



# THE UNIVERSITY OF CHICAGO

Departments of Computer Science, Mathematics, Statistics, and the Computation Institute  
**SCIENTIFIC AND STATISTICAL COMPUTING SEMINAR**

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### Accurate Curvature Computation at Subpixel Resolution

**THURSDAY, February 20, 2014, at 4:30 PM**

Eckhart 133, 5734 S. University Avenue

### ABSTRACT

In processes of visual perception, it may be argued on neurological grounds that the human brain could not possibly use all the information provided by states of stimulation to register information. It rather strips away redundant information and encodes important features, such as contours, and furthermore points on a contour at which direction changes most rapidly (i.e., at angles or peaks of curvature). Yet, algorithms estimating curvatures, even possibly multiscale, are based on a direct computation on a raw image, which turns out to be highly biased. I will present in this talk how curvatures can be accurately estimated by a direct computation on level lines after their independent smoothing. The algorithm provides results coherent to our visual perception, and opens a new method of feature computation and selection. The algorithm runs online on any image at <http://www.ipol.im>.

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