

**Two Dimensional Edge Detection
by Guided Mode Resonant Meta
surface**

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ABSTRACT

- In this letter, a new approach to perform edge detection is presented using an all-dielectric CMOS-compatible meta surface.
- Our design is based on the guided-mode resonance which provides a high quality factor resonance to make the edge detection experimentally realizable.
- The proposed structure is easy to fabricate, and it can be exploited for detection of edges in two dimensions due to its symmetry.

EXISTING SYSTEM

- This concept has been used in all-optical performing of different real-time computations and operations in the temporal or spatial domain.
- Edge detection is a method in which intensity changes in an image is described and as the first step in object detection, it simplifies image processing by decreasing under processing data.
- However, high-throughput edge detection, which requires time consuming computation, represents a key challenge in applications with real-time image processing.

PROPOSED SYSTEM

- Also, a trade-off between gain and the resolution of edge detection is discussed, which can be adjusted using appropriate design parameters.
- The proposed edge detector potentially can be used in ultrafast analog computing and image processing. The proposed structure can be used for edge detection in two dimensions.
- Although the intensity of the edges is not uniform in different directions, the information about the existence of edges in all directions can be provided.

HARDWARE REQUIREMENTS

- Processor - Intel
- Speed - 1.1 Ghz
- RAM - 256 MB(min)
- Hard Disk - 20 GB
- Monitor - SVGA

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SOFTWARE REQUIREMENTS

- Tool - MATLAB R2012
- Operating system - Windows Xp, 7

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