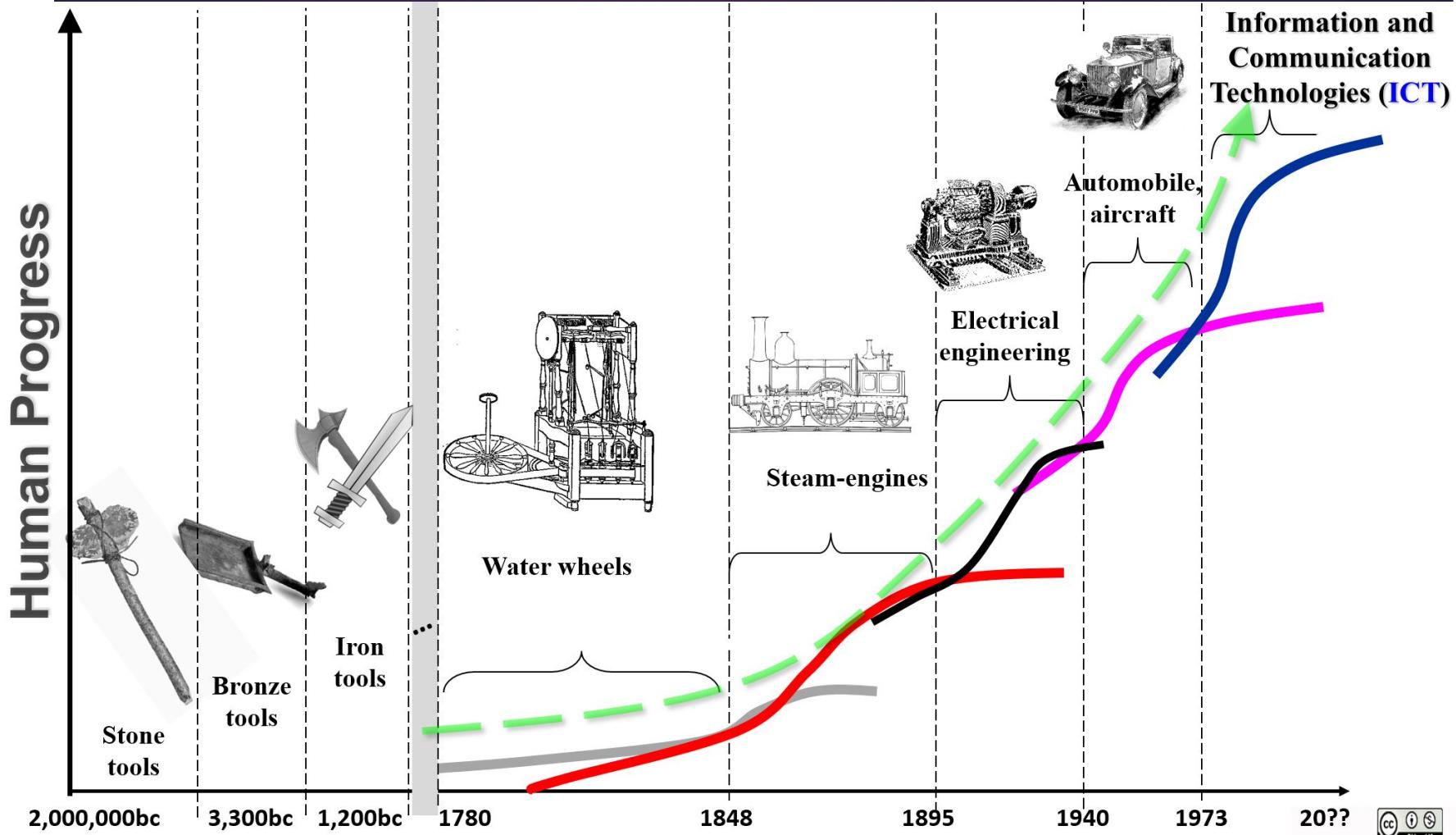


Visual Computing

DR. TERENCE SIM
SCHOOL OF COMPUTING
NATIONAL UNIVERSITY OF SINGAPORE

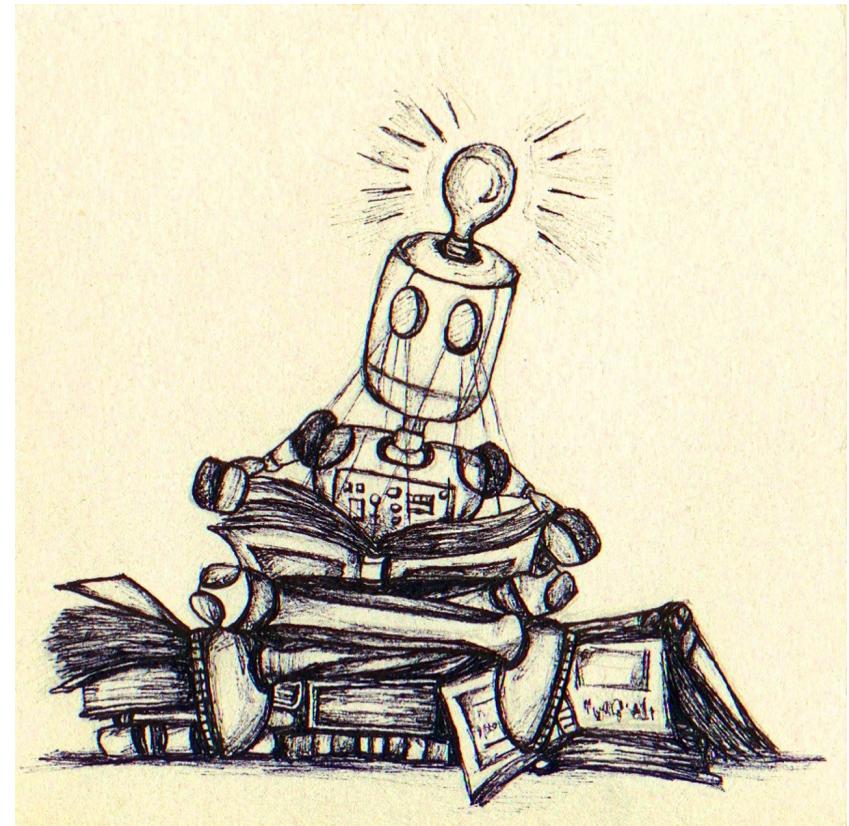
shotNumber 130
AFO_vjCarRear_0 x: -0.4, y: 5.4, z: 1.8, dist:5.7
OBS.RedCC.3 x: -5.7, y: 15.3, z: 0.3, h:0.7, dist:16.0
OBS.RedCC.4 x: -4.1, y: 21.6, z: -0.5, h:0.8, dist:16.0
OBS.RedCC.5 x: -5.0, y: 9.4, z: 0.2, h:0.7, dist:10.7
OBS.RedCC.7 x: -3.1, y: 9.5, z: 0.2, h:0.7, dist:10.0

Making Machines Smarter



Programming vs Learning

```
1<?php // Element class="ie 10">
2<?php language_attributes(); ?>>
3<meta charset="<?php bloginfo( 'charset' ); ?>" />
4<meta name="viewport" content="width=device-width" />
5<link rel="profile" href="<?php bloginfo('http://gmpg.org/xfn/11' ?>" />
6<link rel="pingback" href="<?php bloginfo('pingback_url' ?>" />
7<php fruitful_get_favicon(); ?>
8<?php wp_head(); ?>
9</head>
10<body <?php body_class(); ?>>
11<div id="page-header" class="hfeed site">
12<?php
13    $theme_options = fruitful_get_theme_options();
14    $logo_pos = $menu_pos = '';
15    if (isset($theme_options['logo_position'])) {
16        $logo_pos = esc_attr($theme_options['logo_position']);
17    }
18    if (isset($theme_options['menu_position'])) {
19        $menu_pos = esc_attr($theme_options['menu_position']);
20    }
21    $logo_pos_class = fruitful_get_theme_options('logo_position');
22    $menu_pos_class = fruitful_get_theme_options('menu_position');
23    $responsive_menu_type = fruitful_get_theme_options('responsive_menu_type');
24    $responsive_menu_class = fruitful_get_theme_options('responsive_menu_class');
25    $responsive_menu_align = fruitful_get_theme_options('responsive_menu_align');
26    $responsive_menu_center = fruitful_get_theme_options('responsive_menu_center');
27    $responsive_menu_centered = fruitful_get_theme_options('responsive_menu_centered');
28    $responsive_menu_centered_width = fruitful_get_theme_options('responsive_menu_centered_width');
29    $responsive_menu_centered_width_px = fruitful_get_theme_options('responsive_menu_centered_width_px');
30    $responsive_menu_centered_width_percent = fruitful_get_theme_options('responsive_menu_centered_width_percent');
31    $responsive_menu_centered_width_min = fruitful_get_theme_options('responsive_menu_centered_width_min');
32    $responsive_menu_centered_width_max = fruitful_get_theme_options('responsive_menu_centered_width_max');
33    $responsive_menu_centered_width_min_px = fruitful_get_theme_options('responsive_menu_centered_width_min_px');
34    $responsive_menu_centered_width_max_px = fruitful_get_theme_options('responsive_menu_centered_width_max_px');
35    $responsive_menu_centered_width_min_percent = fruitful_get_theme_options('responsive_menu_centered_width_min_percent');
36    $responsive_menu_centered_width_max_percent = fruitful_get_theme_options('responsive_menu_centered_width_max_percent');
37    $responsive_menu_centered_width_min_percent_px = fruitful_get_theme_options('responsive_menu_centered_width_min_percent_px');
38    $responsive_menu_centered_width_max_percent_px = fruitful_get_theme_options('responsive_menu_centered_width_max_percent_px');
39    $responsive_menu_centered_width_min_percent_percent = fruitful_get_theme_options('responsive_menu_centered_width_min_percent_percent');
3
```



Learning Ping Pong



<https://youtu.be/SH3bADiB7uQ>

Visual Computing Overview

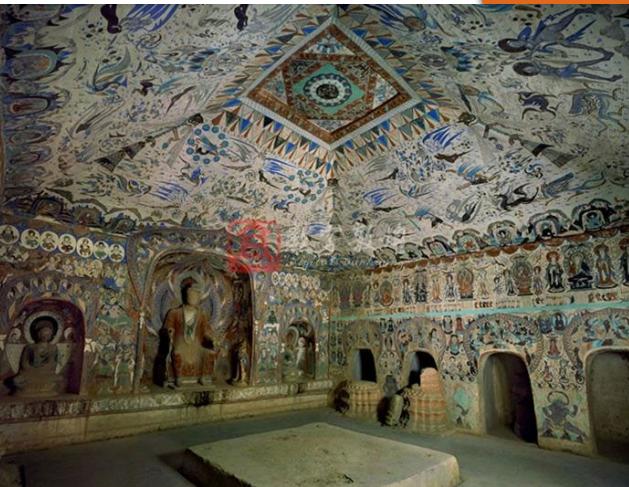


<https://youtu.be/xoyNiatRih4>

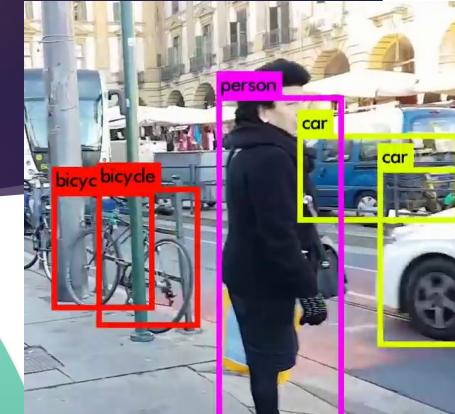
Computational
Photography

Pattern
Recognition

3D
Reconstruction



<https://youtu.be/jlr5BaY9aPk>



Applications



Military /
Security

Medicine

Education

Transport
ation

Phone
apps

Sports

and many more ...

Face Detection: In memory of Dr. Sung Kah Kay, 31 Oct 2000

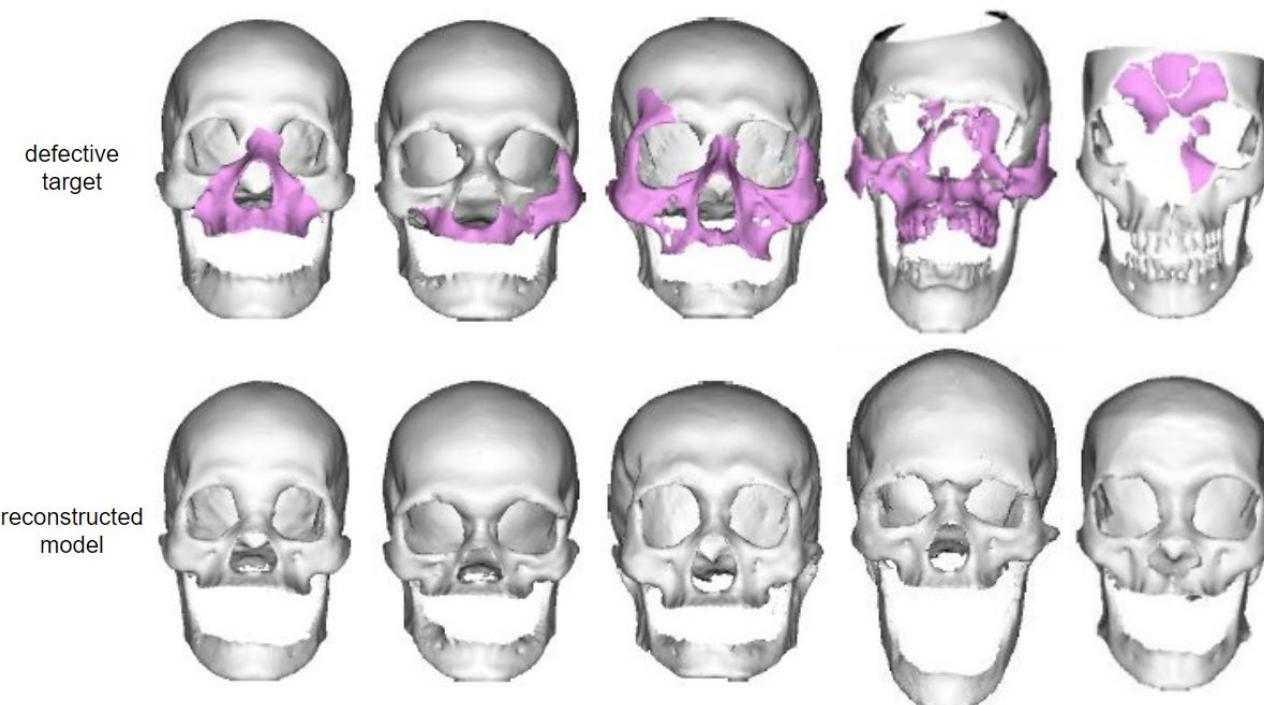


Learning and Example Selection for Object and Pattern Detection
MIT PhD Thesis 1996

Skull reconstruction

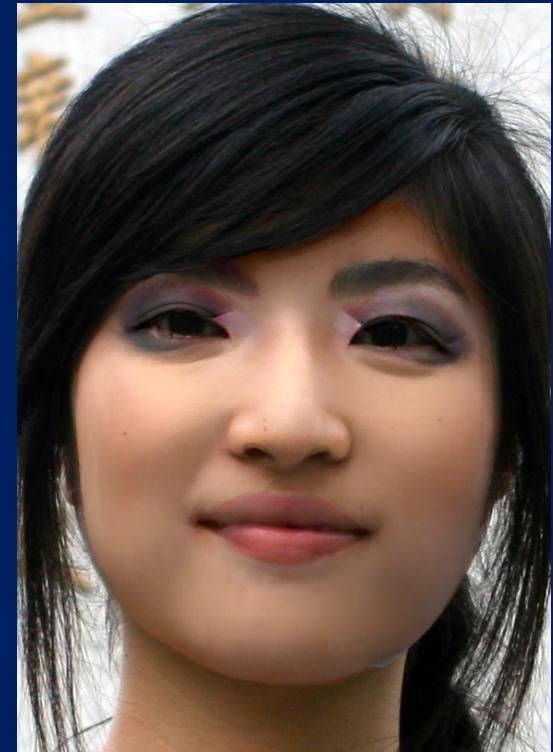
by Assoc. Prof. Leow Wee Kheng

<http://www.comp.nus.edu.sg/~leowwk/skull/>



Face Makeup by Example

(Dong Guo & Terence Sim)



<https://youtu.be/J53eYyydwxw>

CVPR 2009

Digital Face Makeup by Example Dong Guo and Terence Sim

*Photo
Retouching*



Example



Before



After

*Makeup
By
Portraiture*



Example



Input



Result

<https://youtu.be/h6sA0we-iLc>



https://youtu.be/ReDxkr_xH7c

<https://youtu.be/3tHnr7SXFCo>

RoadBotics



https://youtu.be/8Qi7_gbJLys

 **FOODLG**

Food(lg) is a food journaling, nutrition tracking and analysis app on your diet, by simply taking pictures of what you have eaten. Powered by a deep-learning framework that learns the food type from image 'pixels', and based on standard nutritional guidelines and food composition data from the Health Promotion Board (HPB), Food(lg) calculates your daily nutrient estimates with the journaled entries for achieving a well-balanced diet.



Learning Visual Computing

Knowledge

Computer Programming

Linear Algebra

Machine Learning

Computer Vision

Algorithms &
Data Structures

Probability &
Statistics

Image Processing

Computer Graphics

Tools

Python or
C/C++

OpenCV

Numpy /
Scipy or Dlib

PyTorch /
Keras /
Tensorflow

Better: Computer graphics,
Optimization, Multivariate Calculus

Summary

- ▶ Exciting time to work in computer vision
 - ▶ Cameras are ubiquitous
 - ▶ Images are plentiful
 - ▶ Much commercial potential
- ▶ Steep learning curve
 - ▶ Many topics to master,
 - ▶ Many tools to learn
- ▶ Many jobs available
 - ▶ Pays well
 - ▶ Hi-tech startups

Computer vision in Singapore

722 results

Job Alert On



Computer Vision Lead

ByteDance

Singapore, Singapore



68 company alumni work here

Promoted



Tech Lead, Computer Vision for Ads

TikTok

Singapore, Singapore



20 company alumni work here

Promoted · 4 applicants



Tech Lead - Computer Vision for Ads

ByteDance

Singapore, Singapore



132 alumni work here

Promoted · 9 applicants



Tech Lead, Computer Vision Platform

ByteDance

Singapore, Singapore



3 connections work here

Promoted · 12 applicants



Research Scientist, Computer Vision

ViSenze - AI for Visual Commerce

Singapore, Singapore



1 connection works here

2 days ago · Easily Apply