# DETECTION OF EXPLOSIVE OBJECTS USING ARTIFICIAL INTELLIGENCE TECHNOLOGIES

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This report delves into the effectiveness of artificial intelligence (AI) and computer vision for detection of explosive objects within security frameworks [1]. By examining various studies and conducting comparisons, it establishes the superiority of AI-driven detection systems over conventional methods. Through a holistic approach, the study emphasizes the transformative potential of AI and computer vision in enhancing security protocols [2, 3].

The necessity of using AI tools for this significant task is attributable to different safety and effectiveness measurements. As common approximate indicators, task execution safety, detection probability, reliability, and cost have been chosen. As for methodologies – contact, mechanized, radio-wave, optical, and AI-based approaches. The last option is an enhanced version that may be based on several different approaches. This was done to perform a comparison between the classic and tools-based detection methods. The example is shown below in Table 1.

Table 1 – Approaches comparison

| Approach | Contact | Mechanized | Radio-wave | Optical | AI-based |
|---|---|---|---|---|---|
| Measurements | | | | | |
| Task execution safety | Low | Medium | High | Low | High |
| Detection probability | High | High | Medium | Low | High |
| Reliability | High | High | High | High | High |
| Cost | Low | Medium | Medium | Medium | Low |

In the future, it is planned to test the effectiveness of the above AI-based approaches for use in the detection of explosive objects during humanitarian demining.

**References:**

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