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A single pixel camera based on compressed sensing KEVIN KELLY, Electrical Engineering Dept., Rice University, DHARMPAL TAKHAR, JASON LASKA, MIKE WAKIN, MARCO DUARTE, BRIAN VAN OSDOL, DROR BARON, RICHARD BARANIUK — Digital micromirror devices have proven to be a commercially viable MEMs technology for the video/projector display market. Inspired by the success of this technology, we have combined a microcontrolled mirror with a single optical sensor so that it additionally acquire images, rather than merely adapt current camera technology to serve as an optical sensor. In this project, we have developed a practical image/video camera based on this concept and realized it through the use of *compressed sensing*. Our design has additional desirable properties including scalable output bit stream, variable image resolutions and video frame rates. We will also discuss the generalization of *compressed sensing* as a way of image formation for other single detector systems.

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