Image Modeling with Undergraduates and Industry

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I. Efficient shape representation
II. Skeletal Shape Models

\[(m(v), r(v))\]
II. Skeletal Shape Models

\[(m(v), r^+(v), r^-(v))\]
Case 1: Berry Picking Robot
Find the stem!
Work out simpler cases of hard problems—and someone still cares!
Results:

stem in one box: 95%
geometric box choice: 84%
appearance box choice: 54%
Case 2: Forest Fire Prediction
Benefit #2

Free publicity! And connection to a new and larger network
Case 2: Forest Fire Prediction
Where’s the danger?
Benefit #3

Seeing an old friend in a new light
Free access to massive amounts of data
Comparison method
Benefit #5

Gets students excited about research—that you might not want to do
Case 3: Dancer Dictionary
Work in progress...
People talk about your cool stuff and you can too.
Students work very slowly
Publishing can be a problem
Differing time scales for projects and personnel changes
Jargon translation
Thank you!

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III. Near-periodic textures

Hays, Leordeanu, Efros, Liu, Discovering Texture Regularity as a Correspondence Problem, 2006.
Case 3: Pot Grove Discovery
Find the marijuana groves
Find the marijuana groves
Find the marijuana groves