

Compressed lightfield imaging (Ramot)**code:** 7-2013-577[Alexander Bronstein](#), T.A.U Tel Aviv University, Engineering, Electrical Eng-Systems

A novel plenoptic imaging system for compressed acquisition of light field. The camera will consist of a standard high-resolution imaging sensor with a specially designed optical modulator, and will offer significantly higher combined spatial and angular resolution than allowed by existing designs based on microlens arrays. Unlike standard reconstruction algorithms in compressed sensing and computational photography which are very computationally demanding and largely inapplicable for real-time applications, we propose alternative computational techniques that will allow accurate real-time image reconstruction. Our efficient computational techniques will enable this previously unexplored use of compressed sampling.

Potential applications

The proposed technology has direct applications in professional photography, video recording of sports, and movie making as well as in a broader amateur photography and entertainment market. The manufacturing of the camera is in principle very cheap and with appropriate development can cater to the mobile market, which is by far the biggest consumer of camera modules today. The proposed reconstruction techniques are lightweight and can run on a low-power battery-operated device such as a cell phone. More exotic applications can include medical imaging, microscopy, and surveillance.

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