A.I.-Controlled Fire Extinguishing System Design

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Abstract

The Fire-Tracking Extinguisher will automatically detect and recognize a break-out of fire in a room, assign priority levels in instances of multiple breakouts and extinguish the biggest threat by using a high-precision water gun to douse the fire. It can operate without human input, lowering the risks of fire-related injury and respiratory problems carried by extinguishers, and minimizing the water-damage because its spray is localized.

Background

- Fire safety is an important concern in today's world. Traditional fire protection systems – fire extinguishers and water sprinklers – are necessary but flawed. Extinguishers contain sprays of harmful chemicals and can only be used in close range to the fire, and sprinklers can cause extensive water damage. There is a growing need for faster and smarter fire safety technology.

Fig 1 Fire sprinkler.

[Source: https://www.qrfs.com/blog/260-what-makes-residential-fire-sprinkler-heads-special/]

- We are working on a type of active fire prevention system that operates on the principle of machine learning in artificial intelligence.
  - Machine learning is when a computer is programmed with an algorithm that allows it to study data, learn from it and build mathematical models based on that data to make predictions about future events.
  - In essence, it is teaching a machine to do what you and I do: learn.

Future Work

Our future work entails increasing the accuracy of the system and providing more functionalities.

Acknowledgements

Our special thanks to the following individuals: Professor Nicholas Madamopoulos, our mentor; lab technicians; and the ORCA team.

Methods

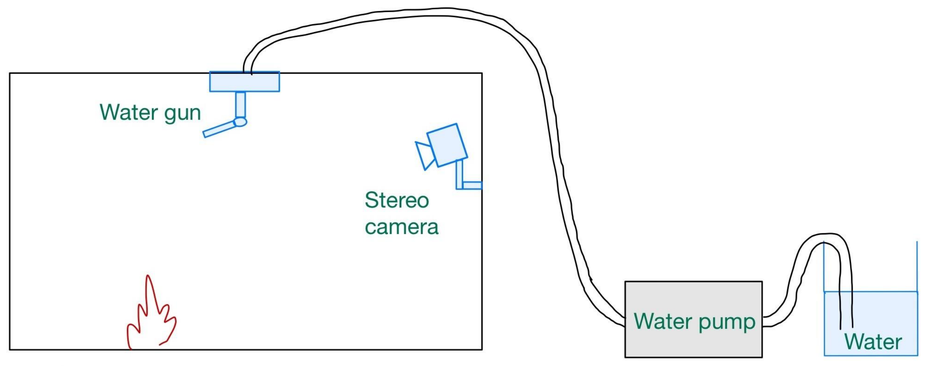

Fig 2 Diagram of prototype.

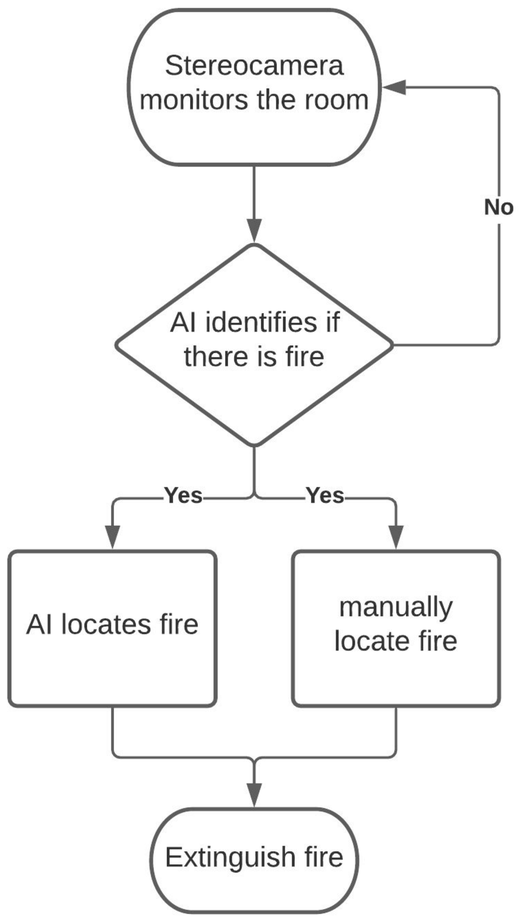

Fig 3 Flowchart of software logic.

Results and Conclusion

- A small prototype was built to test out the theories. During testing, a laser gun was used instead of a water gun for convenience.
- The performance of our design is outstanding. It has a 95% accuracy.

Fig 4 Stereo Camera.

Fig 5 Laser Gun.