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.