

# HEAT MAPPING

## CUBESAT IMAGING PAYLOAD

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### ABSTRACT

Design and deploy innovative CubeSat imaging payloads with advanced thermal and multispectral sensors. The mission aims to provide high-resolution data for detecting wildfires, heat anomalies, and geological resources to support disaster response, sustainable resource management, and environmental preservation

### INTRODUCTION

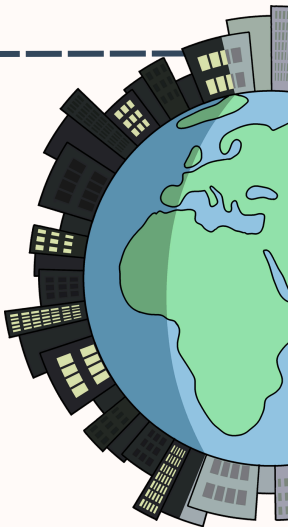
The CubeSat imaging payload project focuses on environmental and industrial challenges. It integrates thermal and multispectral imaging to provide actionable insights for disaster and resource management.

### PROBLEM STATEMENT

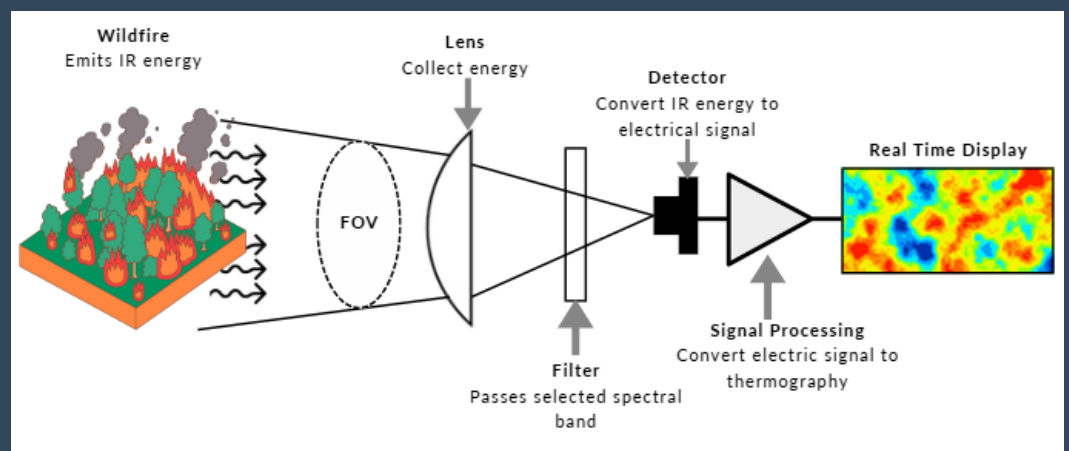
Wildfires, such as those recently devastating Los Angeles, require rapid and accurate detection to minimize damage and protect lives. Current satellite imaging systems often lack the resolution, responsiveness, or cost-effectiveness for localized heat mapping. A CubeSat-based imaging system tailored for heat mapping offers a compact, affordable, and high-resolution solution for real-time wildfire monitoring, providing critical data for early intervention and resource management.

### OBJECTIVES

- Heat Mapping:
  - Detect and monitor wildfires in real time, enabling rapid response and post-fire recovery.
- Mining:
  - Identify mineral-rich zones using thermal and multispectral imaging.
- Integrated Payload:
  - Develop a single system capturing both thermal and multispectral data for versatile applications.

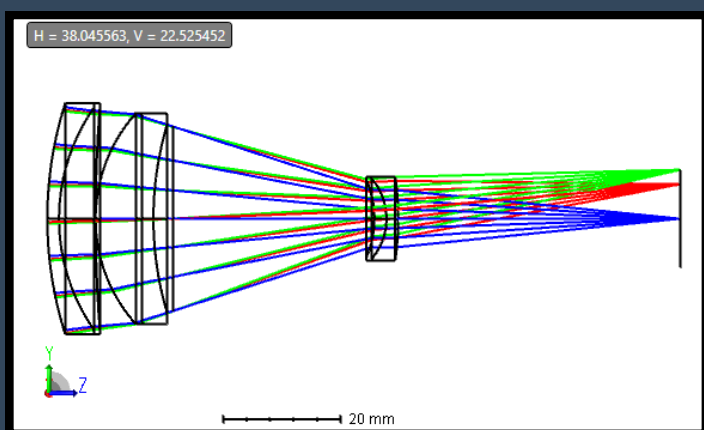


### CAMERA SYSTEM ARCHITECTURE



### OPTIMIZED LENS DESIGN

#### LENS LAYOUT



- Three lenses work together to focus and direct light onto a sensor
- The system captures a large area, ideal for environmental monitoring from space
- Precise optics ensure sharp, detailed images for thermal and multispectral sensors

