COMPUTER VISION
Texture descriptors

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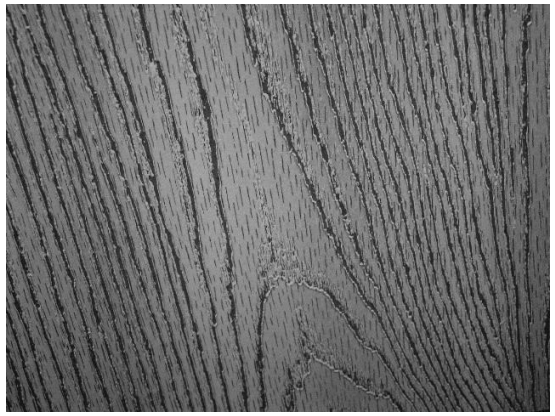
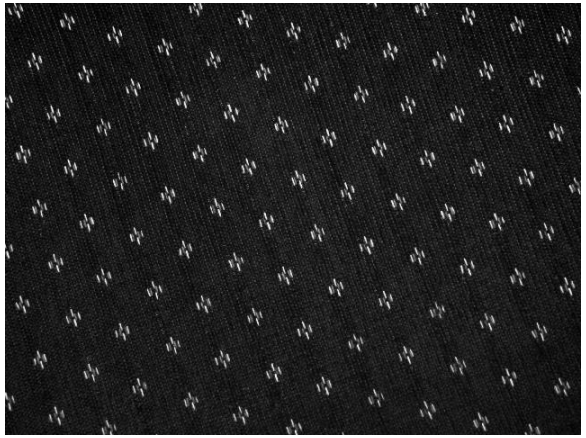
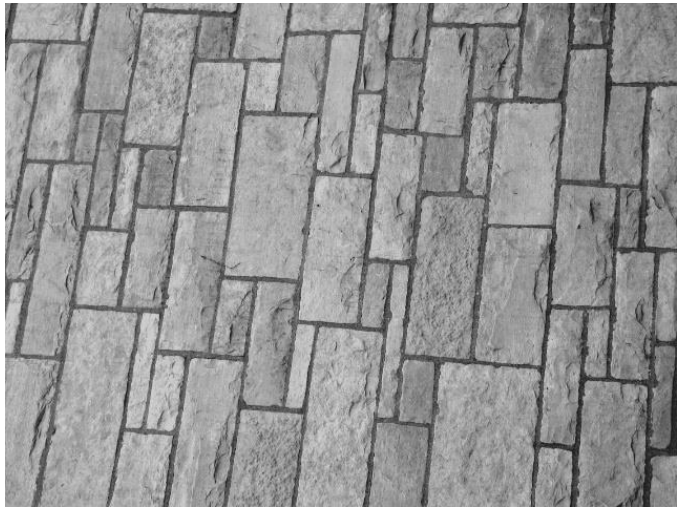
Texture and Material

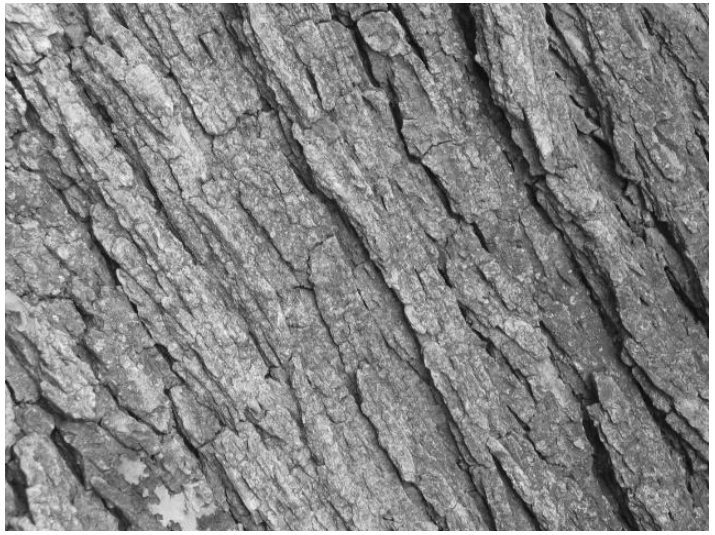


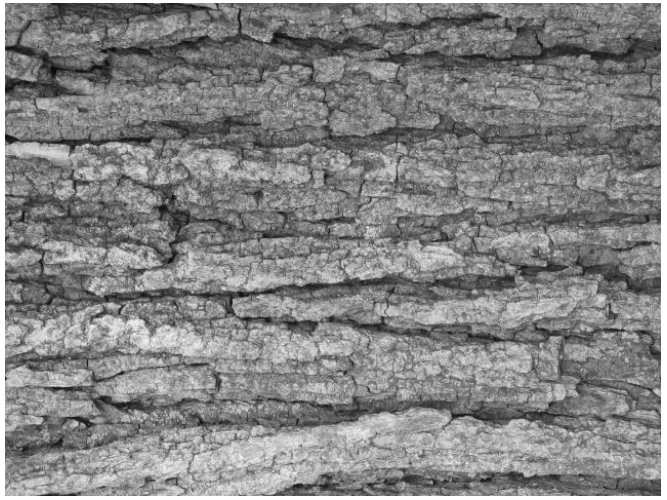




http://www-cvr.ai.uiuc.edu/ponce_grp/data/texture_database/samples/

Texture and Orientation





http://www-cvr.ai.uiuc.edu/ponce_grp/data/texture_database/samples/

Texture and Scale

http://www-cvr.ai.uiuc.edu/ponce_grp/data/texture_database/samples/

HMI
HUMAN MACHINE INTERACTION LABORATORY

What is texture?

Regular or stochastic patterns caused by bumps, grooves, and/or markings

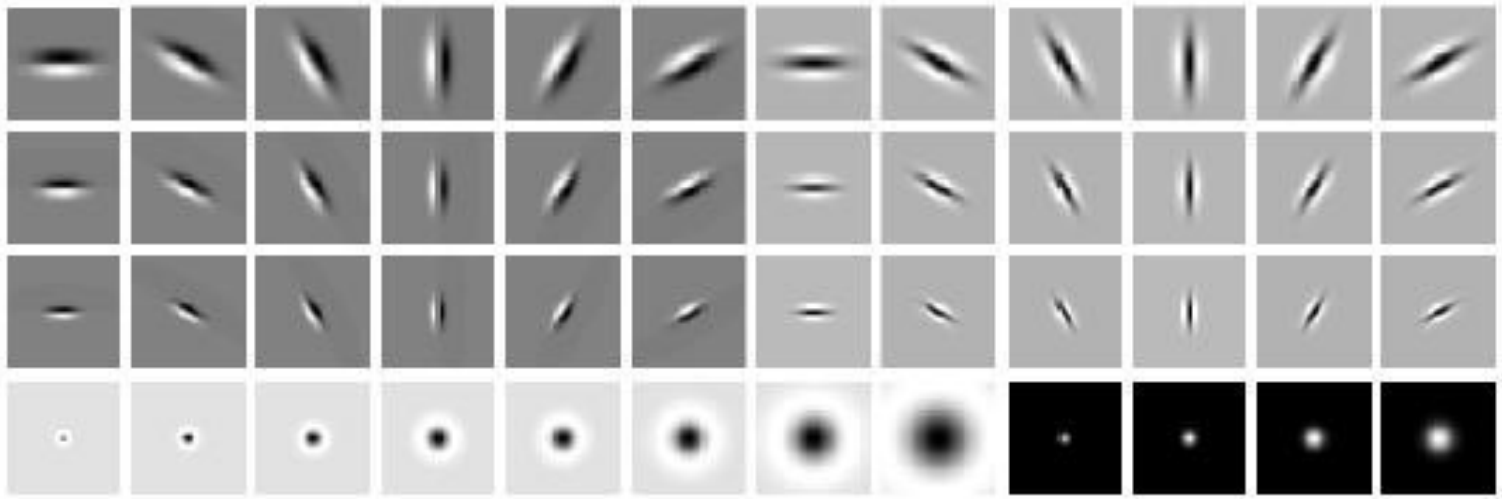
HMI
HUMAN MACHINE INTERACTION LABORATORY

How can we represent texture?

- Compute responses of blobs and edges at various orientations and scales

Overcomplete representation: filter banks

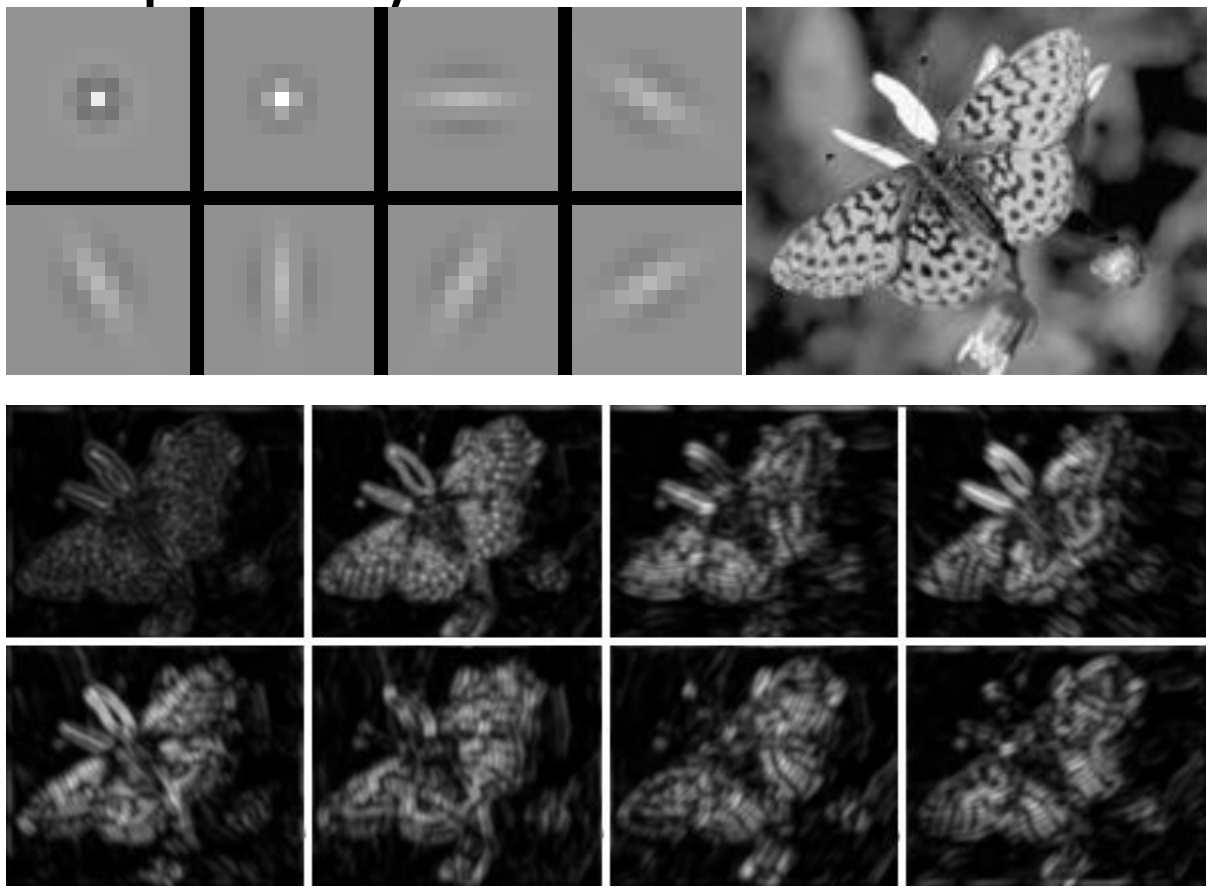
LM Filter Bank



Code for filter banks: *www.robots.ox.ac.uk/~vgg/research/texclass/filters.html*

Filter banks

- Process image with each filter and keep responses (or squared/abs responses)



HMI
HUMAN MACHINE INTERACTION LABORATORY

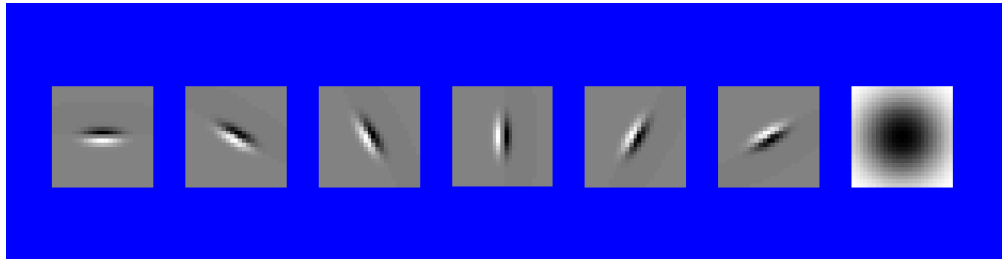
How can we represent texture?

- Measure responses of blobs and edges at various orientations and scales

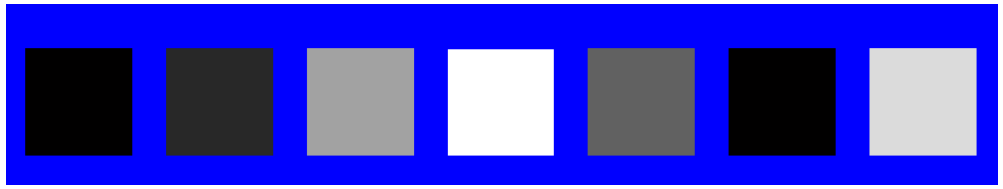
- Idea 1: Record simple statistics (e.g., mean, std.) of absolute filter responses

Can you match the texture to the response?

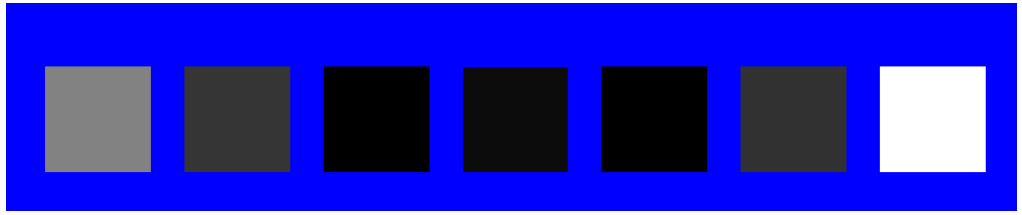
Filters



1



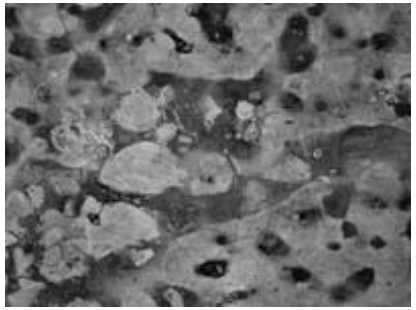
2



3

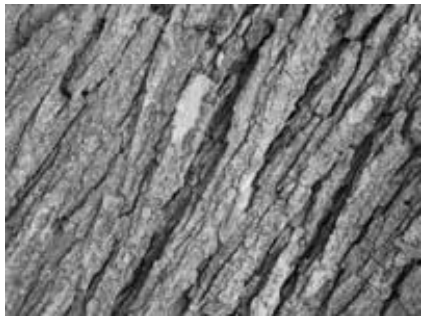
Mean abs responses

A

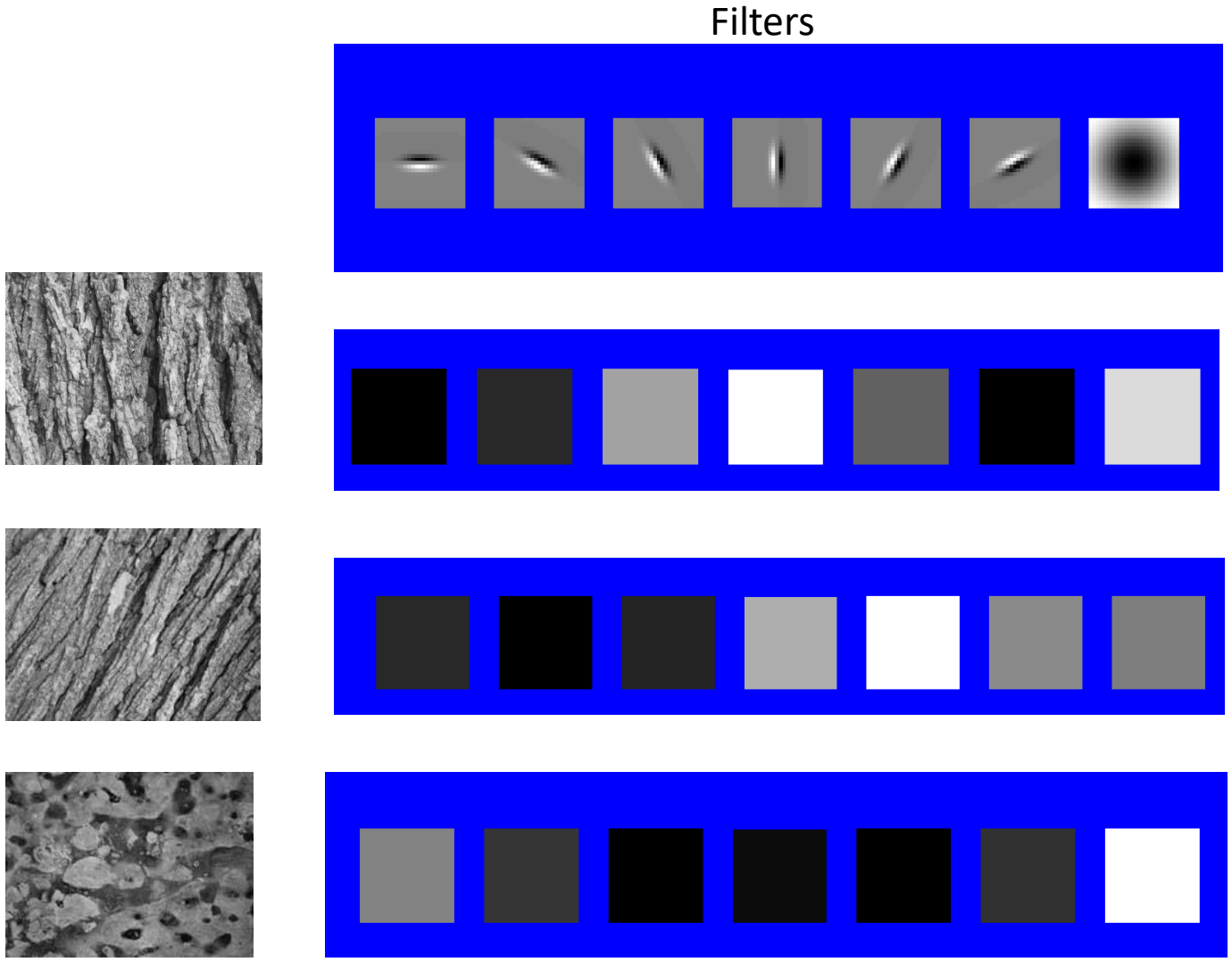


B

C



Representing texture by mean abs response



Representing texture

- Idea 2: take vectors of filter responses at each pixel and cluster them, then take histograms (more on this in coming weeks)