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Technology Helping Firefighters Tackle Wildfires

By Neal Leavitt

At 8:30 PM on Dec. 7, the power suddenly went out in our house. We looked out our master bedroom window in the dark and saw a wall of 20-40-foot-high flames on an adjacent hillside sweeping towards us.

The Lilac Fire, which started as a small brushfire on Interstate 15 in San Diego County earlier that day, had quickly grown to over 4,000 acres. And we were now in the fire's crosshairs.

With ash and embers swirling around us, it was time to go. Put the suitcases in the car, grabbed our Yorkie, said a brief prayer and left. On our way out, one of the firefighters at the gate leading out to the street told us he expected the fire to be in our area within 15 minutes.

Fortunately, thanks to the superhuman efforts of the firefighters, many of whom camped out in our back yard and in the yards of many of our neighbors for two straight nights, all of the homes in our immediate neighborhood were spared.

It was a close call; many of the surrounding hillsides now resemble a lunar landscape and dozens of the lovely old oaks along Olive Hill Road (one of the Lilac Fire's epicenters) were burned.

But we're thankful this holiday season that we have a house to come home to.

Now that things are somewhat settling down, it got me to thinking about how technology is giving firefighters an extra edge. With the Lilac Fire, helicopters carried iPads that displayed critical information; the firefighters also had custom cell phone apps that gave them up-to-the-second status reports.

And that's just the tip of the proverbial iceberg as firefighters are rapidly adapting new technologies to further combat seemingly larger and deadlier wildfires each season (and here in California, it has pretty much become year-round).

Here are a few examples:

At UC-Berkeley, astrophysicist Carlton Pennypacker and a team of researchers have been developing a system called the Fire Urgency Estimator in Geosynchronous Orbit (FUEGO). In brief, FUEGO uses satellite and drone technology to monitor wildfires in their early stages. FUEGO is currently testing various parts of the system.

"It's probably five years before we'll have a huge effectiveness," Pennypacker says. "I think we can have some modest effectiveness almost immediately. We're not going to stop all fires, but the future is optimistic on this."

Back in August, San Diego Fire Rescue began a trial test on aircraft equipped with radar and high-tech sensors that tells them if fires are moving into residential areas. According to FireRescue 1 News, "the radar technology gives firefighters the ability to draw

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a perimeter around the fire and change it continuously based on what direction it is moving. Firefighters also will be able to see how the fire changes once water is dropped onto it, and the technology will help them see through smoke better."

In Sweden, a futuristic firefighting helmet called 'C-Thru' uses cloud computing to send and receive data. Data is projected onto the helmet lens – this provides a heads-up display that includes vitals like temperature, remaining oxygen and CO2 levels. A thermo-optic camera enables firefighters to see even in thick smoke.

And firefighting robots will become ubiquitous over the next few years. Maine-based Howe and Howe Technologies has developed Thermite, a firefighting robot that can withstand extreme heat and winds.

Virtual Reality (VR) is also becoming an important firefighting tool. Orange Business Services, a global telecommunications operator and IT services company, said the US Forest Service is currently employing VR to train smokejumpers who parachute into remote areas to fight wildfires.

"The VR simulators create 3D representations of the fire scenario, with trainers able to change physical characteristics like wind direction and speed, to prepare smokejumpers for real life engagements in truly dangerous conditions," notes the company.

Orange Business Services also reports that low-powered Internet of Things (IoT) connected sensors are being used to gather data from remote areas that are potential hotspots.

"Sensors can be used to detect and measure the level of CO2 and check for unseasonably high temperatures, indicating the possible presence of fires in the area. Given that these connected devices require minimal power, a Low-Power Wide-Area Network (LPWAN) is ideal here," says the company.

Fire season length has increased almost 20 percent in one generation not only in California, but throughout North America. And with more people living in areas affected by wildfires, it's critical that firefighters have access to more than just a hose. Sensor technology, drones, data analytics, and more, are providing firefighters with the tools they need.

These technologies may just help save your house too.

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