

Single-pixel optical fire "distinguisher"

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Seeing through flames is of great significance for numerous scenarios. However, it is hard to see through flames by the naked eye or even by an advanced camera, because immense electromagnetic radiation emitted by the flame can blind any photodetector and results in a visual obstacle to the object in/behind the flame. We report a single-pixel computational optical imaging technique that can see through flames. Through structured illumination and the associated image recovery algorithm, flames can be computationally muted in the images recovered. Consequently, an optical fire "distinguisher" is achieved. The reported technique operates at the visible waveband and can see a dynamic scene through flames at the video frame rate in real time.

Short Bio:



Zibang Zhang is currently an Associate Professor with Department of Optoelectronic Engineering at Jinan University, Guangzhou, China. Dr. Zhang's expertise includes computational imaging and optical engineering. His current research interests include single-pixel imaging, lensless microscopy, and fringe projection profilometry. Dr. Zhang has published more than 20 peer reviewed papers, including Nature Communications, Optica, Optics Letters, Optics Express, etc. He was awarded the second prize of Guangdong Natural Sciences Award 2021 for the project entitled "Fourier single-pixel imaging principle and methods".