on the occupancy and crowd density of various areas in real-time.	Measure and monitor the crowd density, and when necessary, divert the traffic in times of congestion.
	Alert notification when the crowd density of an area is nearing or has exceeded a pre-defined building/area occupancy limit.	Ensure measures to safeguard the safety of the people within the building or campus. Also, achieve compliance with building/area occupancy guidelines.
	Access past historical information on crowd density within a defined period of time.	Better plan for future expansions or amenities such as washrooms, notice boards, ventilation systems, etc.

The Modular Feature of IntelliSURF™

More than the standard command-and-control platform, IntelliSURF™ integrates with a suite of modules which comprises best-of-breed technology, insights and domain knowledge.

Be it monitoring the crowd density of specified areas so as to divert traffic in times of congestion or tracking the speed of spread of a trending topic on social media, our modules represent a range of functionalities across the unique needs and contexts of various industries, so you could pick only the ones to complement what you truly need.



Interested to find out how IntelliSURF™ can bring you performance gains based on insights on crowd density through WiFi? Speak to us, or request a consultation today.

surfnation@ncs.com.sg