



Social Justice Watcher

SIPI

SOCIAL INNOVATION PROJECT INCUBATOR

2025

In Justice We Act.



Social Justice Watcher

CROWDGUARD

In Justice We Act.



Social Justice Watcher

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Social Justice Watcher

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MISSION

Creating safer places for people to gather, move, and celebrate.

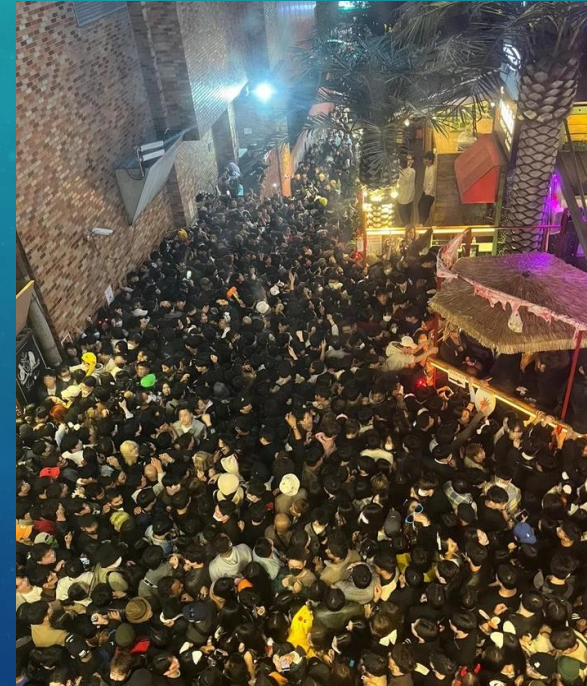




INITIATIVES

Last year on October 29, the Itaewon district, a popular nightlife district in Seoul, was filled with people in costumes celebrating Halloween. However, as the day darkened, a moving crowd funneled into one of the small, steep alleyways, resulting in a fatal crowd crush, killing nearly 160 and injuring almost 200. No one was able to foresee this festival turning into a disaster.

After this event, we realized that in large public gatherings or events, such as concerts and festivals, there is a high risk of crowd crush incidents. Hence, we recognized the need to develop solutions to prevent people from losing their lives in such festive events due to a lack of real-time crowd monitoring, inadequate safety measures, and delayed emergency response.



^ Photo from Itaewon crowd crush



TARGET POPULATION

1. For people attending large-scale events

- concerts
- festivals
- sport matches
- demonstration and protests
- public events



2. For people who wish to feel protected while enjoying public gatherings

- families with children
- the elderly
- anyone with mobility concerns



3. For people who need to use public transport during rush hours or before holidays

- returning to hometown before New Years or other holidays
- commuting for work or school





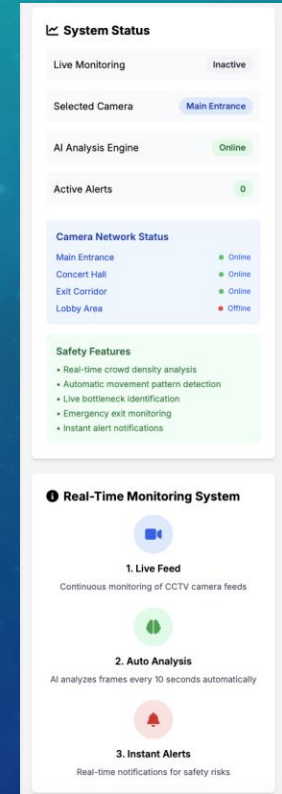
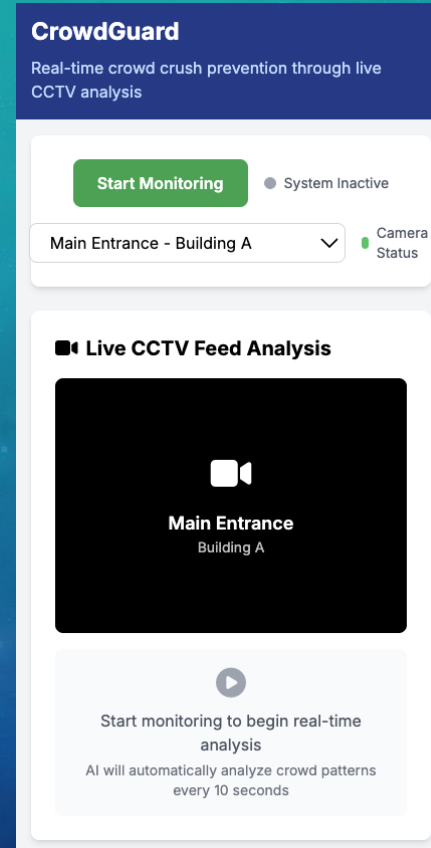
SIGNIFICANCE

- Crowd crush disasters are a real and growing public safety issue, with hundreds of preventable deaths in recent years.
- Existing CCTV systems are passive – they record but don't warn. CrowdGuard adds intelligent, real-time detection and alert capability.
- The app raises awareness in the most critical moments, helping people respond before it's too late.
- The problem is universal as it can affect anyone attending a concert, commuting during holidays, or simply walking through a busy station.
- We aim to shift safety from reactive to proactive, helping prevent tragedies instead of responding to them.
- This project combines innovation and empathy, using AI not just for convenience, but to protect lives in real-world situations.

SOLUTION

An AI-based crowd-detecting user-based application:

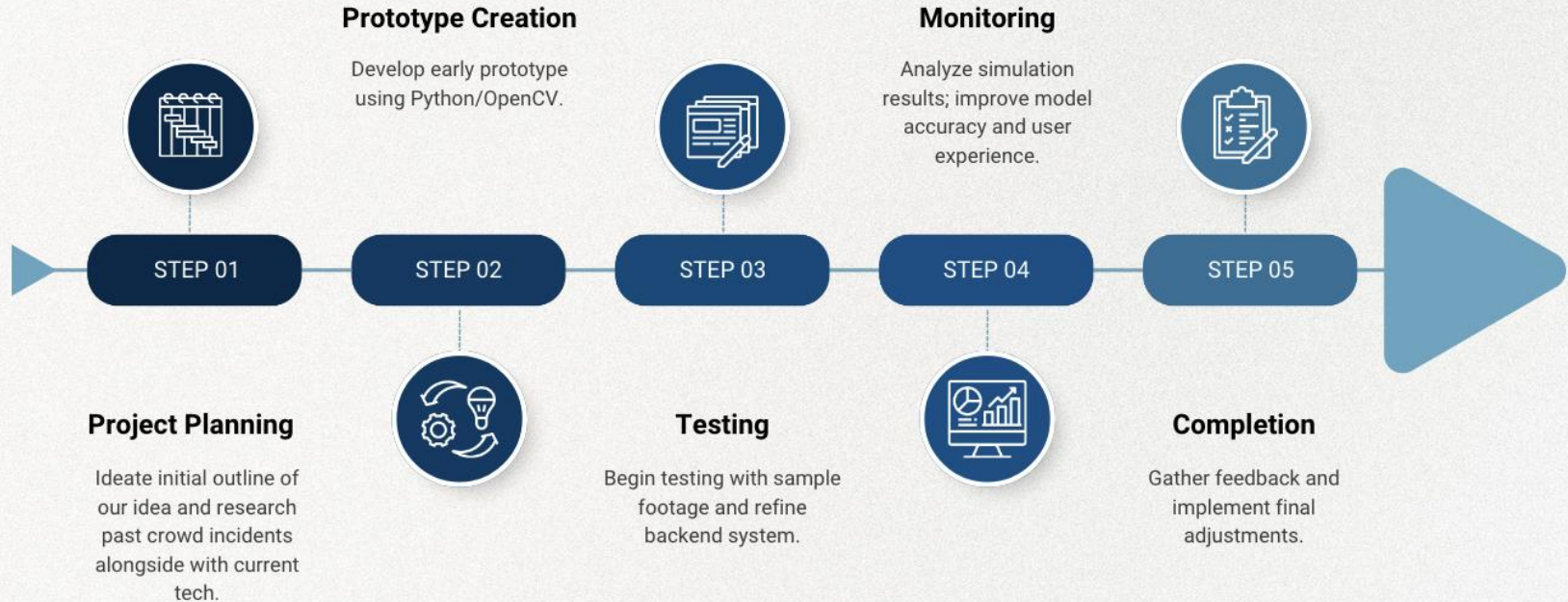
By developing an application that includes a smart, AI-based CCTV analysis system that can detect dangerous crowd behaviours early on and send alerting notifications to the users in real-time, we can help save lives, reduce injuries, and create safer public spaces for everyone.



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TIMELINE/PROJECT CYCLE

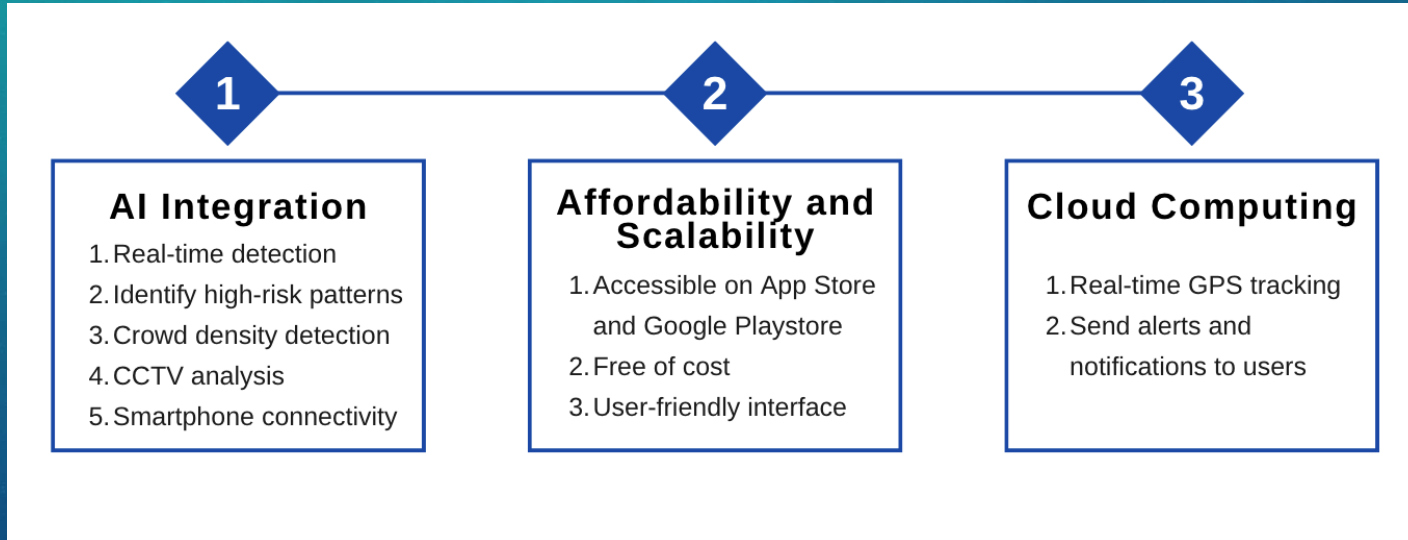




INNOVATION

Existing crowd management tools that provide density analytics based on video feeds such as CrowdVision and Density.io are not easily accessible to the general public and often limited to private venues and authorities.

Hence, these are our unique selling points that our competitors lack:





SOCIAL IMPACT

The application would be accessible to the general public at an international scale. Participants and attendees going to such large events would be asked in advance to download this application before arriving to the venue.

Since this application would be utilized in numerous large-scale events such as festivals and concerts, we estimate the reach to be around **5 million+ users** in total.

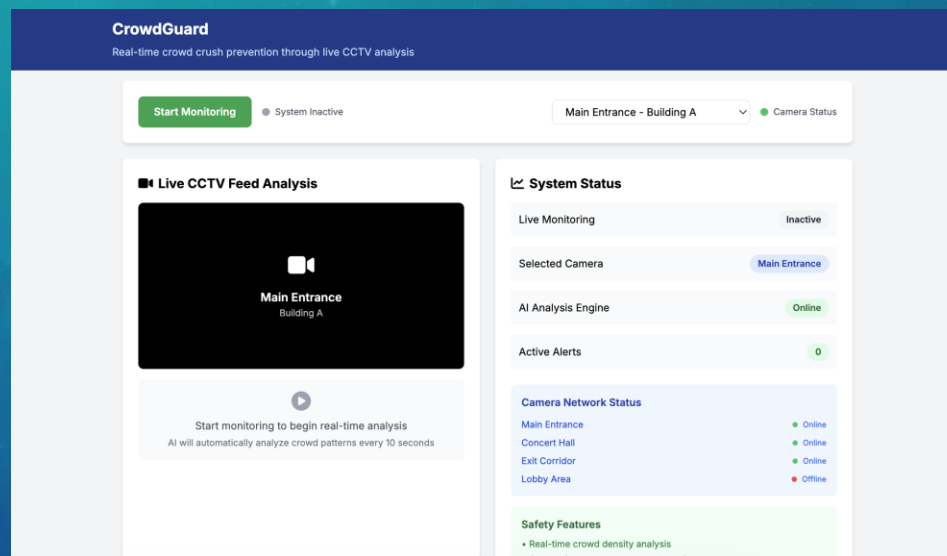
We will leverage social media platforms such as Facebook, Instagram, X, and Youtube to increase the visibility of the application to a wider range of audience



EVIDENCE/PHOTOS

```
Crowd Safety Monitor
// Simulate analysis when monitoring starts
47 simulateFrameAnalysis();
48
49 return () => clearInterval(interval);
50 }, [isMonitoring, selectedCamera]);
51
52
53 const simulateFrameAnalysis = async () => {
54   setLoading(true);
55   setFloor(null);
56
57   try {
58     // Simulate AI analysis of current CCTV frame
59     const mockAnalysisResults = {
60       {
61         risk: "LOW",
62         analysis:
63           "Crowd density: Normal (15-20 people visible)\Movement: Orderly flow patterns\Bottlenecks: None detected\Emergency exits: Clear and accessible\Overall a
64       },
65       {
66         risk: "MODERATE",
67         analysis:
68           "Crowd density: Moderate (40-50 people visible)\Movement: Some clustering near entrance\Bottlenecks: Minor congestion at doorway\Emergency exits: Partial
69       },
70       {
71         risk: "HIGH",
72         analysis:
73           "Crowd density: High (80+ people visible)\Movement: Irregular patterns, pushing detected\Bottlenecks: Significant congestion at main exit\Emergency exits
74       },
75       {
76         risk: "CRITICAL",
77         analysis:
78           "Crowd density: Dangerous (100+ people in confined space)\Movement: Panic behavior detected, rapid movement\Bottlenecks: Severe crushing at exit points\W
79     };
80   } catch (error) {
81     console.error("Error in AI analysis simulation:", error);
82   }
83
84   // Randomly select analysis result for simulation
85   const randomResult = mockAnalysisResults[
86     Math.floor(Math.random() * mockAnalysisResults.length)
87   ];
88 }
```

```
Crowd Safety Monitor
219 </div>
220 </div>
221
222 <div className="Panel">
223   <div className="bg-white rounded-lg shadow-md p-4">
224     <h3 className="text-xl font-bold mb-4">
225       System Status
226     </h3>
227
228     <div className="space-p-4">
229       <div className="flex justify-between items-center p-3 bg-gray-50 rounded">
230         <span>Live Monitoring</span>
231         <span>
232           <div className="px-3 py-3 rounded-full text-sm font-sansbold [&#x2D;green-500 text-gray-800]
233             {isMonitoring ? "Active" : "Inactive"}
234           </div>
235         </span>
236       </div>
237
238       <div className="flex justify-between items-center p-3 bg-gray-50 rounded">
239         <span>Selected Camera</span>
240         <span>
241           <div className="px-3 py-3 rounded-full text-sm font-sansbold [&#x2D;blue-500 text-blue-800]
242             {selectedCamera ? "Main Entrance" : "Concert Hall"}
243           </div>
244         </span>
245       </div>
246
247       <div className="flex justify-between items-center p-3 bg-gray-50 rounded">
248         <span>AI Analysis Engine</span>
249         <span>
250           <div className="px-3 py-3 rounded-full text-sm font-sansbold [&#x2D;green-500 text-green-800]
251             {aiEngineStatus ? "Online" : "Offline"}
252           </div>
253         </span>
254       </div>
255
256       <div className="flex justify-between items-center p-3 bg-gray-50 rounded">
257         <span>Active Alerts</span>
258         <span>
259           <div className="px-3 py-3 rounded-full text-sm font-sansbold [&#x2D;red-500 text-red-800]
260             {activeAlertsCount}
261           </div>
262         </span>
263       </div>
264     </div>
265
266     <div>
267       <h4>Camera Network Status</h4>
268       <div>
269         <div>Main Entrance</div>
270         <div>Concert Hall</div>
271         <div>Exit Corridor</div>
272         <div>Lobby Area</div>
273       </div>
274       <div>
275         <div>● Online</div>
276         <div>● Online</div>
277         <div>● Online</div>
278         <div>● Offline</div>
279       </div>
280     </div>
281
282     <div>
283       <h4>Safety Features</h4>
284       <ul>
285         <li>Real-time crowd density analysis</li>
286         <li>Automatic movement pattern detection</li>
287       </ul>
288     </div>
289   </div>
290 </div>
```



^ Website version of CrowdGuard



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- Ha, Kyoo-Man. “Reviewing Stakeholders during the Itaewon Halloween Crowd Crush, Korea 2022: Qualitative Content Analysis.” *F1000Research*, vol. 12, Nov. 2023, p. 829, <https://doi.org/10.12688/f1000research.135265.2>.
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