Surveillance Sensor Knowledge Fusion Scenario Description ”Stockholm Stadium”

Introduction

There are three Stockholm football clubs active in the higher leagues of Swedish football, *Djurgården*, *AIK*, and *Hammarby*. Derby matches between these three clubs are a frequent occurrence, and at these derbies some instances of violent and antisocial behaviour can be experienced, either at the pitch or in other parts of town where hooligans meet up to fight it out. In order to combat such behaviour a CEP system is employed based on camera surveillance and other sensor systems (see below), supporting the police in their tactical decision-making. Such a system is also hoped to help detect or prevent terrorist attacks at such sports events.

Location

The Stockholm Stadium sports arena is located in the northern parts of central Stockholm. It is the home pitch of the Djurgården football team. The closest metro station is Stadion, located 150 meters to the east of the stadium. This metro station is on the Red metro line, and neighbours the stations Östermalmstorg (Eastern Square) and Tekniska Högskolan (Royal Institute of Technology). Each station is approximately two minutes away from the next, and in the central areas of the city, each station is around 1 km (+- 200 m) from the next. Stockholm Stadium is also frequented by a number of bus lines, including the buses 4, 73, and 44. Bus stops are at approximately 500 m (+- 100m) intervals.

The stadium is located at the crossroads of the major thoroughfares of the city (Valhallavägen and Lidingövägen), which are generally open during matches, though right before and right after matches may be difficult to traverse due to the size of the crowds (see later map). These two thoroughfares border two sides of the stadium. Of the other two sides, one is a hill accessible only on foot, and one is a minor access road.

The stadium itself is surround by a 160 cm fence topped with spikes, at a distance of 5-25 meters from the stadium building. The sidewalk outside of the fence is a no-parking zone on the sections bordering the large thoroughfares (though authorized vehicles may stop for short time periods to unload cargo), but parking is allowed on the minor road. Generally most people enter the stadium toward the southwestern side of the building, i.e. toward Valhallavägen.

Inside the stadium, seats are arranged in such a manner that the supporters of the two teams are on opposite sides of the stadium from one another. Visitors with no team allegiance or preference (commonly families and occasional visitors) are seated in the areas between them.

Surveillance systems

The stadium itself has the following sensor systems, covering the inside of the area and the adjacent sidewalk:

- Camera systems that can identify and track individuals or groups of people, vehicles, and objects as they move around within their field of vision, and that can identify car license plates, faces (including face recognition/fingerprinting against databases), peoples' clothes (colour and type), whether they are male or female, if they are carrying something, moving naturally or with a limp, etc.
- Audio recording systems that can identify different types of noise (ordinary street sounds, gunshots, loud crowds, glass breaking, etc.) and pinpoint the direction and distance of the noise.
- Seismic sensors noting larger movement that can estimate the number of people in a crowd or the weight of a vehicle.
- Hazardous materials sensors in the air conditioning system covering the inside of the stadium building (however, not the open-air pitch).

In the surrounding metro system, the following sensor systems are in place:

- Camera systems as per above.
- Audio recording as per above.
- Hazardous materials sensors as per above.

The bus lines and some public places (bars, pubs, banks, shopping malls) in the city have the following sensors:

- Camera systems as per above.

Known threats

The three Stockholm-based clubs each have very vocal and violent fan groupings (the “firms”). Each club also has larger fan clubs that are not generally violent but simply enjoy the game, though in a few cases the line between the firms and the peaceful fan clubs has been known to blur. Generally it is the firms who are violent, but it has been known to happen that a normally peaceful fan club member with a bit too much to drink has acted in this way also. Most of the time such violent or antisocial behaviour is not directed at neutral bystanders, but is instead directed either at other firms, or at members of the opposing teams fan clubs.

The police have a register of convicted hooligans active in the firms, including mugshots used for photo identification. These people are banned from the events. However, the firms recruit heavily among young people and this register cannot be said to be 100 % accurate all of the time. They also have a watchlist of potential hooligans who are not yet banned but are under suspicion.

The fan clubs of the three teams generally wear their team’s colours when attending a match. The firms sometimes wear matching colours, though the colour chosen does not necessarily correspond to that of “their” team.

As football matches are situations with a lot of people gathered in a limited space, the Stockholm police are also concerned with the risk of possible terrorist attacks during matches, including bombing, shootings, or releases of poisonous or radioactive substances in the arenas or in the nearby metro or bus system. These threats are a bit more vague but generally the perceived perpetrators of such crimes fall into one of three categories:

1. Islamist fundamentalists
2. Right-wing extremists (skinheads, neo-fascists, etc.)
3. Left-wing extremists (anarchists, violent anti-fascist groups, etc.)

Known members or affiliates of any of these three groups are on police watchlists but are not by default banned from any sporting events.

Security staff

There are two types of security personnel present at matches: the private security staff employed at the stadium, and the Stockholm police. The former carry pepper spray and batons, but are not allowed to carry firearms. Their main tasks are to check that no people coming in are carrying dangerous items (fireworks, weapons, glass bottles, etc.). They also ensure that no unauthorized people enter the pitch in the centre of the stadium, and that the supporters of the two teams stay within their designated seating areas. The security staff carry radios for communication with the stadium security manager.

The police are armed with handguns. At high-risk situations they carry more powerful weaponry, up to and including sub-machineguns. While their task in the general case is to uphold the law, at this type of events they are primarily interested in keeping the peace. The police work in pairs of two, each pair travelling in a patrol car. They carry radios with which they communicate with the central police command. Patrol cars can carry one prisoner in the back seat. Their response time to any given point in central Stockholm is in the majority of cases between five and ten minutes.

While the two involved security organisations are distinct and with different chains of command, recently and in response to perceived threats, they have started working together on high-risk situation management, so that the stadium security manager has access to the local command and control centre and is constantly informed by the police theatre commander.

Maps of the surrounding areas



Figure 1 - Map of Stockholm Metro network



Figure 2 - Map of central Stockholm bus lines

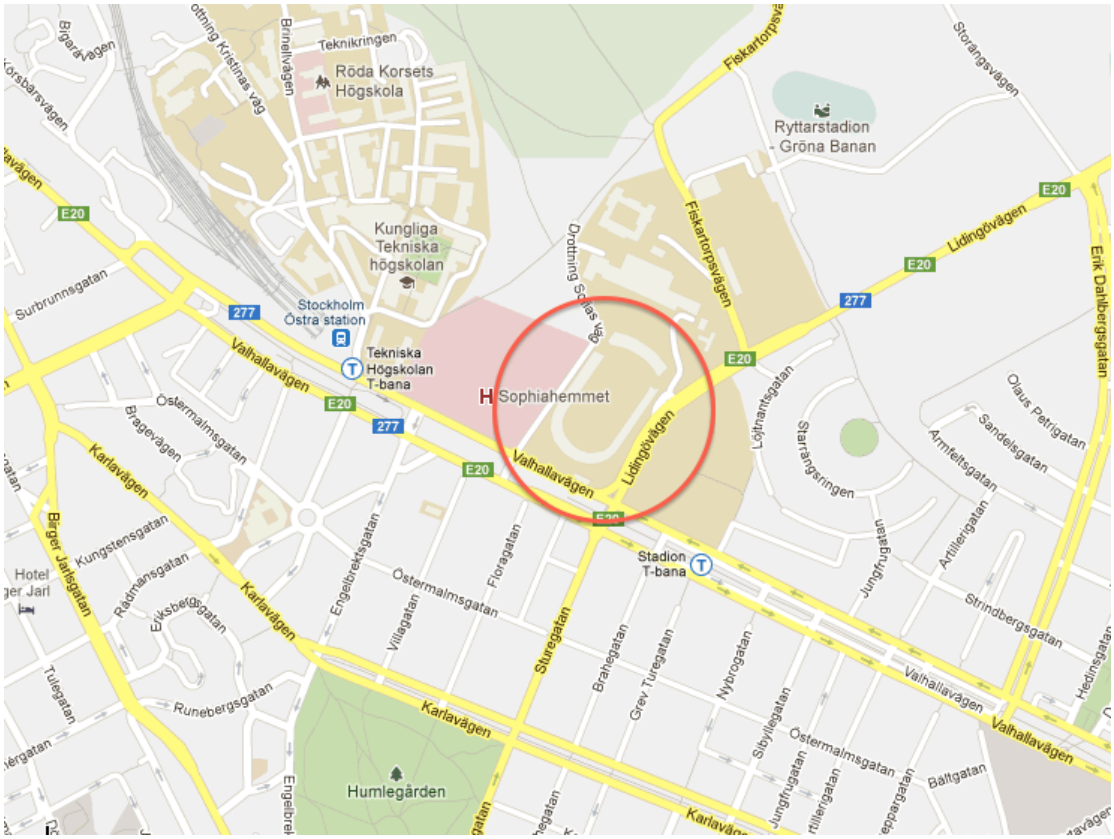


Figure 3 - Zoomed in map view of Stockholms Stadion

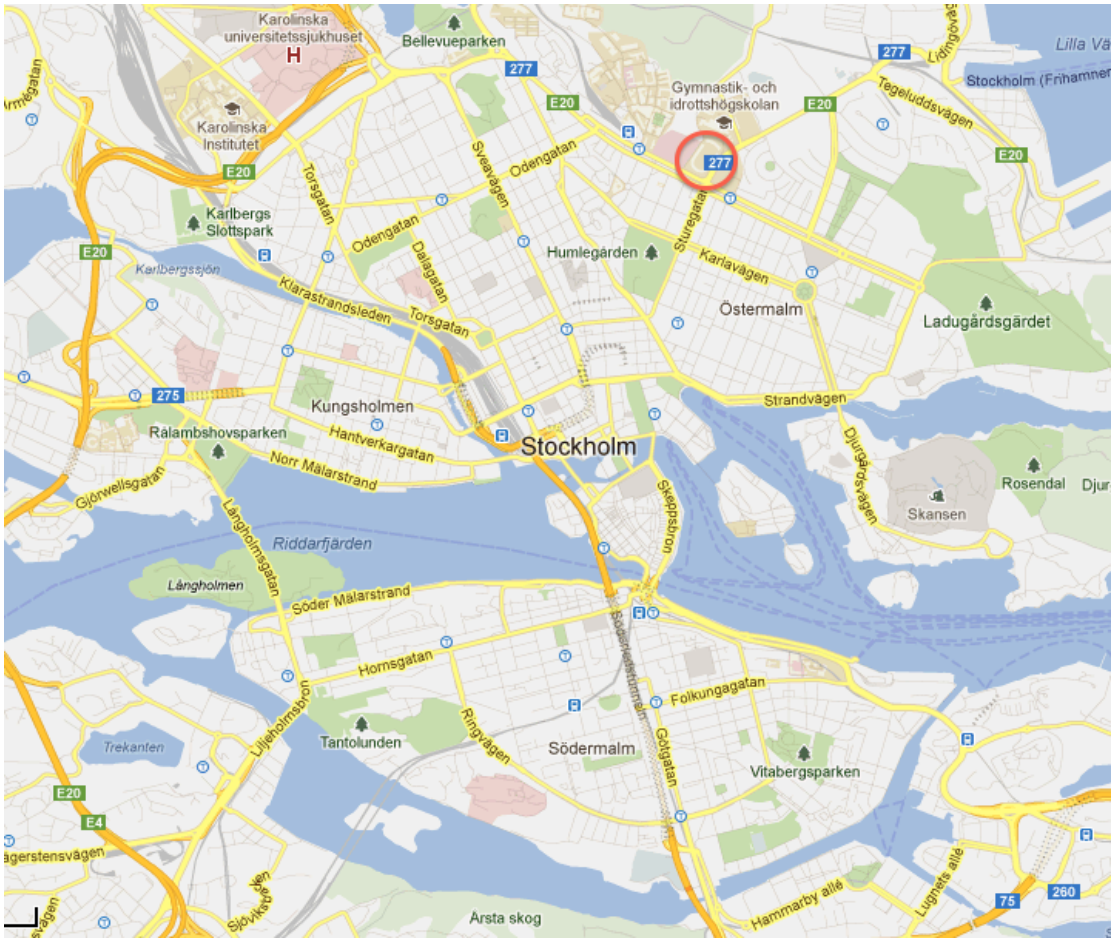


Figure 4 - Stockholms stadion's position in Central Stockholm

Location pictures



Figure 5 - Inside of the stadium



Figure 6 - Outside of the stadium



Figure 7 - Nearby metro station entrance