THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

Department of
Electronic & Computer
Engineering
電 子 及 計 算 機 工 程 學 系

ELEC 1020

Media Production: Technology and Design

Lecture 4

Prof. James She (*james.she@ust.hk*)

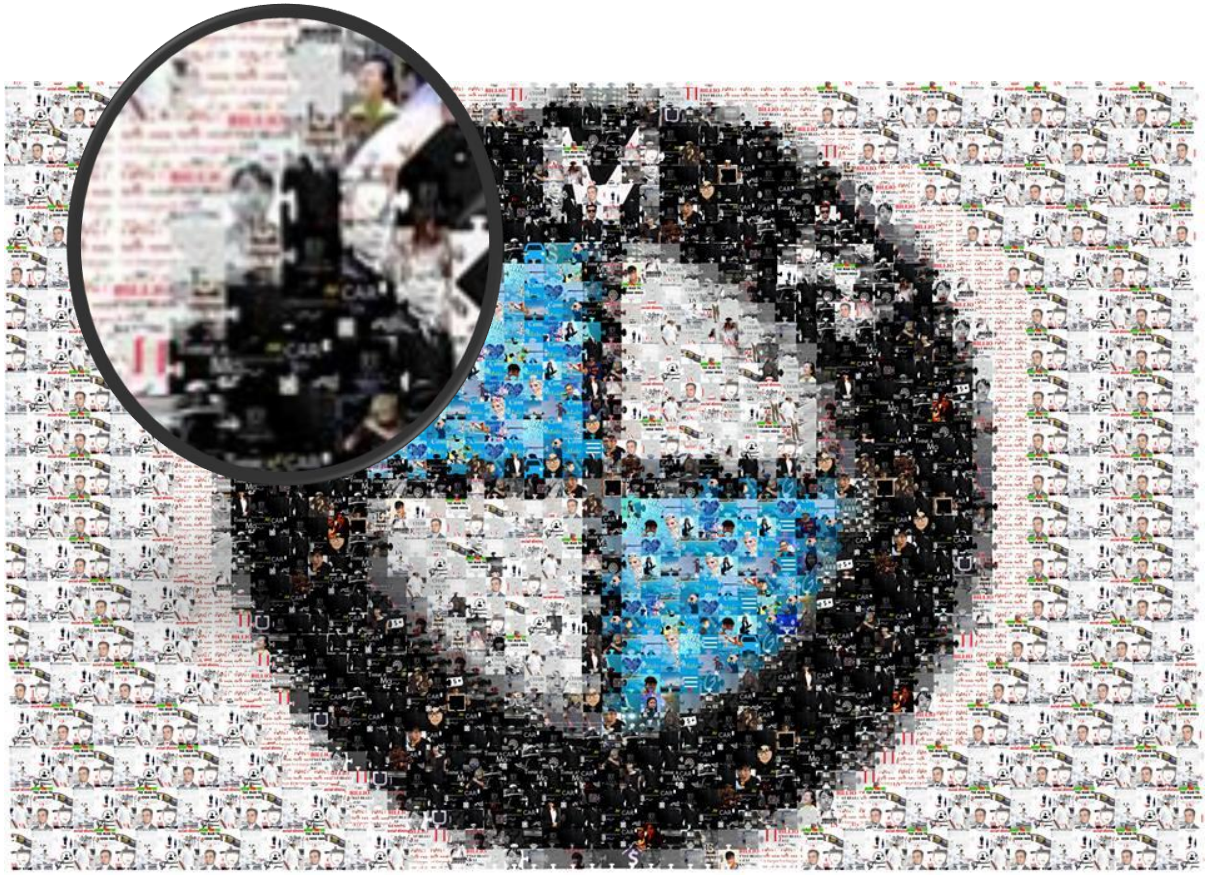
Announcement

1. Mid-term Exam next Tue (1 hour in the lecture)
   - Everything up to L4 and Lab 3

2. Prepare your iHome account before Lab 3
   - Check the coming Facebook post for details

Selected Creative Tasks

Selected Creative Tasks

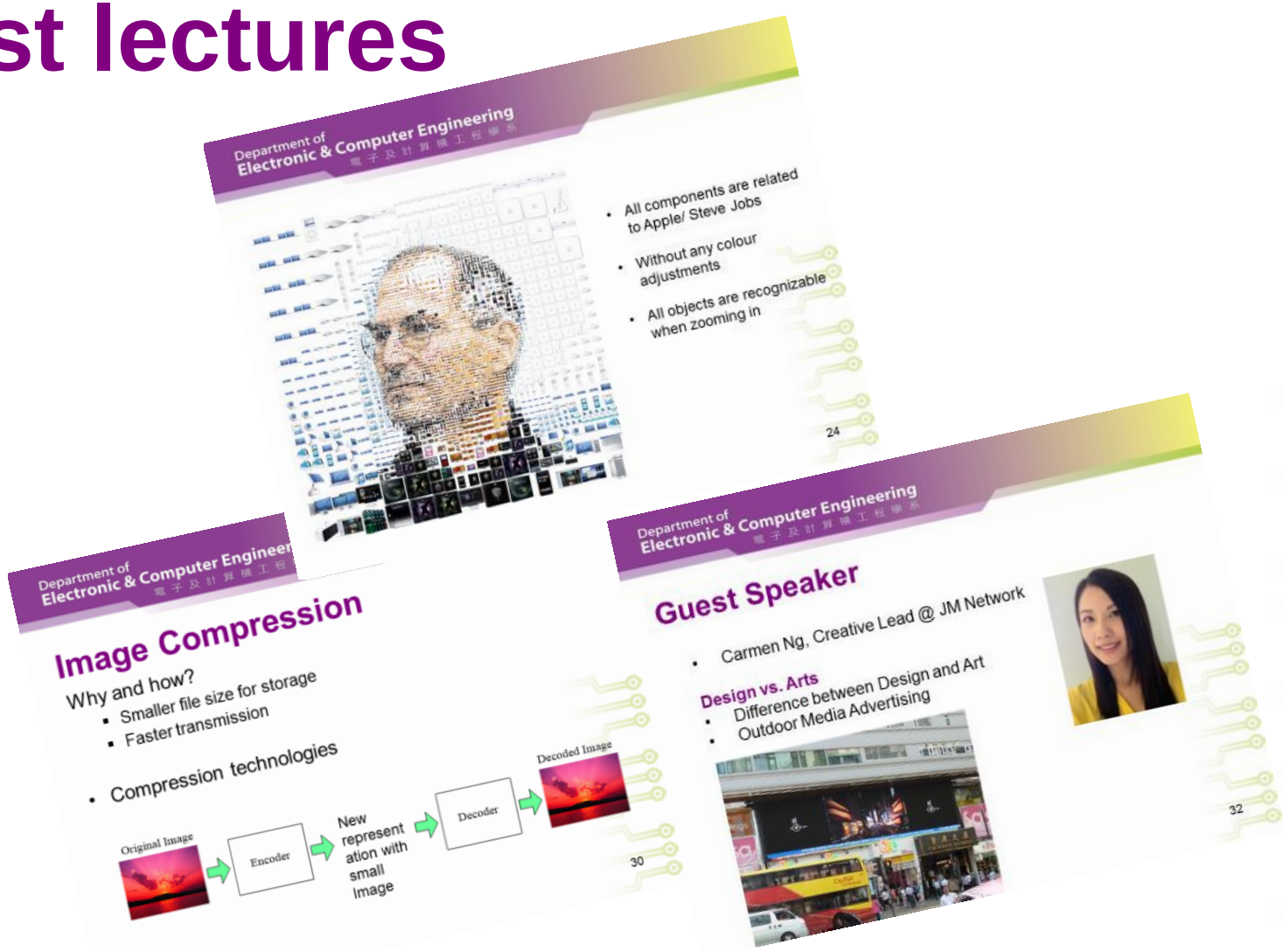


Selected Creative Tasks

Scoring Rubric For the Labs

max. 4 (100%) out of 4	4 (100%) Exceeds Standard	2 (50%) Meets Standard	1 (25%) Approaches Standard	0 (0%) Fails
Evaluation of your production in terms of design and technical effectiveness	**On top of the standard** deliverables, students showed **unusual insight, complexity, originality, or creativity** with their message or choice of an art form or medium to express it.	Students completed **ALL** required messages and reproduced the expected art form or medium.	Students **partially** completed the required messages and reproduced the expected art form or medium.	Students **FAILED to complete any** required messages and reproduced the expected art form or medium.
	Work shows **rich** evidence that student researched his/her **OWN** ideas, art form, and the techniques of his/her art form.	Work shows **full** evidence that students completed the required ideas, art form, and the techniques of art form expected.	Work shows **partial** evidence that students completed **some** required ideas, art form, and the techniques of art form expected.	Work shows **NO** evidence that students completed any required ideas, art form, and the techniques of art form expected.

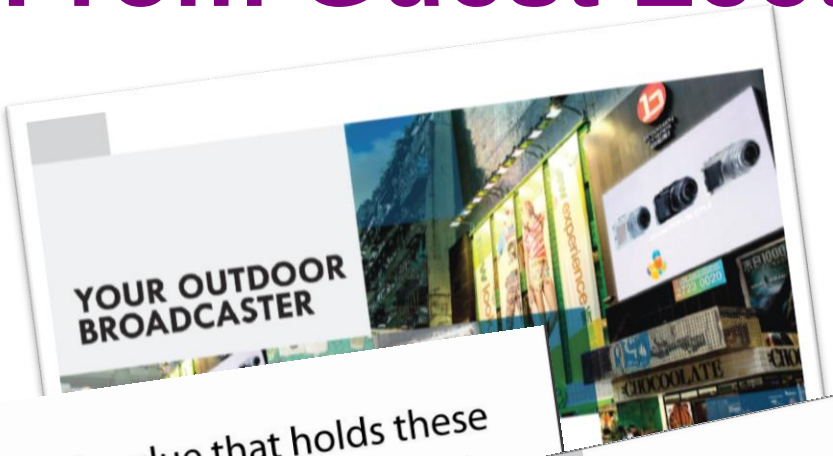
Last lectures



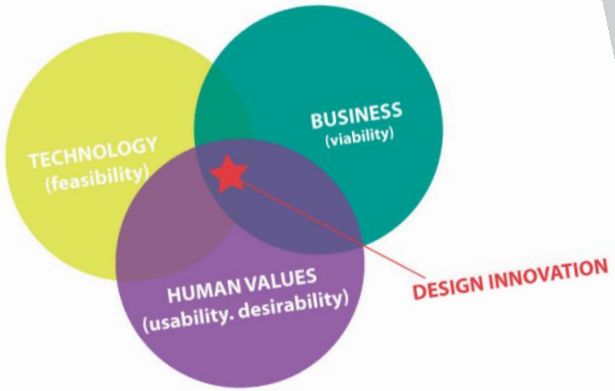
Outcomes from this lecture

1. Arts and Designs
2. Image File Formats and Sizes
3. Animation

Recall From Guest Lecture



"Design thinking is the glue that holds these disciplines together." - Institute of Design at Standard.



Artists and Designers both create visual compositions, but their **REASONS** (or the purpose) for doing so are different.

Man and Woman,1958, by Picasso

Man and Woman, some toilet signs

Recall From Guest Lecture

Art vs Design

Recall From Guest Lecture

Art vs Design

Recall - What's Media? Content and Medium

Digital Billboard Network

Content
1. REMAX
2. Sales Performance
3. Contact

Medium
1. Digital display
2. Internet
3. Wireless

Evolution of Outdoor Media

Marketing

1. “the process of performing market research, selling products and/or services to customers and promoting them via advertising to further enhance sales.” – wikipedia.com

2. “the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large.” – American Marketing Association

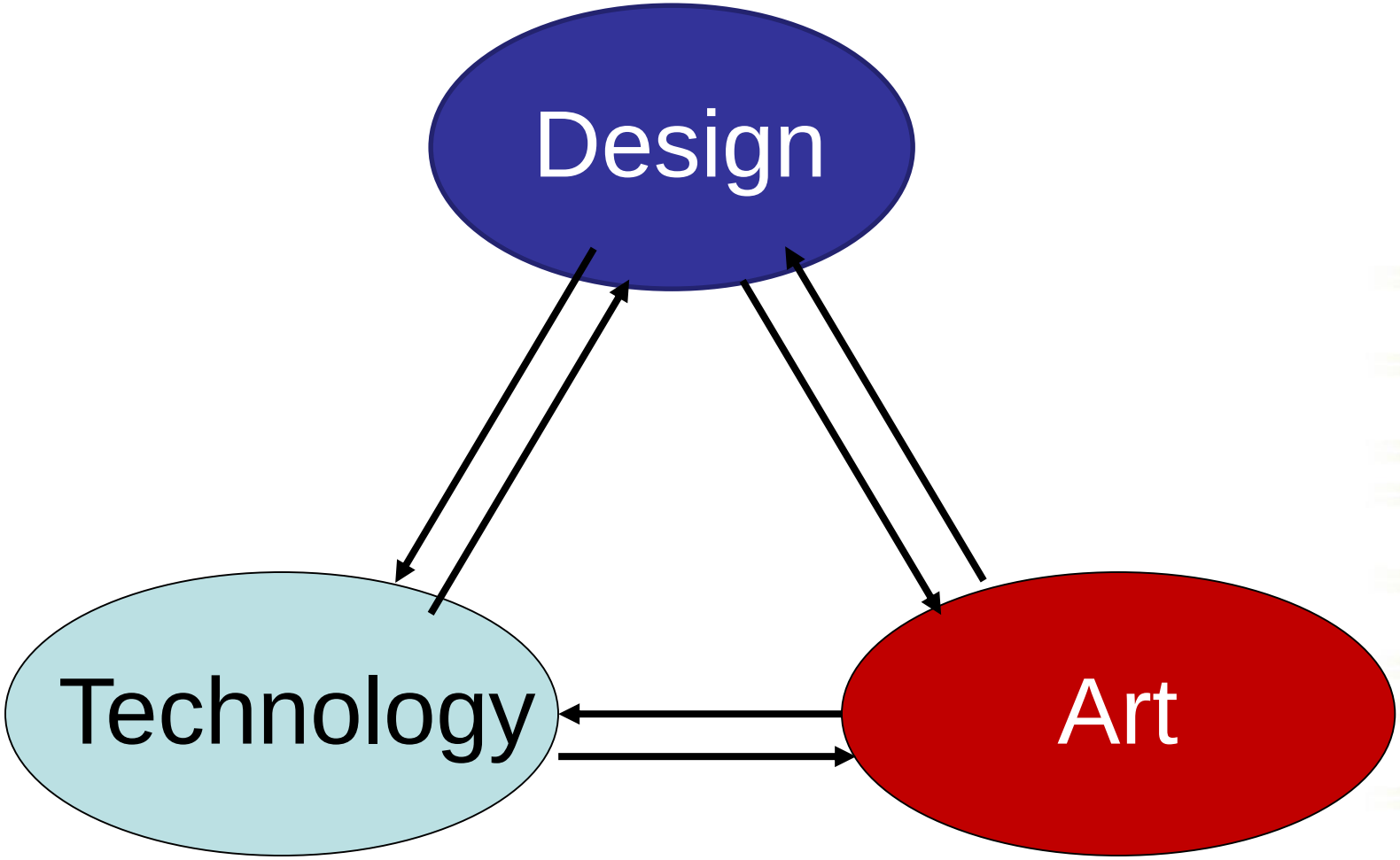
and more…

Application of Outdoor Media: Marketing

Design Goals:

- to sell through persuasion of a product/ idea/ service to a wide audience.
- to broadcast a message that will reach the largest number of people.

Art, design and Technology



Recall: Design Principles

A. Understanding the original marketing message

1. what is the contextual meanings?
2. any other cultural meanings?
3. from who (e.g., a charity)? to who (e.g., student)?
4. what impression/ image is needed?
5. how long is aimed to last?
6. etc.

Recall: Design Principles

B. Knowing more about your targeted audience

1. what are the environments they perceive the message?
2. what are their ages? and demographics?
3. what are the common languages?
4. their cultures?
5. their educational backgrounds?
6. etc.

Recall: Design Principles

C. Identifying the right digital media and multimedia technologies

1. Making it artistically and technically looking good/pretty?
2. Is it the right media type (e.g., text, song, photo, video, etc.) and the form of presentation/delivering (e.g., email? facebook?)
3. the perceptual meanings (e.g., visually) aligned to the meanings of the original message?
4. Is the media effect (e.g., loudness, tones, styles) aligned to the original message?
5. Is it a right mix of various digital media?
6. etc.

Out-of-class Activity (Facebook page) – selected works

bmp size: 900KB
jpg size: 317KB

bmp size: 900KB
jpg size: 119KB

bmp size: 900KB
jpg size: 20.8KB

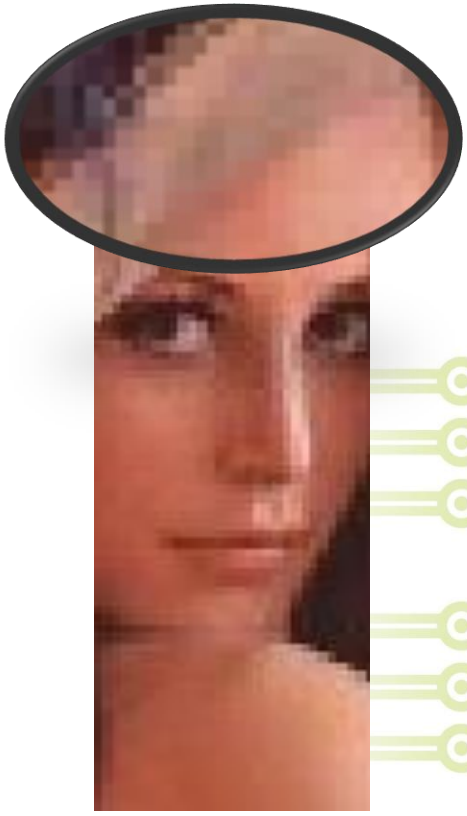
bmp size: 900KB
jpg size: 7.8KB

Comparison of file formats

BMP: 48.0KB

PNG: 30.3KB

GIF:15.8KB



JPG: 6.55KB

GIF – Compressing by using less colors

Color Look-Up Table (CLUT) - 1

- Reduced 24-bit pixel to 8-bit per pixel
  - 16 million colors ➔ 256 colors (e.g., .gif format)
  - Use 0-255 to represent the color
- Rather than light intensity values (RGB) on each pixel
  - Index number / pixel + Color Look-Up Table (CLUT)

23	11	2	180	200
9	12	24	1	150
234	12	4	4	4
202	235	35	0	23
3	191	212	0	113

Memory Map

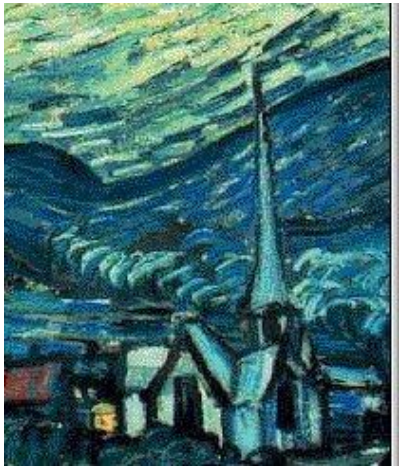
Index	R	G	B
…	…	…	…
149	35	0	23
150	9	12	24
151	202	235	180
…	…	…	…

CLUT

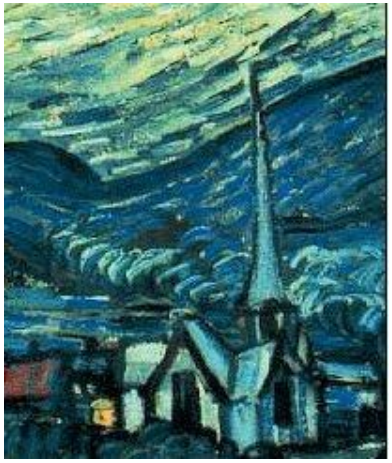
GIF

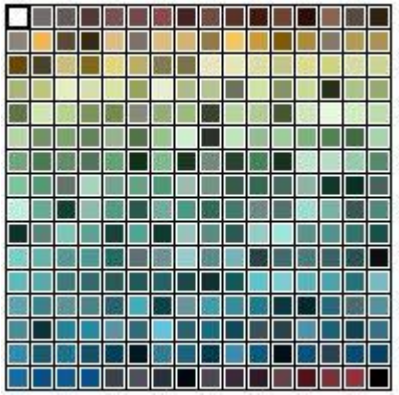
CLUT

Before

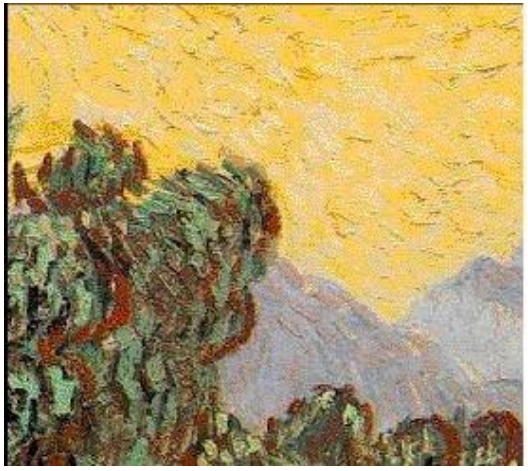


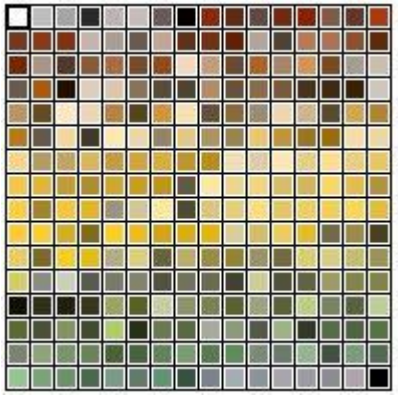
After





CLUT #1





CLUT #2

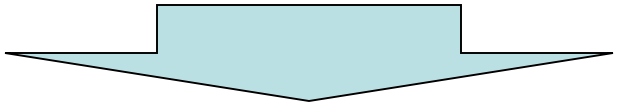
5 minutes BREAK

What is Animation?

Example

What is animation:
http://www.youtube.com/watch?v=Y6lLVDGF6kc

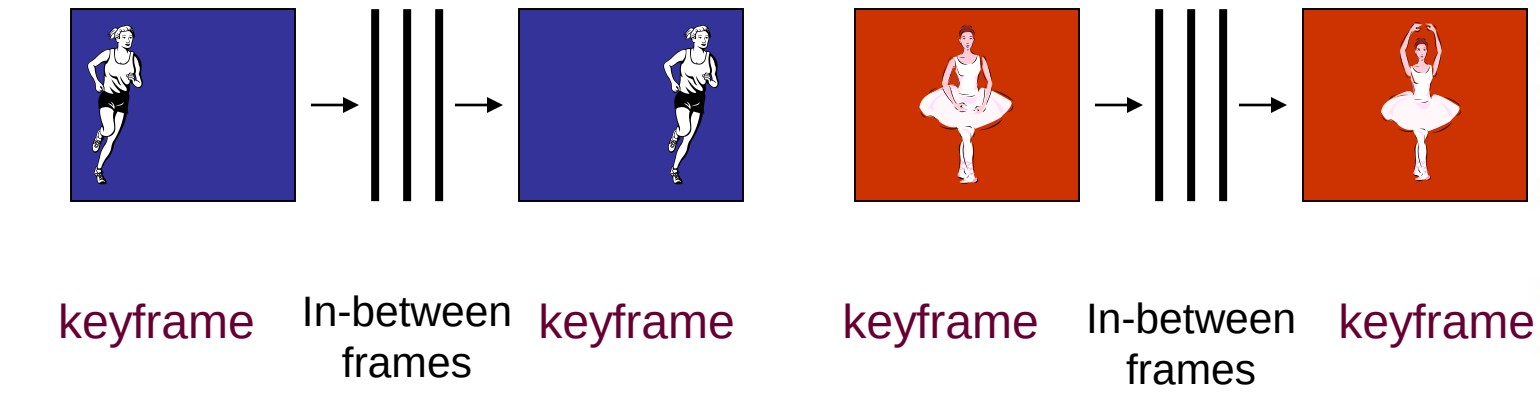
Animation: A sequence of related pictures



Basic of Animation

Concept of Keyframe

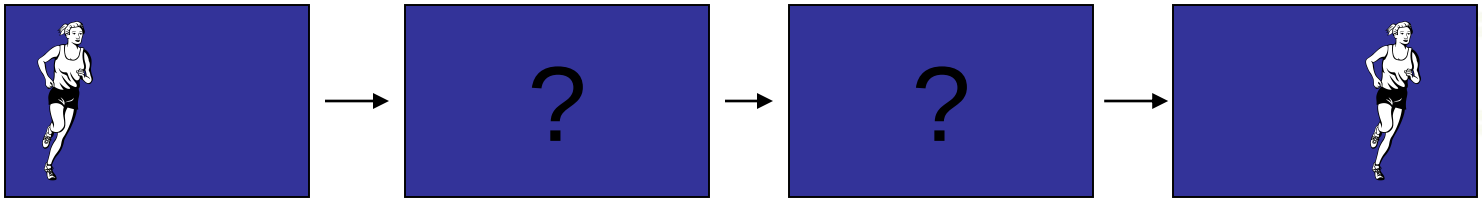
- Keyframes define the end points of an animation sequence
- Scene and objects within a pair of keyframes are usually strongly related
- Animations are only performed between a pair of keyframes, but not inter-keyframes



In-between generation

Some relationships

- With the first and last frame given, how to generate in between frames?
- Example:



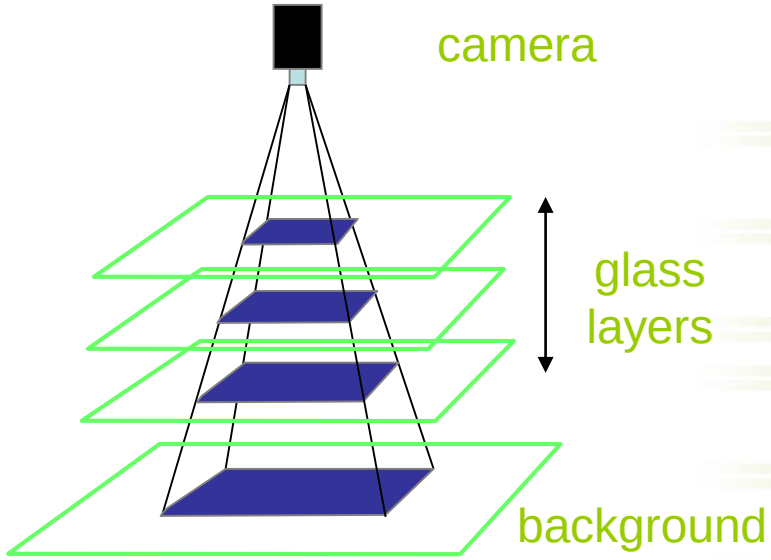
- Requires some relationships between the first and last frame before animation make sense

- What relationship requires for start/end keyframes?

Traditional Animation Techniques

Stages of animations

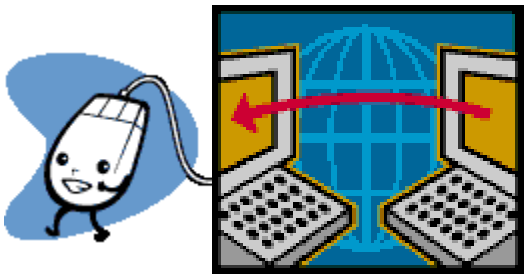
- Storyboard
- Layout
- Sound track
- Keyframe definition
- In between filling
- Painting on transparency
- Filming with camera
- Post production editing



Computer Assisted Animation

Role of computer in animation

- To digitize drawing
- To produce in-between frames
- Specify the motion of an object
- Rendering of object with respect to background
- Synchronization of movie and sound track
- Digitized effect filters
- Conversion between different standards



Types of in-between generations and movements

In-between generations

Requirements

- A technique to create an illusion of movement by a series of photographic drawing (or frames)
- Process of dynamically generating a series of frames for a set of given objects

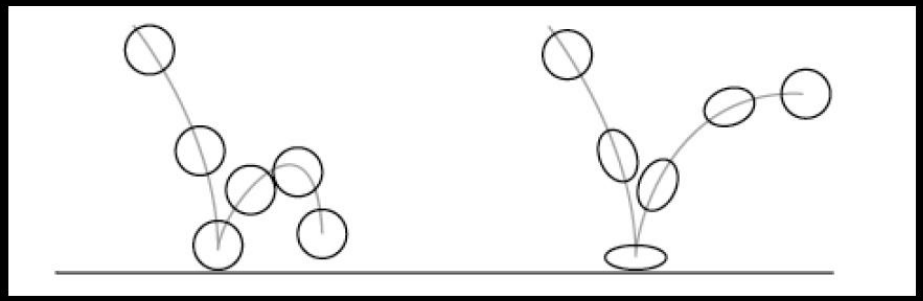
Type of animation effects

- Motion and rotation
- Metamorphosis and shape changes
- Color/ Transparency modification

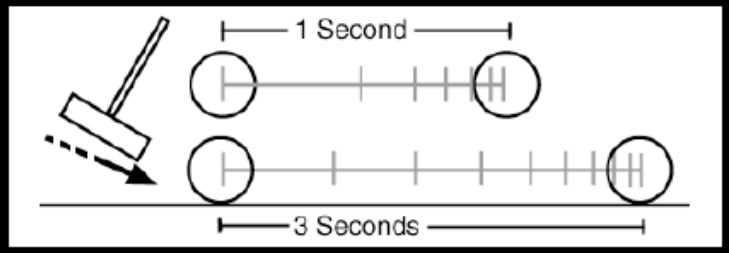
More Examples

Design the cast of each object

Squash and Stretch



Timing

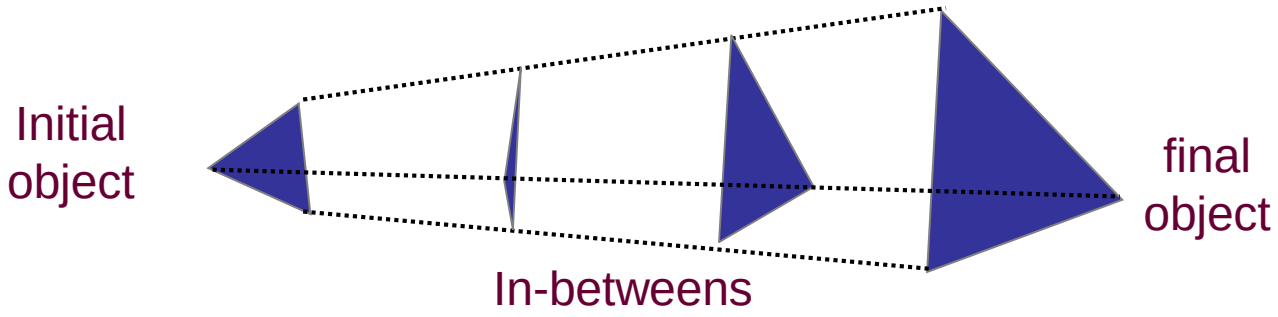


Slow-In Slow-Out

In-between generation in objects -2

Translation, scaling and distortion

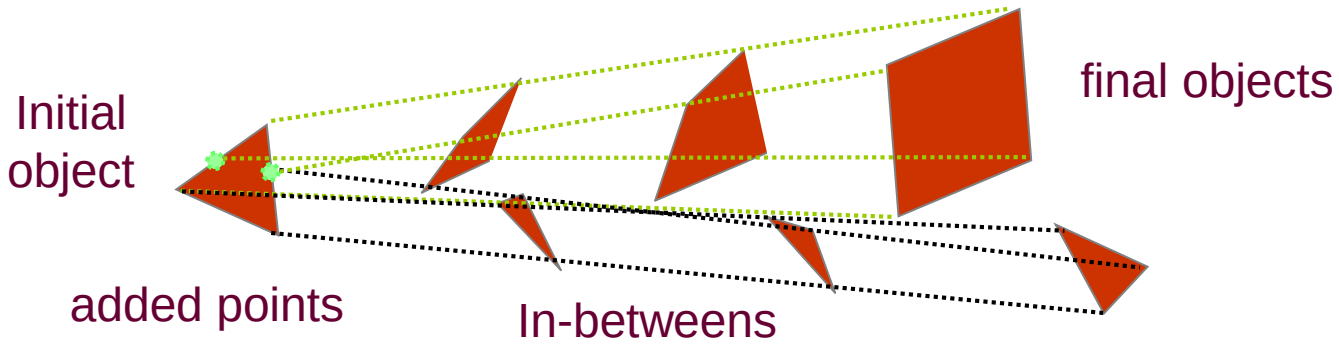
- Number of vertices, edges and planes are not altered
- Motion path interpolation can be used



In-between generation in objects - 3

Metamorphosis

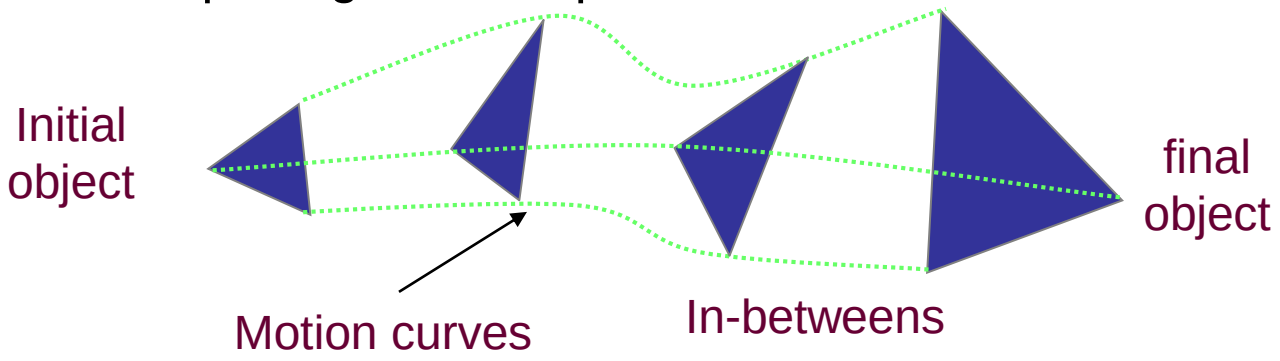
- Number of vertices, edges and planes are altered
- Need to insert vertices to match the between initial and final object(s)



In-between generation in objects - 4

Motion curves

– Instead of linear vertices translation, non-linear function and non-uniform spacing can be specified



– Motion can be defined by non-linear functions $f_x(t)$ & $f_y(t)$ such that $(f_x(0)\ ,\ f_y(0)) = (x_0,y_0)$ and $(f_x(1)\ ,\ f_y(1)) = (x_1,y_1)$ the new co-ordinates are

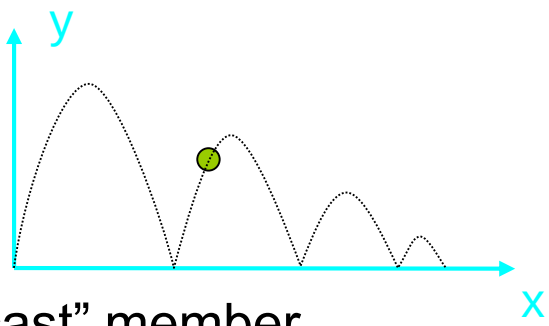
$$x = f_x(t)$$
$$y = f_y(t) \quad \text{with } t : 0 \rightarrow 1$$

Behavioral Animation - 1

Complex object animation

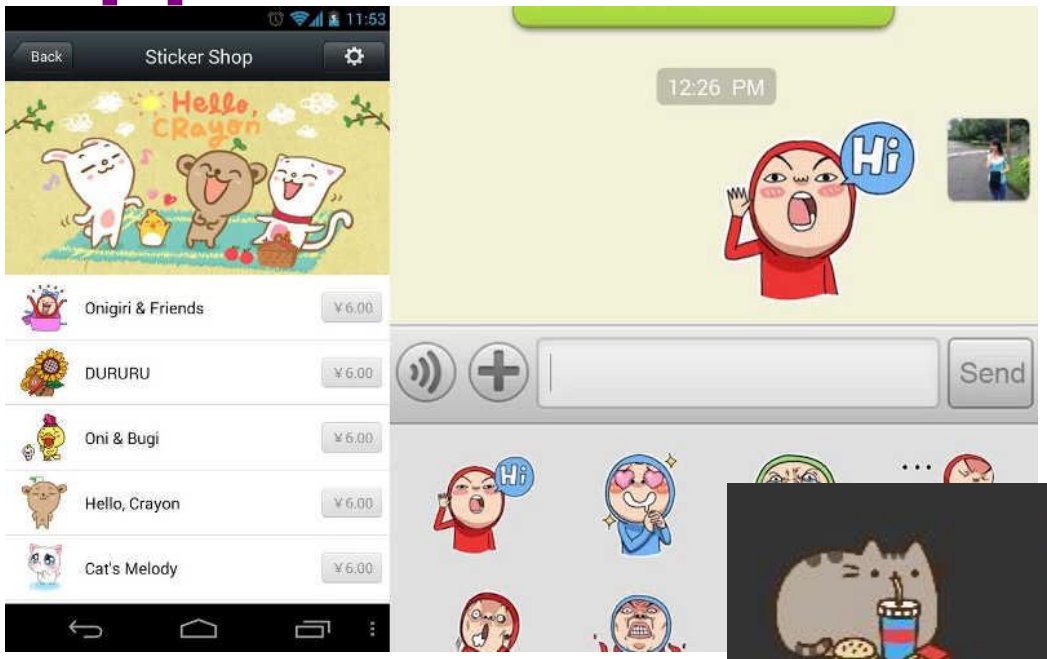
- The behavior of some objects can be governed by simple or complex physical laws
- Individual object can have a set of behavior describing it and put it into a scene of animation
- e.g., A bouncing ball

$$(x, y) = (f_x(t), f_y(t))$$



- Each object is considered as a “cast” member

Application #1: Mobile apps



WeChat Sticker

Facebook Sticker

Applications #2: Advertising

1. Apliman Mobile Advertising
   - http://www.youtube.com/watch?v=pNx9R29vAp4

- End of Lecture 4 -