

AI to lighten the load in the fight against bushfires

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Snapping a picture on your next bushwalk could help predict and prevent devastating bushfires, thanks to a new innovative mobile phone app, NOBURN, powered by AI developed by University of Adelaide experts.

"The app's AI computer vision can analyze user-submitted photos of fire-prone areas to assess potential [bushfire](#) fuel loads," said Professor Javen Shi, Director of Advanced Reasoning and Learning at the University's Australian Institute for Machine Learning (AIML).

"The submitted data is then used to estimate the severity of a potential bushfire and how far it's likely to spread."

Professor Shi said the AI models developed for the app mimic the eyes of human experts who would ordinarily be scouring bushland for bushfire hazards.

"Once we train the model, we don't really need experts to go to the forest," Professor Shi said.

"We can easily have thousands of citizens—such as bushwalkers and families on camping trips—who can take photos that our AI can use to make predictions."

Collecting quality data from users of NOBURN could take up to 12 months, and another year for the app's AI model to be trained on the images uploaded from rural areas.

However, Professor Shi said the point of the app is to raise awareness for the ways investment in AI can help prevent devastating losses during bushfires.

"The app alone is small, but we hope this is a catalyst to ignite people's excitement and hope, because we lose millions of dollars every year to fires," Professor Shi said.

"We hope to expand this to [situational awareness](#), like a command center for the bushfire commanders, and they can see in real time their

resource deployment, how a bushfire spreads, and we can build AI for them to interact with.

"We even foresee an AI that can have a conversation with the commander and the firefighters—like how Iron Man has AI talking to Tony Stark—to give real-time advice and make them more aware of their surroundings in low-visibility conditions."

The idea for the app was sparked after the Black Summer bushfire season in 2019-2020, which burned more than 46 million acres, destroyed more than 9,000 properties, claimed 34 lives and cost farmers up to \$7 billion in damages.

Professor Shi worked alongside the University of the Sunshine Coast forestry experts, Dr. Sam Van Holsbeeck and Professor Mark Brown, as well as Director of the Center for Human Factors and Sociotechnical Systems, Professor Paul Salmon, to develop the NOBURN app.

"There's a huge potential for AI to be leading that game in overall fuel-hazard assessment and again even further into bushfire prediction and simulation modeling as we've been attempting with AIML," Dr. Van Holsbeeck said.

"It's not just a bushfire research project; it is really like a combination of different fields of discipline coming together and doing this is in a way that makes bushfire research accessible to the general public."

More information: NOBURN is free to download and use for both [Apple](#) and [Android](#) phones.

Provided by University of Adelaide

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