Example Project Topics

- A topic of your choice
  - With approval of instructor

Texture Processing

- Texture classification
  - Representing and Recognizing the Visual Appearance of Materials ...
    - https://people.eecs.berkeley.edu/~malik/papers/LM-3dtexton.pdf
  - www.robots.ox.ac.uk/~vgg/research/texclass/filters.html

Texture Processing

- Texture synthesis
    - https://en.wikipedia.org/wiki/Texture_synthesis
    - Efros-Leung 1999
      "Texture Synthesis by Non-parametric Sampling"
        - http://ieeexplore.ieee.org/document/790383
    - Wei-Levoy 2000
      "Fast Texture Synthesis using Tree-structured Vector Quantization"
        - http://dl.acm.org/citation.cfm?id=345009
- Exemplar-based Image Inpainting
    - http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=1323101

Scale Space Analysis

- https://en.wikipedia.org/wiki/Scale_space

- Edge detection + ridge detection with automatic scale selection

  – https://link.springer.com/article/10.1023/A:1008097225773

- Scale-space theory: A basic tool for analysing structures at different scales

  – http://www.csc.kth.se/~tony/abstracts/Lin94-SI-abstract.html

- Scale-Space for Discrete Signals

  – http://dl.acm.org/citation.cfm?id=607668&dl=ACM&coll=ACM

- Ridge detection

  – https://en.wikipedia.org/wiki/Ridge_detection

Deep Learning

- Deep learning in image processing

  – http://www.iro.umontreal.ca/~memisevr/talks/memisevicIcisp2016.pdf

- Convolutional neural networks

  – https://en.wikipedia.org/wiki/Convolutional_neural_network

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Image Enhancement

- Eye detection in face images

  – http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=1614821

  – https://link.springer.com/content/pdf/10.1007%2F978-3-642-31919-8_23.pdf

- Red eye removal

  – https://infoscience.epfl.ch/record/63852/files/VolkenTV06.pdf

  – http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=5648115

  – https://www.learnopencv.com/automatic-red-eye-remover-using-opencv-cpp-python/

  – http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=5597742

Image Enhancement

- Image colorization (B&W → Color photos

  - http://cs229.stanford.edu/proj2013/KabirzadehSousaBlaes-AutomaticColorizationOfGrayscaleImages.pdf
  - Patch Based Image Colorization

    - http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=6460810
    - Also look into the many references within

  - Transferring color to greyscale images

    - http://dl.acm.org/citation.cfm?id=566576

  - Colorful image colorization

    - https://arxiv.org/pdf/1603.08511.pdf

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