Fire management is a complex challenge, balancing the ecological role of fire in some ecosystems with the need to protect human communities and infrastructure. Our team, led by Dr. Ahmed Mateen and including Ruqya Bashir, has taken on this crucial mission. We've harnessed the power of data, specifically NASA's dataset spanning 2019 to 2022, and developed a powerful model that combines three cutting-edge algorithms: the Random Forest Classifier, Gradient Boosting Classifier, and Long Short-Term Memory (LSTM).

This model has achieved an impressive accuracy rate of 98%, enhancing fire detection and management. Community-based fire management, where local communities actively participate in wildfire prevention, control, and recovery efforts, is a promising approach. However, despite existing research, there's a critical gap in understanding its effectiveness and broader adoption.

Effective fire management is essential for protecting lives and property, preserving ecosystems, maintaining air quality and public health, mitigating economic impacts, and addressing the role of wildfires in climate change. Our work not only fills a critical knowledge gap but also holds the potential to make significant strides in safeguarding both human communities and the environment from the devastating impacts of wildfires.