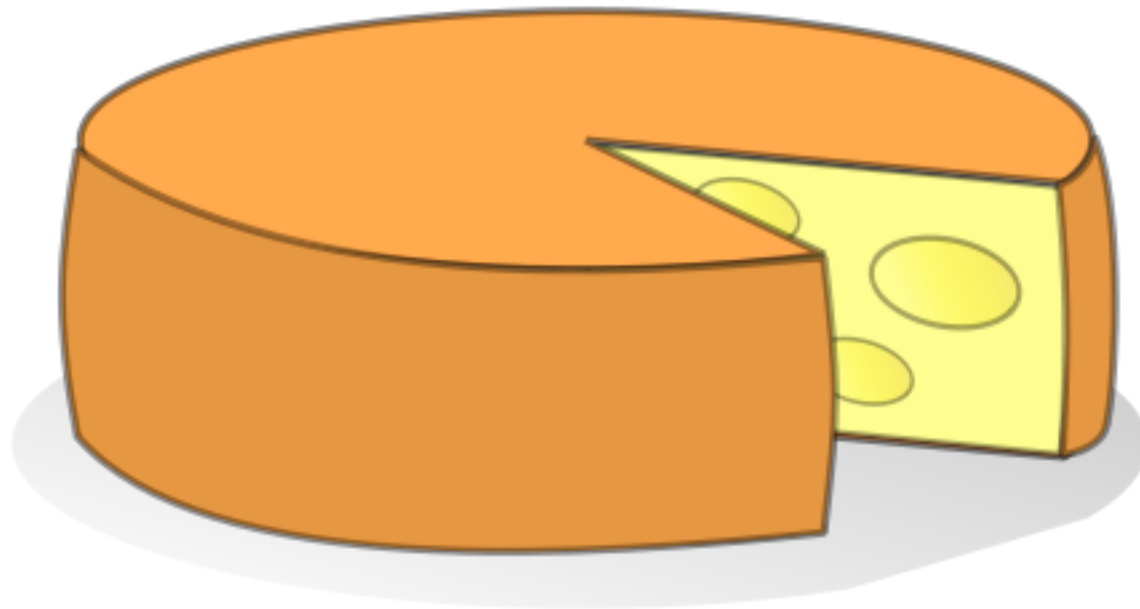


Computer Science E-7

Exposing Digital Photography

Lecture 1: Welcome!
August 29, 2011

danallan@mit.edu



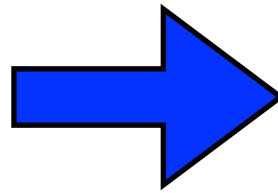
Cameras

Pinhole Cameras



Cameras

Pinhole cameras



Cameras

Single Lens Reflex (SLR)



Cameras

Non-SLRs

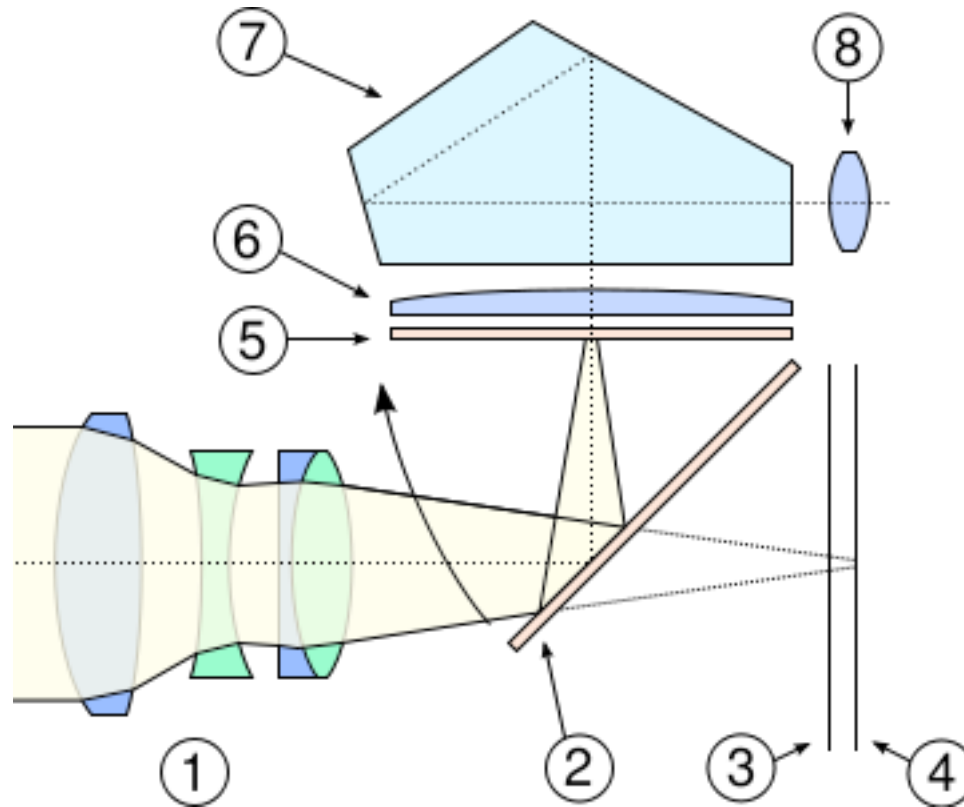


Image from http://en.wikipedia.org/wiki/Single-lens_reflex_camera

Cameras

Film Plane

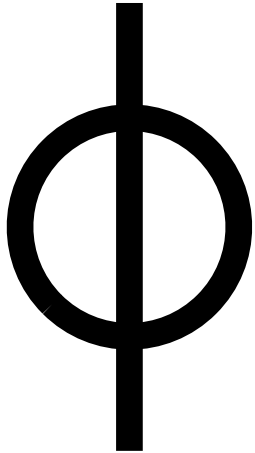


Image from <http://www.dpreview.com/reviews/canoneos40d/page7.asp>

Cameras

Location of the Focal Plane



Image from Digital Photography Review, <http://www.dpreview.com>

Cameras

Exposing SLRs



Photo by Dan Armendariz, 2007

Cameras

Exposing Dust



Photo by Dan Armendariz, 2007

Cameras

Exposing Dust



Exposing SLRs

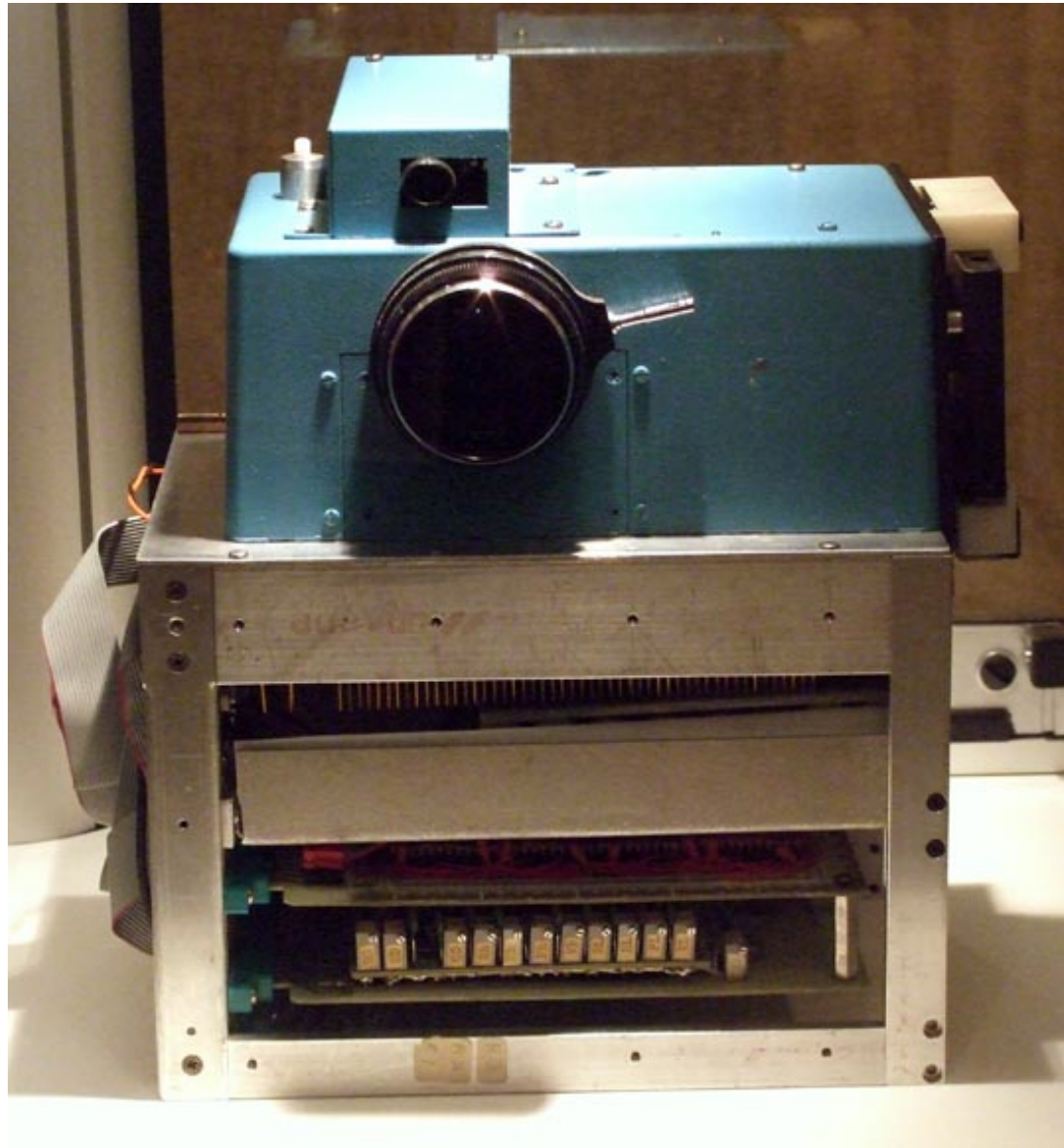


Image from CNET.co.uk: <http://crave.cnet.co.uk/digitalcameras/0,39029429,49293172-1,00.htm>

Cameras

Exposing SLRs



Image from CNET.co.uk: <http://crave.cnet.co.uk/digitalcameras/0,39029429,49293172-5,00.htm>

Cameras

Exposing SLRs

Bit	0 or 1
Byte	8 bits

Bits and Bytes

Refresher

Kilo-	1024 bytes
Mega-	1024 kilobytes (1,048,576 bytes)
Giga-	1024 megabytes (1,073,741,824 bytes)

Bits and Bytes

Refresher



Photo by Dan Armendariz, 2007

Bits and Bytes

Photos



Photo by Dan Armendariz, 2007

Bits and Bytes

Photos

JPEG

Red	Green	Blue
8-bit	8-bit	8-bit

Bits and Bytes

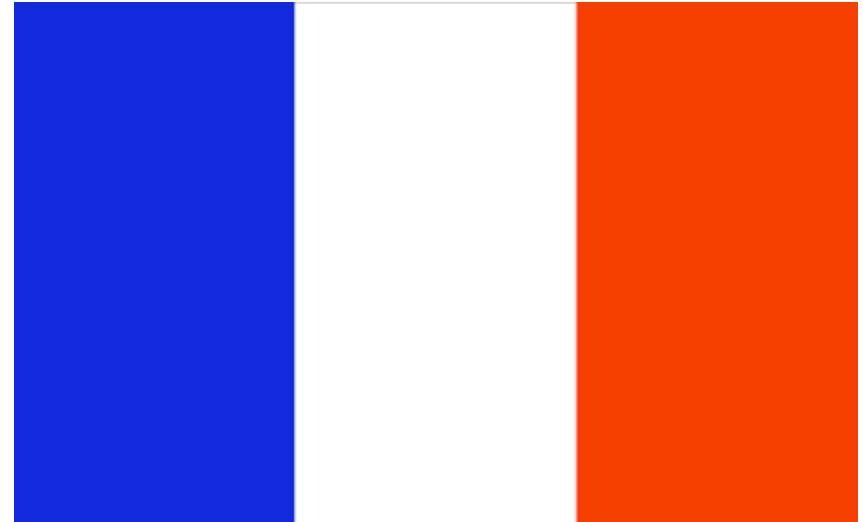
Colors

16-bit TIFF

Red	Green	Blue
16-bit	16-bit	16-bit

Bits and Bytes

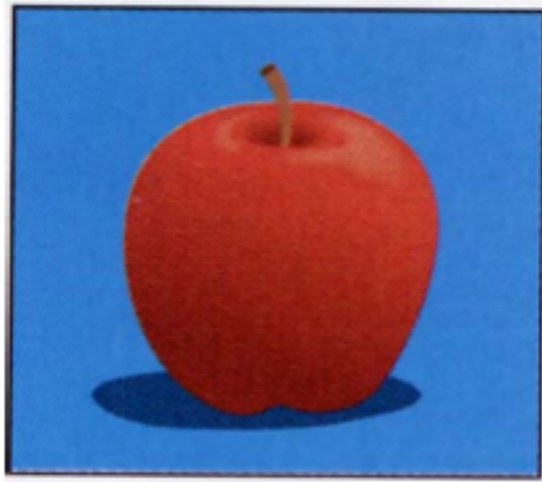
Colors



Flag images from <http://www.worldatlas.com/>, copyright © Graphic Maps.

Bits & Bytes

Compression



Images from Dennis P. Curtin, et al., Information Technology: The Breaking Wave, copyright ©The McGraw-Hill Companies, Inc.

Bits & Bytes

Compression

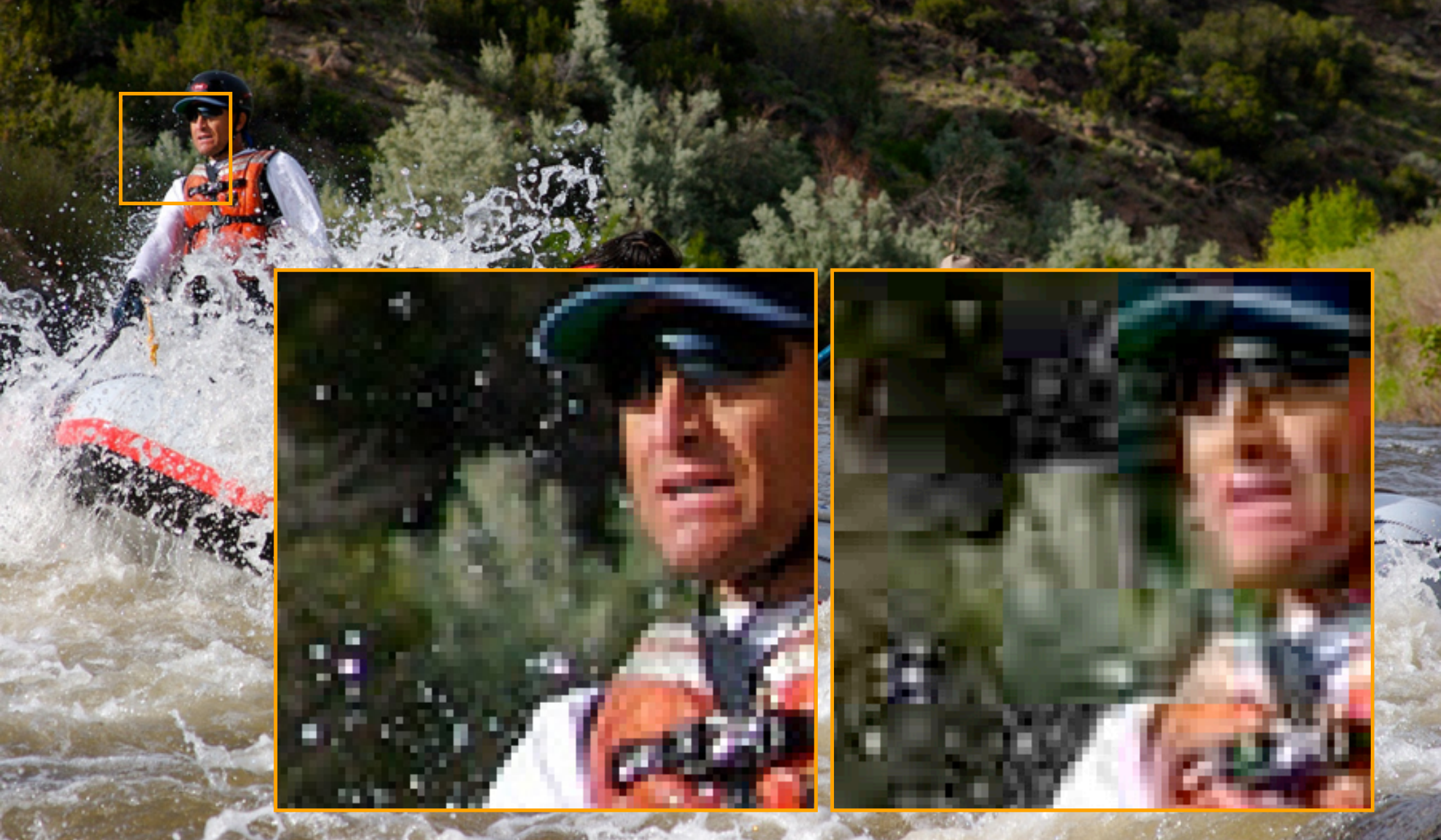


Photo by Dan Armendariz, 2007

Bits & Bytes

Lossless vs Lossy Compression

Name	Compression	Color	Alpha
JPG	Lossy	24-bit	No
GIF	Lossless	8-bit*	Yes
PNG	Lossless	24-bit	Yes**
PSD	Unknown (lossless)	48-bit	Yes
TIFF	Lossless	48-bit	No

* GIF contains an 8-bit palette (or subset of colors) from a 24-bit set of colors

** Some older software does not properly display transparency in PNG files

Bits & Bytes

File Types

Lecture 1: Welcome!
Lecture 2: Software Tools & Light
Lecture 3: Exposure
Lecture 4: Exposure (continued)
Lecture 5: Optics
Lecture 6: The Histogram
Lecture 7: Software Tools (continued)
Lecture 8: Movie night!
Lecture 9: Digital Cameras
Lecture 10: Digital Cameras (continued)
Lecture 11: Color
Lecture 12: Artifacts
Lecture 13: Even More Software Tools

Lectures
4 Projects
4 Problem Sets
1 Final Project
0 Exams

Computer Science E-7

Expectations

<http://cse7.org/>

Computer Science E-7

Website

staff@cse7.org

Computer Science E-7

Staff Email address

<http://www.dropbox.com/>

<http://blog.cse7.org>



Image from <http://www.dpreview.com/reviews/panasonicfz8/>

Computer Science E-7

Cameras

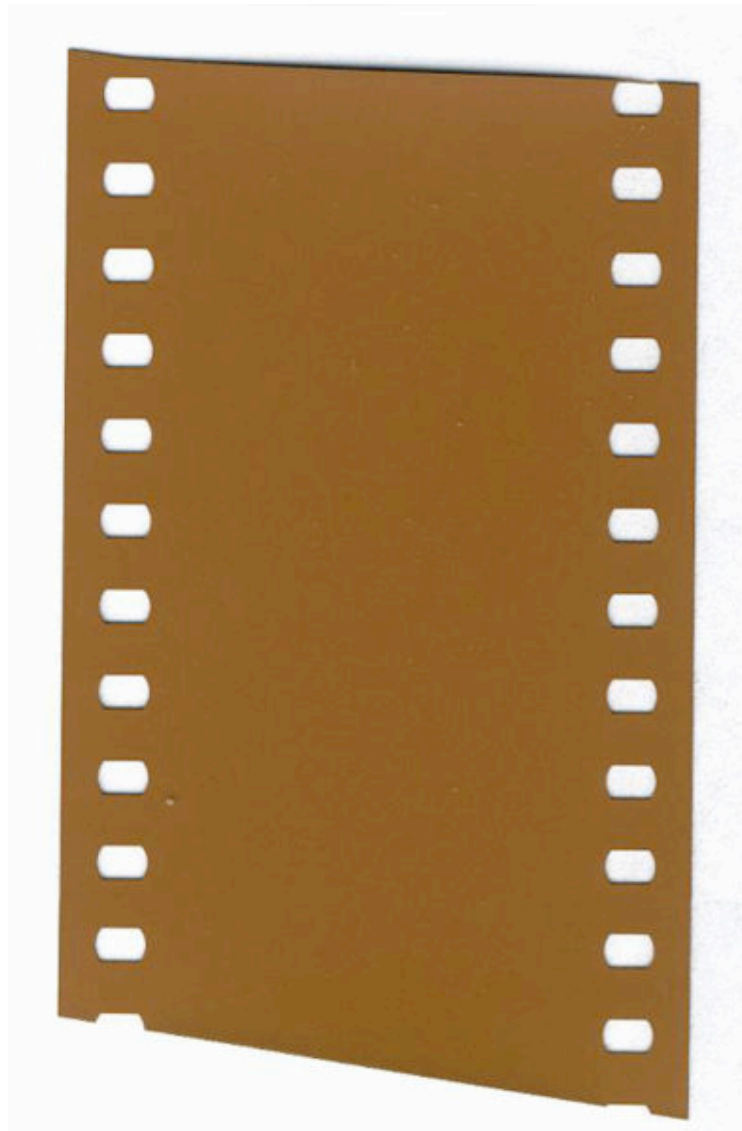


Image from http://en.wikipedia.org/wiki/35mm_film

Computer Science E-7

Similarity to Film



Photo by Dan Armendariz, 2007

Photographs

What makes a photo interesting?



Photo by Dan Armendariz, 2007

Composition

Rule of Thirds



Digital Photography

An Expensive Hobby

Computer Science E-7

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