

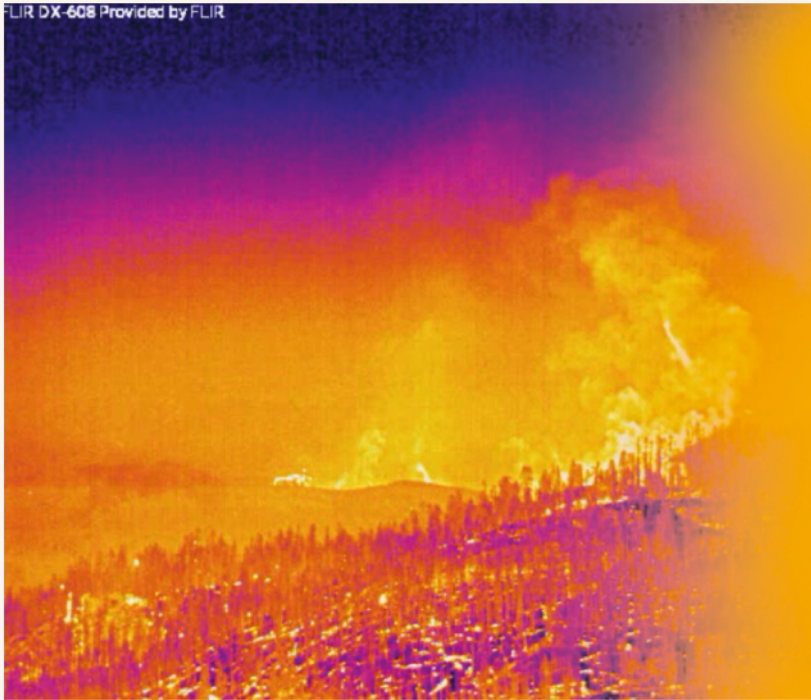


**What is a thermal imaging camera?**

**How do Firefighting Robots operate with thermal cameras?**

**Leotronics Robotics develops software to equip their robots with a thermal vision for autonomous firefighting**

FLIR DX-608 Provided by FLIR



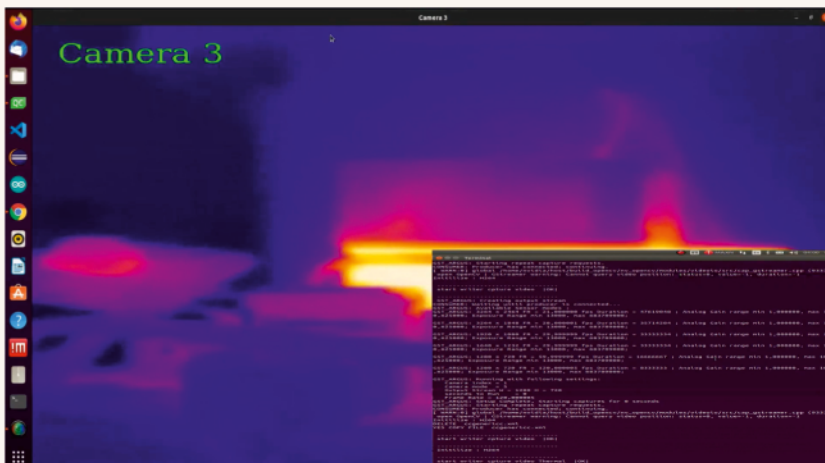
## What do firefighters need to know about thermal imaging cameras for firefighting robots?

Firefighting operations are no longer conceivable without thermal imaging cameras. They convert the heat radiation of objects and living beings into visible images. The areas of application of thermal imaging cameras are manifold and range from searching for people to determining sources of fire. The thermal vision system is one of the main subsystems of a modern firefighting robot.

Firefighters need to know how these systems work to maximize their potential, which can be achieved by acquiring some knowledge about how they operate, what they measure, what kind of firefights they are used for or against,

and their limitations and current status within firefighting technology.

This small article will provide an overview of firefighting robots equipped with thermal infrared (IR) camera sensors.



## What is a thermal imaging camera?

Thermal imaging cameras are devices that measure the amount of heat radiation that is emitted from an object. This measurement is then converted into a visible image. The main limitation of thermal imaging cameras is that they can only measure the amount of radiation emitted from an object and not the temperature of the thing itself. The fire is only visible in the video when it radiates heat. It becomes more complicated when burning materials that do not emit heat, such as wood, plastics, and fabrics, or when the fire is covered by water.

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## How do Firefighting Robots operate with thermal cameras?

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**With the growing number of firefighting robots, it is now easier for firefighters to tackle fires in hazardous environments. The remote-controlled vehicles have imaging and thermal sensors that provide enhanced situational awareness to be more effective on-site when combating blazes without having any human life endangered by fighting these outbreaks blindly like before!**

Firefighting robots used in firefighting operations can be equipped with thermal imaging cameras to search for people who fell unconscious during a fire and determine hot spots where fire may originate from. Also, drones are being developed as an efficient alternative to traditional firefighting tactics. These aircraft can fly

above buildings and provide firefighters on the ground with crucial information about where they're located, size of the event (fire), type/compound involved, etc., without putting lives at risk or risking property damage by approaching structures directly over them. Additionally, some drones feature onboard extinguishing materials that

allow crews direct access into hot spots, so it doesn't take hours for someone else - like helicopters- to arrive later! Ground robots and drones with infra-red cameras are the latest technology to help extinguish fires. These can get into places that would previously have been impossible for firefighters, as well it takes smothering on a whole new

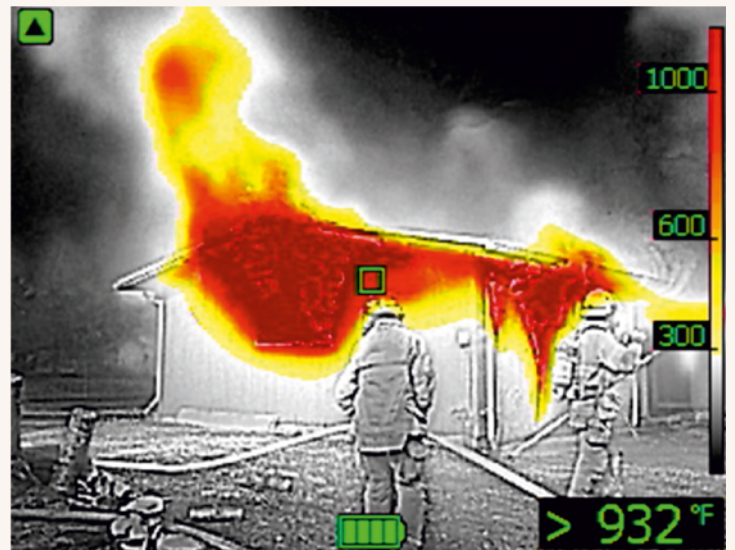
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## LeoTronics Robotics develops software to equip their robots with a thermal vision for autonomous firefighting

**LeoTronics Robotics is working on a thermal vision system for firefighting robots that enable firefighters to conduct their work without putting themselves and others at risk of injury and seeing a picture of fire from a safe distance.**

The system consists of infrared cameras, a powerful computing unit based on the Nvidia Jetson platform, and a program code with elements of artificial intelligence, which allows performing the following main functions:

- transfer the thermal picture of the fire to the robot operator;
- identify hotbeds of fire;
- to identify living beings in the complex environment of blazing fire;
- determine the average temperature of any area;
- direct a stream of a fire-extinguishing agent to the fire site.



**LeoTronics Robotics offers firefighting robots TrackReitar FFL with or without a thermal imaging camera depending on the firefighting application and the fire brigade's operational needs.**



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## World news - CES 2022 exhibition

From January 5 to 8, Las Vegas hosted its first high-tech expo of 2022. CES returned "home" to Las Vegas, welcoming more than 40,000 visitors, including 1,800 members of the world's media, at 11 indoor and outdoor venues. The show was a truly global event, with 30 percent of attendees from outside the U.S., representing 119 countries.

**It featured many new products, including a prototype electric crossover, a smart scale, a modular computer, and a tattoo printer.**