Introduction to Computer Science

Week 1- Impact of Technology

Shih-Yi (James) Chien
Assistant Professor
Dept. of Management Information Systems
National Chengchi University, Taiwan
sychien@nccu.edu.tw

https://ppt.cc/fpAJfx

2

Introduction to Computer Science

1. Course#: 306005011
2. Lecture language: English-taught
3. Friday afternoon
4. Session: 13:10-15:00
5. Lab: 15:10-16:00
6. Classroom: 商館260207
7. All the materials will be uploaded to **Moodle**

A	06:10-07:00
B	07:10-08:00
1	08:10-09:00
2	09:10-10:00
3	10:10-11:00
4	11:10-12:00
C	12:10-13:00
D	**13:10-14:00**
5	**14:10-15:00**
6	**15:10-16:00**
7	16:10-17:00
8	17:10-18:00

Contact Info

All emails to us about this class must contain **IntroCS2020** in the subject line to be read

- **IntroCS2020**: Questions about final project
- Email without this info might be deleted by spam filters
- Office hours: by appointment

Instructor:

- 簡士鎰 (James): sychien@nccu.edu.tw

TAs:

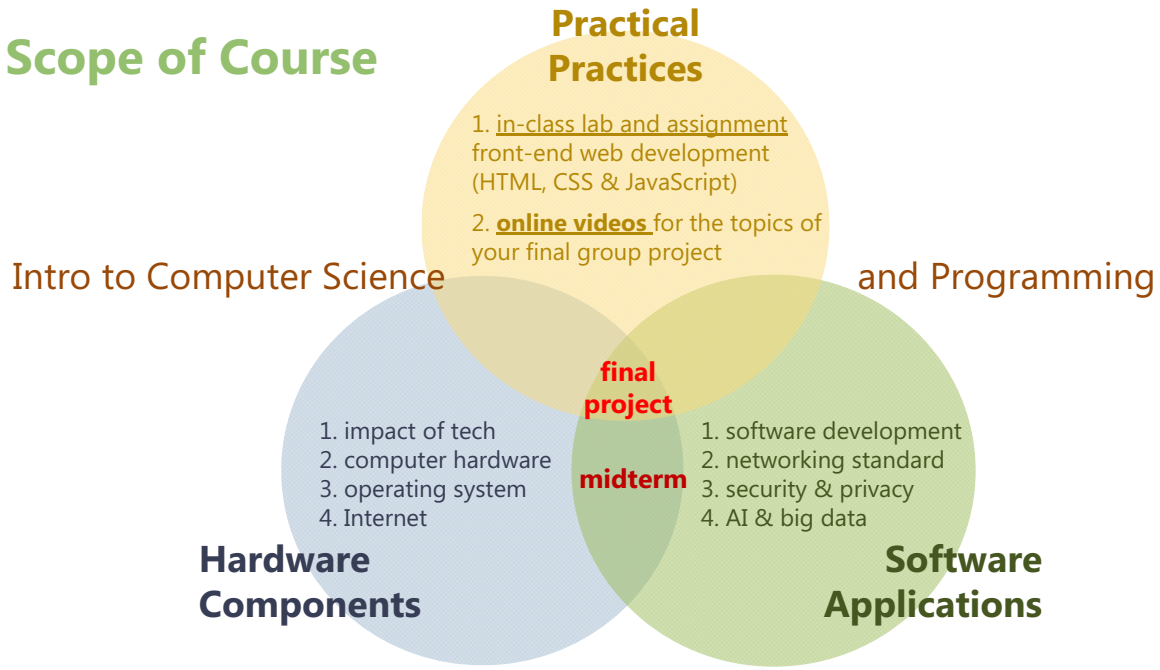
- 楊程鈞 (Kevin): 108356018@nccu.edu.tw
- 莊景雲 (Ching-Yun): 109462007@nccu.edu.tw
- 林桂華 (Guei-Hua): 109356030@nccu.edu.tw

Course Info…
So.. what is this course about…?

WHY should I take this course?
WHAT will I learn from this course?
HOW can I apply what I have learned?

6

Scope of Course



Tentative Syllabus

Week	Topic	Lab	Assignment
1 (9/18)	Impact of digital technology	Brief Intro	
2 (9/25)	Computer Hardware and Digital Media		
3 (10/2)	**Holiday**		
4 (10/9)	**Holiday**		
5 (10/16)	Operating Systems and Internet *Online Session: Intro to Social Technology by Prof. Hsiao	MS Excel Advanced Functions	
6 (10/23)	Software Development *Online Session: Fake News in Social Media by Prof. Su	MS Word Advanced	
7 (10/30)	Networking Standard *Online Session: Data Visualization by Prof. Hsiao		
8 (11/6)	Digital Security and Privacy *Online Session: Introduction to AI by Prof. Ku		
9 (11/13)	AI and Big Data *Online Session: Algorithmic Governance by Prof. Chen	Personal Website II	HW-1.2 (5%) Personal Website
10 (11/20)	**Midterm (30%)**		Final Project Topic & Team Members

1. learn history, conceptual structure and computer organizations
2. study the state-of-the-art information technology

1. understand the innovative features of intelligent systems and computer applications
2. study the principles and learn from practical cases

9

9 (11/13)	AI and Big Data *Online Session: Algorithmic Governance by Prof. Chen	Personal Website II	HW-1.2 (5%) Personal Website
10 (11/20)	**Midterm (30%)**		Final Project Topic & Team Members
11 (11/27)	Programming Language: HTML I		
12 (12/4)	Programming Language: HTML II & CSS I		
13 (12/11)	Programming Language: CSS II		
14 (12/18)	Programming Language: JavaScript I	JavaScript I	HW-5 (5%) JS Exercise
15 (12/25)	Programming Language: JavaScript II	JavaScript II	HW-6 (5%) JS Exercise
16 (1/1)	**Holiday**		
17 (1/8)	**Demo Day- Final Project Presentation (35%)**		**Up to 4 students**
18 (1/15)	**Winter Break**		

1. develop your personal website and use it an online warehouse
2. gain experience in programming languages through lab and assignment

apply your knowledge into the final group project

10

Grading

Homework 35% (6 homework)

- Personal website: 10 pts
- HTML*2, CSS*1 and JavaScript*2: 5 pts each

Midterm 30% (Nov. 20)

- Multiple choice questions, true/false questions
- Open questions

Final Group Project 35% (Jan. 8)

- Details shown on next page (submit your poster file by 12/30)

Course participation: 5%

- In case you are in the borderline (#urwelcome)

11

Final Group Project- Presentation

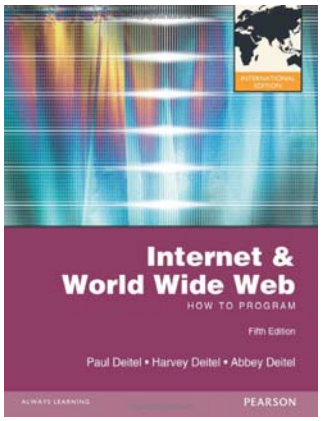
1. Watch all five online videos
2. Find your teammates and form the team wisely
   - Up to 4 students
3. Discuss with teammates and pick up the potential topics
   - The proposed topics must be related to the videos
4. Submit your team info and the proposed topics by Nov. 20
   - First come first serve; prioritize and submit at least three topics
5. Demo day: final group presentation on Jan. 8
   - Provide your own opinions; cite your references- **DO NOT** copy and paste
   - Grade by the instructor, TAs and other groups
   - In-group evaluation: no free rider policy (#howdareyou)

12

Suggested Textbooks

- Technology for Success: Computer Concepts (ISBN: 978-981-48-8803-5)

- Internet and World Wide Web How To Program (5th Edition) (ISBN: 978-0273764021)



Academic Dishonesty

1. All graded work that you do for this course must be the sole result of your own efforts unless directed otherwise.
2. You may not do work for another student nor may any student copy or plagiarize someone else's work.
3. You may not assist, facilitate or enable another student's academic dishonesty, even if unintentional.
4. Severe penalties will be imposed on all parties involved, and any grade assigned due to academic dishonesty will not be dropped!
5. If you have any questions on this matter, contact the Instructor.

Special Circumstances

The Instructor strongly endorses the University's policy on disabilities

- If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact the Instructor and Disability at the university

Feel free to let us (instructor or TAs) know if you need any help or if any questions arise

Priority for taking this course

1. MIS department
2. Double major, minor, or programs
3. College of commerce
4. Others

In case you are not in the class roster yet..

-We are having TOO many students in 306005001

-Some of the students will need to take 306005011 (Fri. 1pm-4pm)

- If you have no class conflict and want to register this class, you will be asked to take 306005011
- Same materials, but you do not need to wake up in such early morning
- Great opportunities to advance your English (you will need it anyhow)

Week 1- Impact of Tech

17

Image: https://images.app.goo.gl/L4wNAbqCq6m1XfbeA

Image: https://images.app.goo.gl/KiT7K1aNwZ3yGC7e9

Image: https://images.app.goo.gl/7QSaZqe8s568Tmyt9

Image: https://images.app.goo.gl/jQLk3scEZDUZDTek9

18

Image: https://images.app.goo.gl/7c1kLaa75jozkpXC7

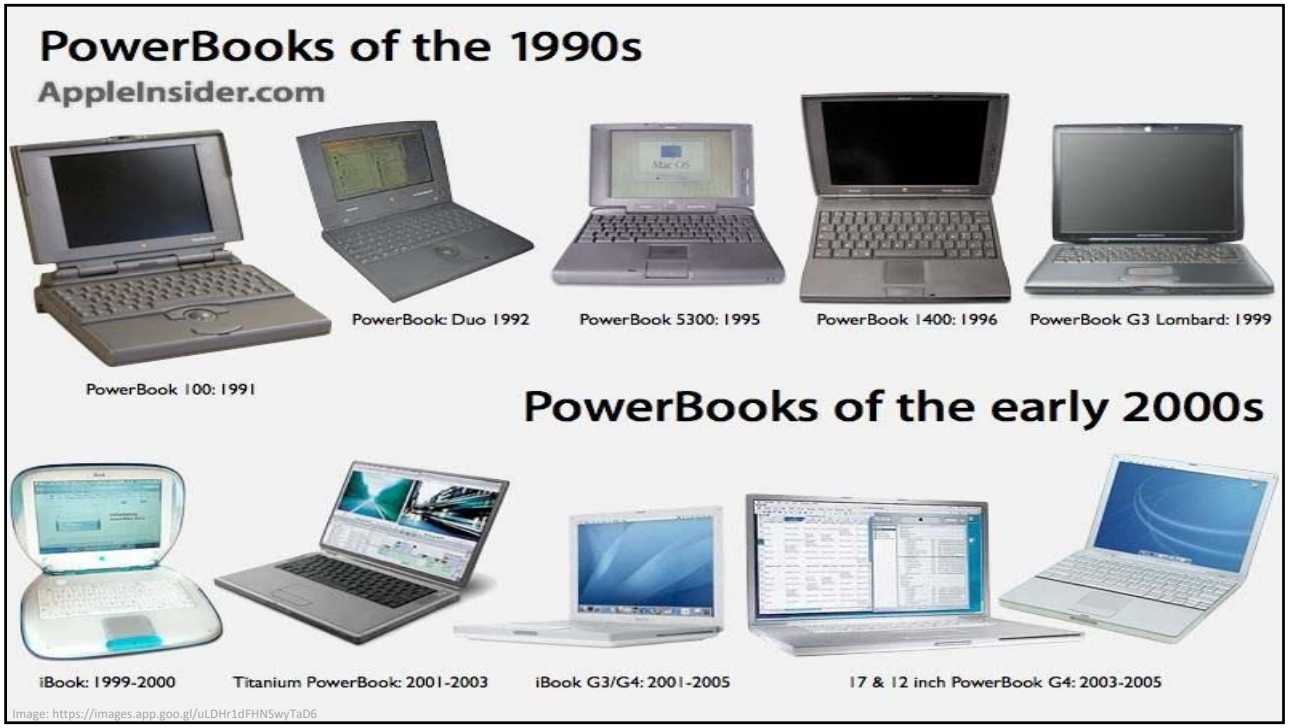


Image: https://images.app.goo.gl/uLDHr1dFHNSwyTaD6

https://images.app.goo.gl/o5211zwiMULMZkp26

https://images.app.goo.gl/2NtrqWe3U5seKGJm7

21

Heard#: ?

Used#: ?

https://www.youtube.com/watch?v=8ucCxtgN6sc

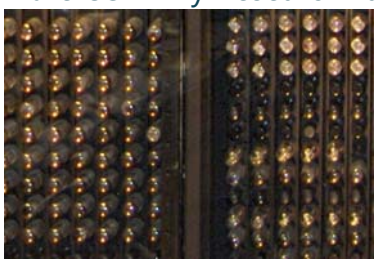
Photo credit: http://stracatela.info/history-of-cellphones-timeline/this-pin-is-about-how-phones-started-back-then-from-now-tech-adv-history-of-cellphones-timeline/

ENIAC (launch in 1946)

Electronic Numerical Integrator and Computer

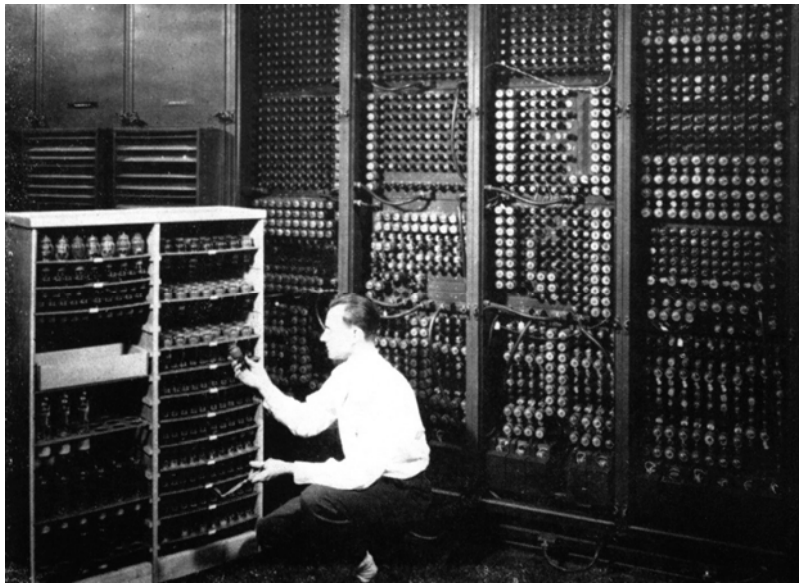
First electronic general-purpose computer

- Calculate firing tables for the US Army Research Lab



Vacuum Tubes

Source: https://www.wired.com/2014/11/eniac-unearthed



Apple Lisa 1 (launch in 1983)

First ever computer to come with a **mouse**

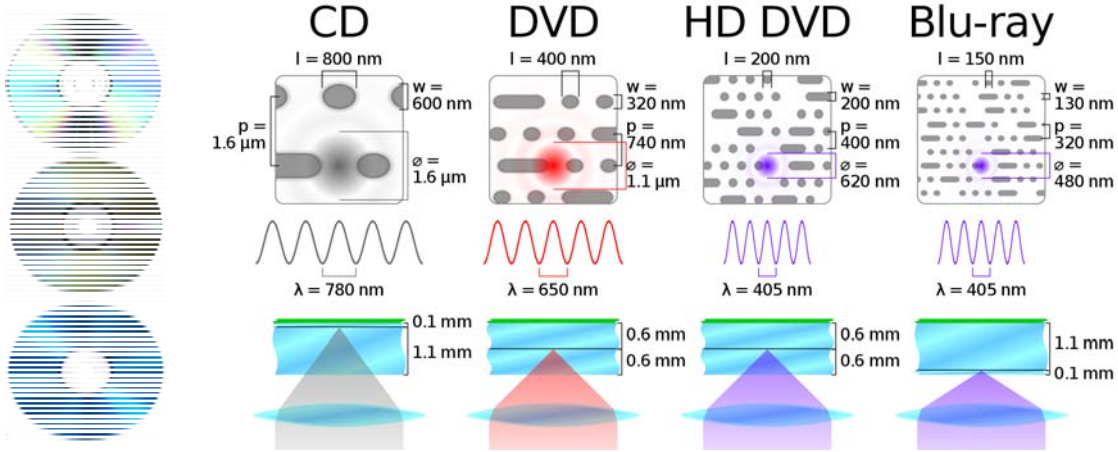
- **Auction for $42,000 USD in 2014**

Source: https://www.telegraph.co.uk/technology/apple/10788057/First-computer-to-come-with-a-mouse-could-fetch-25000-at-auction.html

Source: https://en.wikipedia.org/wiki/Floppy_disk#/media/File:Floppy_disk_2009_G1.jpg

Storage Devices

Various optical disc and cassette tape formats
(shorter wavelength (λ), larger disk space)



Source: https://en.wikipedia.org/wiki/Optical_disc

History of GPS

Source: http://www.dailymail.co.uk/news/article-2147617/Iter-Avto-The-antique-route-The-sat-nav-1930-used-map-scroll.html

Virtual Reality (VR)

Simulated experience that can be similar to or completely different from the real world

Image: https://en.wikipedia.org/wiki/Virtual_reality
Video: https://www.youtube.com/watch?v=VZyhQZSTlGQ

Augmented Reality (AR)

Objects that reside in the real world are enhanced by computer-generated perceptual information

Image: https://images.app.goo.gl/58VXuvCNFvVoRvdW8
Video: https://www.youtube.com/watch?v=XWbY5jdJnHg

32

1985…

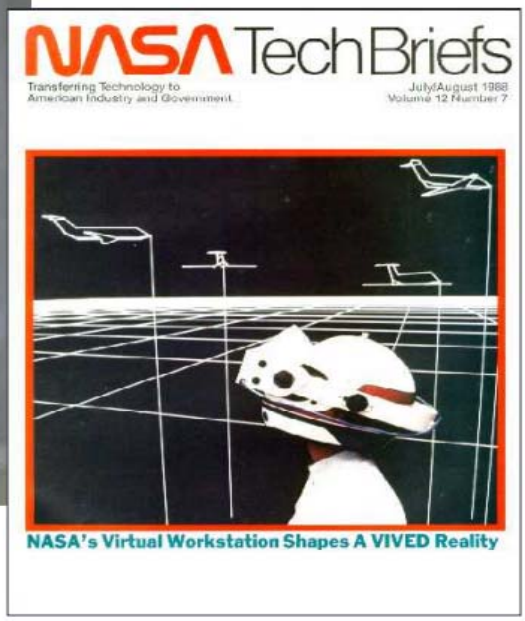


Image: https://images.app.goo.gl/Mxh8GA3YM2FgPL5F6

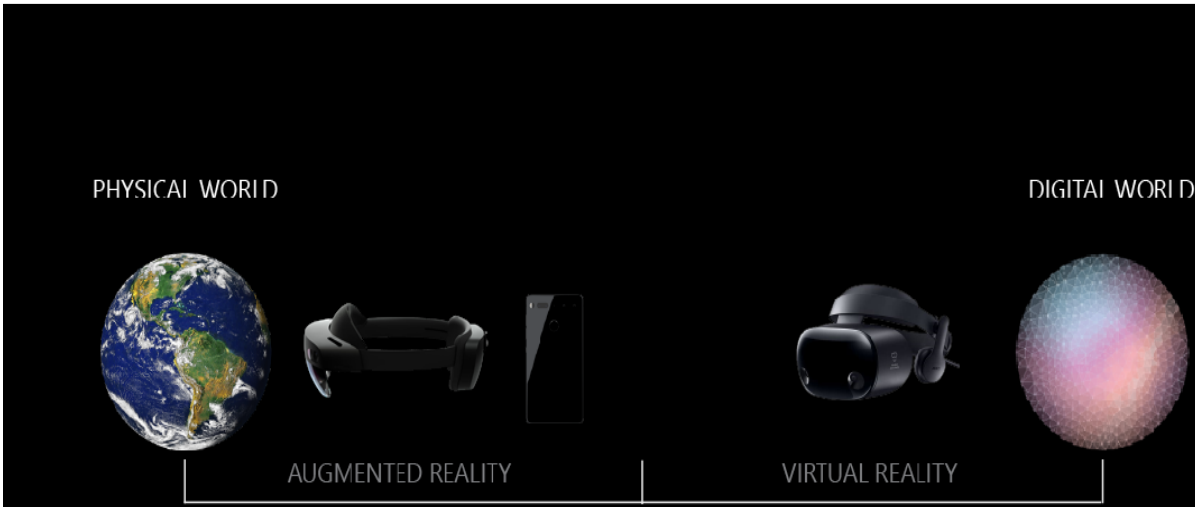


Image: https://docs.microsoft.com/en-us/windows/mixed-reality/discover/mixed-reality
Video: https://www.youtube.com/watch?v=pHjjqKLFMXM

34

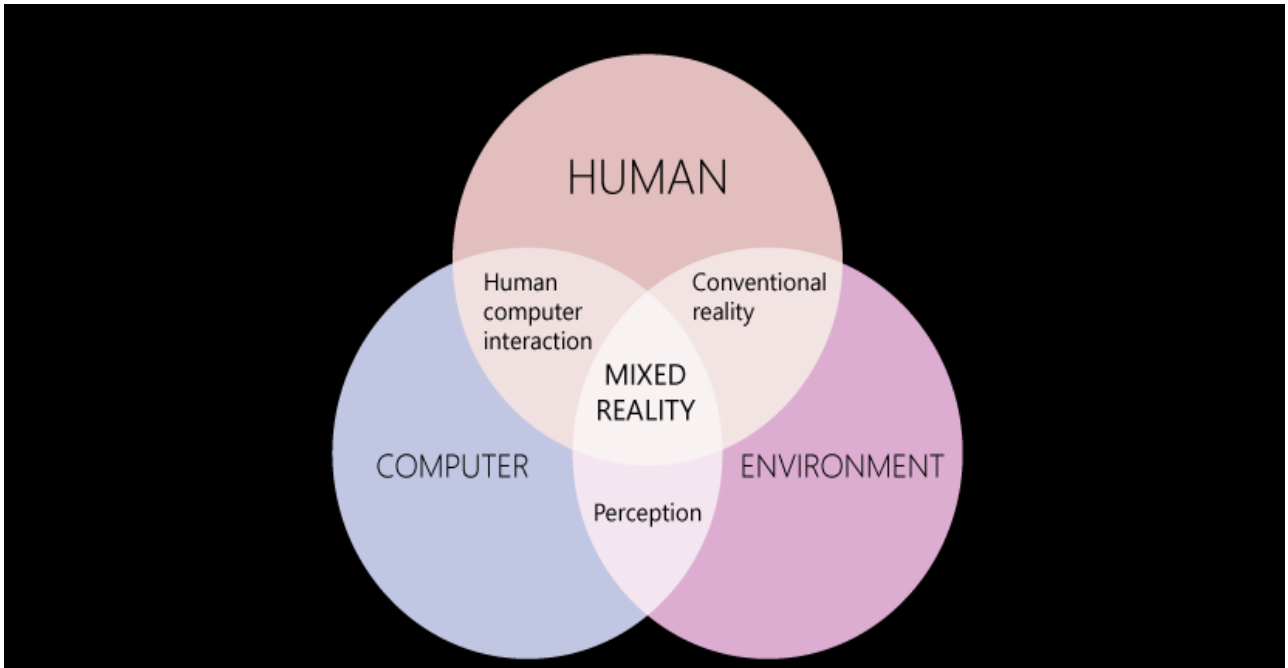
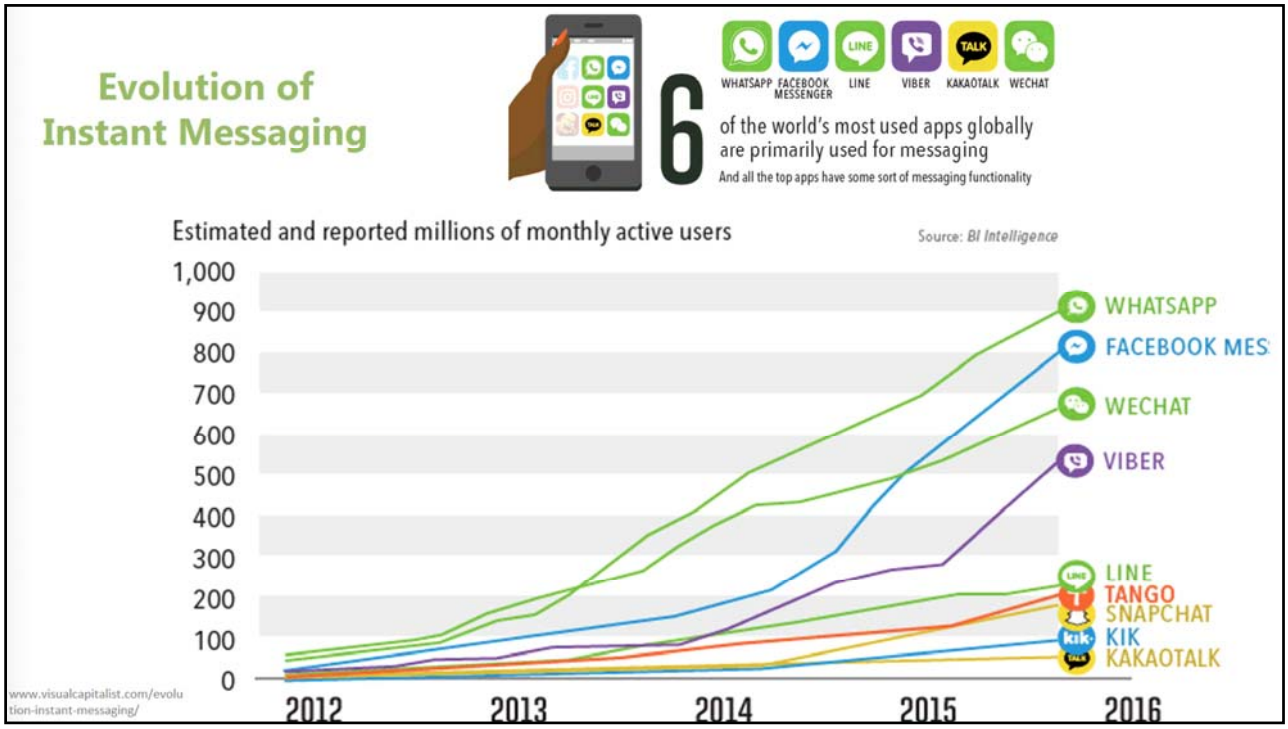
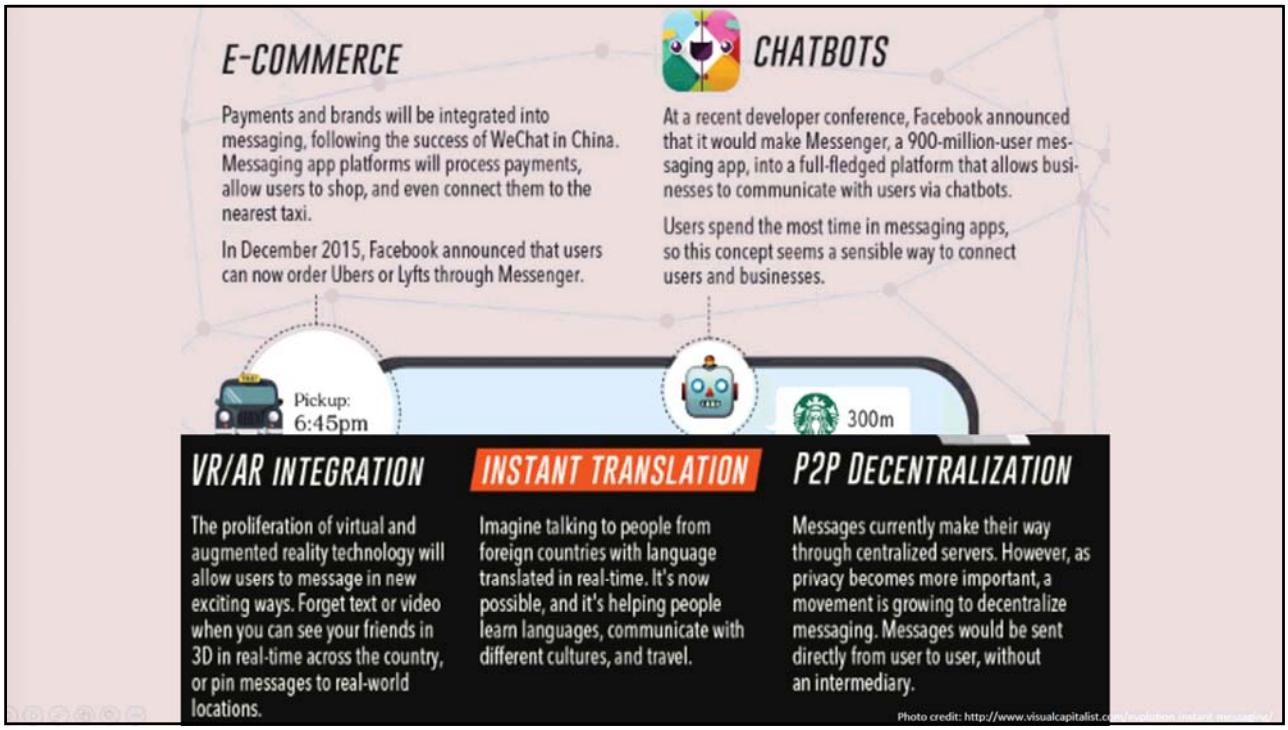
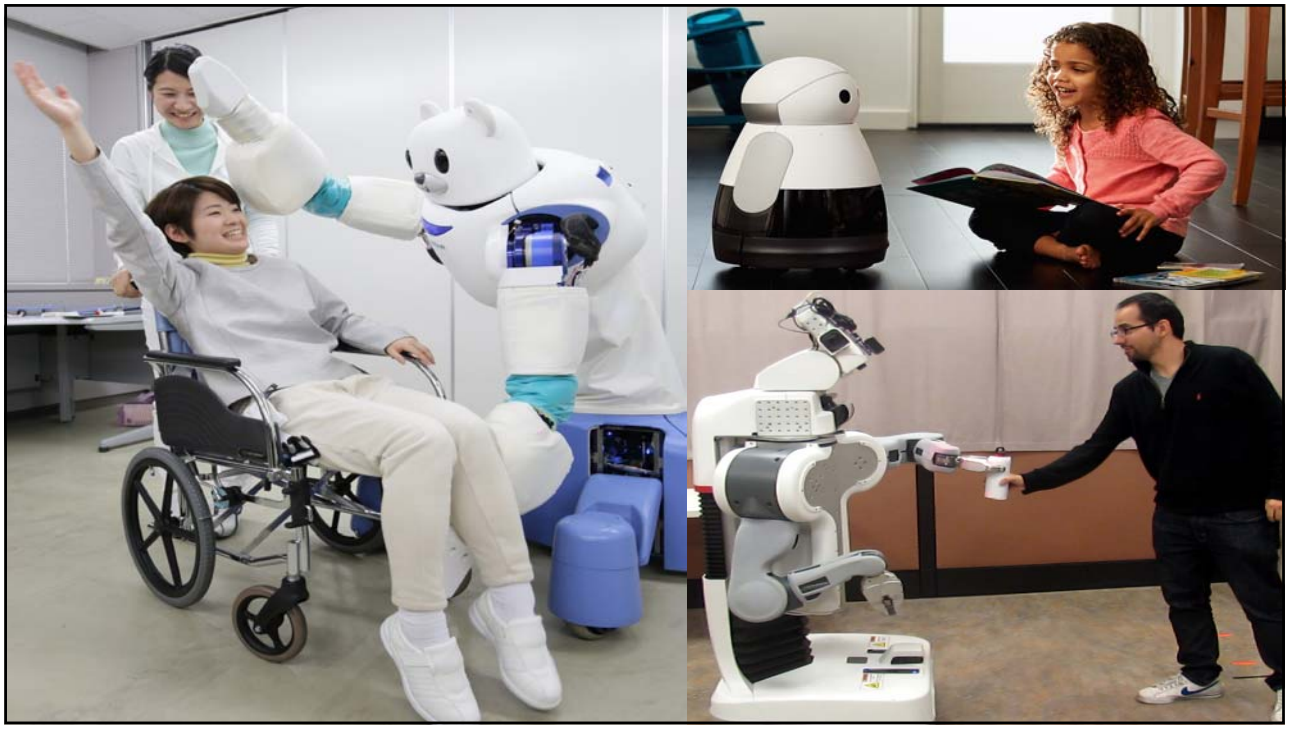


Image: https://docs.microsoft.com/en-us/windows/mixed-reality/discover/mixed-reality
Video: http://www.youtube.com/watch?v=hm7qmtkf5r4&t=1m2s

35

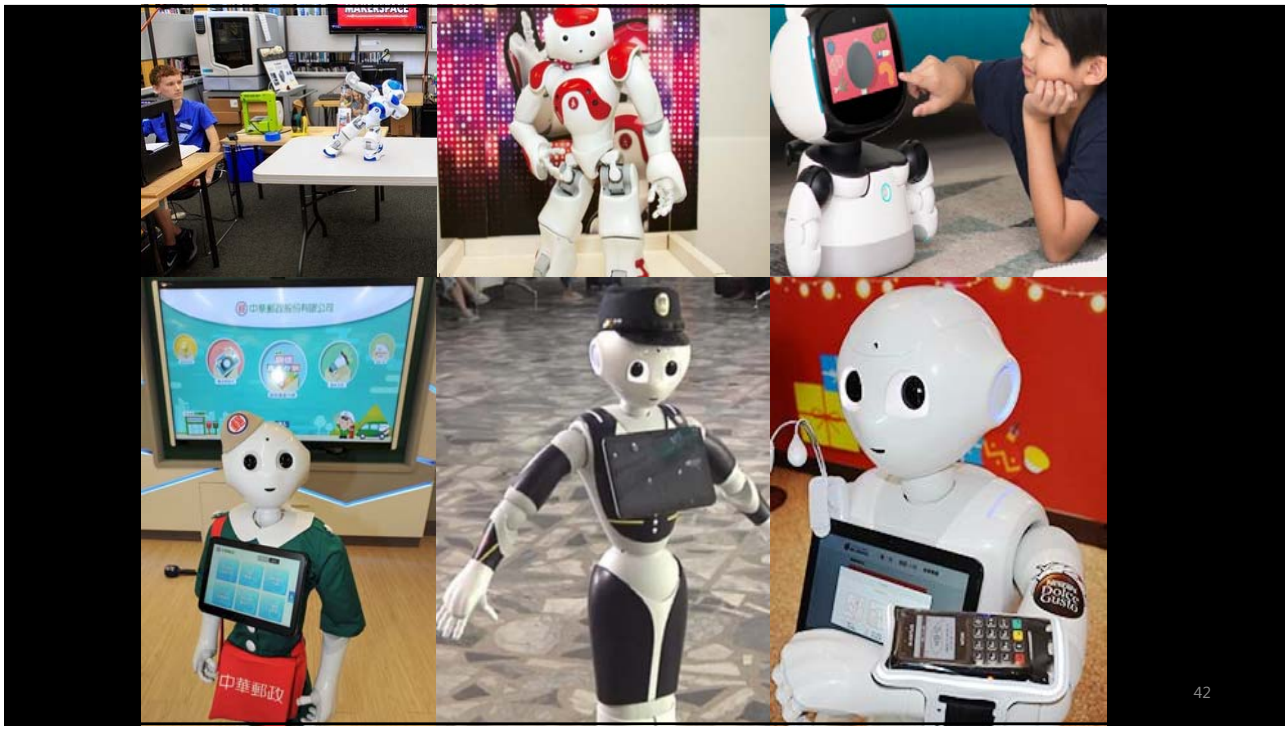

Evolution of Instant Messaging
6
WHATSAPP
FACEBOOK MESSENGER
LINE
VIBER
KAKAOTALK
WECHAT
of the world's most used apps globally are primarily used for messaging
And all the top apps have some sort of messaging functionality
Estimated and reported millions of monthly active users
Source: BI Intelligence
1,000
900
800
700
600
500
400
300
200
100
0
2012
2013
2014
2015
2016
WHATSAPP
FACEBOOK MES
WECHAT
VIBER
LINE
TANGO
SNAPCHAT
KIK
KAKAOTALK
www.visualcapitalist.com/evolution-instant-messaging/

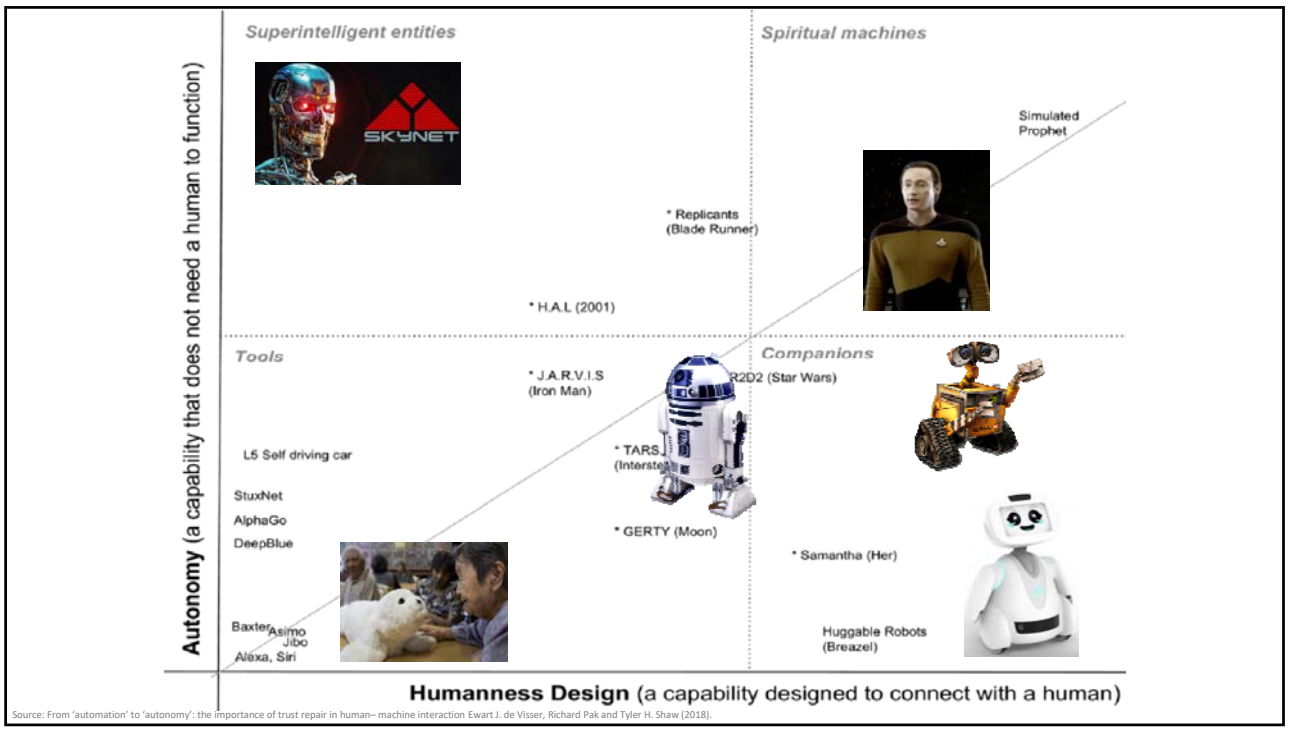

E-COMMERCE
Payments and brands will be integrated into messaging, following the success of WeChat in China. Messaging app platforms will process payments, allow users to shop, and even connect them to the nearest taxi.
In December 2015, Facebook announced that users can now order Ubers or Lyfts through Messenger.
CHATBOTS
At a recent developer conference, Facebook announced that it would make Messenger, a 900-million-user messaging app, into a full-fledged platform that allows businesses to communicate with users via chatbots.
Users spend the most time in messaging apps, so this concept seems a sensible way to connect users and businesses.
Pickup:
6:45pm
300m
VR/AR INTEGRATION
The proliferation of virtual and augmented reality technology will allow users to message in new exciting ways. Forget text or video when you can see your friends in 3D in real-time across the country, or pin messages to real-world locations.
INSTANT TRANSLATION
Imagine talking to people from foreign countries with language translated in real-time. It's now possible, and it's helping people learn languages, communicate with different cultures, and travel.
P2P DECENTRALIZATION
Messages currently make their way through centralized servers. However, as privacy becomes more important, a movement is growing to decentralize messaging. Messages would be sent directly from user to user, without an intermediary.
Photo credit: http://www.visualcapitalist.com/evolution-instant-messaging/



RFID
Antenna
Ultrasonic
RFID
Reader
2-DOF
Robot
Arm
RFID
Antenna
Laser
Ultrasonic
https://research.a-star.edu.sg/research/7512/high-tech-librarian-knows-its-books
https://ieeexplore.ieee.org/document/7354246

2018.11.14.(수) 성균관대학교 중앙학술정보관
학술주제가이드
성균관대학교
http://koreabizwire.com/sungkyunkwan-university-ai-robot-offers-academic-information-to-students/128659


中華郵政
42

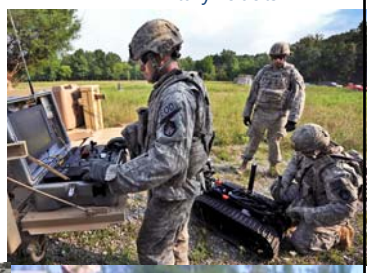


Advanced robotic applications

Human-robot collaboration rather then replacing human operators

- Future military robots
- AI humanoid robot
- Human+robot in the battle fields

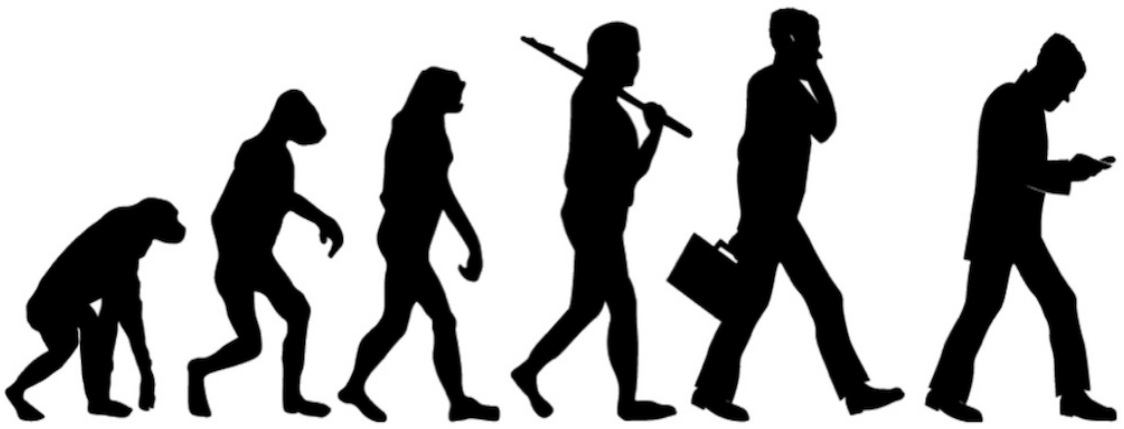
Military robots



Robots for health education

Assistive robots for the elderly

Medical examiner



計算機概論

Introduction to Computer Science

學年學期：109-1
Fall Semester, 2020

科目代碼：306005001
Course No.306005001

修別：必	2.0	50
Type of Credit: Required	學分數 Credit(s)	預收人數 Number of Students

課程資料
Course Details

開課單位：資管一甲、資管一乙
Course Department:Management Information Systems/B/1

課程簡介

Course Description

This course covers the history, conceptual structure, and computer organizations of computer science. The basic programming languages (e.g., HTML & CSS) will be introduced, which are designed to help students with little or no programming experience. In addition, the students will be asked to explore the principles, concepts and methodologies of the emerging technologies (such as Blockchain, IoT, humanoid robots, etc.) and present these topics in the final project presentation.

「本課程已獲執行本校深耕數位互動課程補助計畫（E計畫），因此課程於課後將課程影片分享至教學平台並供已註冊課程之網路學員參與，故請修課同學務必簽署「修課學生參與數位互動課程同意書」；至本課程旁聽之同學，原則上亦須簽署，因故未能或不願簽署者，進入課堂旁聽時，視為已瞭解同意書內容並已授權。網路學員於線上註冊並使用服務前，務必先閱讀同意書，當在線上點選「同意」鍵，視為已閱讀書，並願意遵守所有同意書之規範。」

本課程已加入數位互動課程補助計畫，
同時有現場修課學員與網路學員。
課後會把課程影片分享到教學平台供網路學員觀看，
現場的聲音以及部份影像將會錄製進影片中，
因此請各位簽署下一頁的授權同意書。

國立政治大學

修課學生參與數位互動課程（E計畫）同意書

一、 本人同意與網路學員共同參與課程。
二、 本人同意並授權國立政治大學課程拍攝、使用、公開展示本人之肖像、姓名、聲音等。
三、 本人同意國立政治大學得不限地域、時間、方式，於課程中，無償利用本人於參與該課程中之所有著作。
四、 本人擔保就參與該課程中之所有著作，均已取得相關著作權人合法授權，或屬著作權法上合理使用，未侵害第三人之智慧財產權。
五、 本課程內容受著作權法保護，如有超越修習本課程自我學習以外之使用，應先依規定取得授權。

☐ 本人已閱讀並同意以上事項

此致國立政治大學

立同意書人：_____（簽名或蓋章）

身分證字號：_____

學　　號：_____（非本校學生免填）

中華民國　　年　　月　　日

National Chengchi University

Interactive Online Course Enrollment Agreement (Program E) - Regular Student

I. I hereby agree to attend the same courses as attended by online students.
II. I hereby give my consent and permission to National Chengchi University to record, use, and publicly display my image, including likeness, name, and voice.
III. I hereby agree that National Chengchi University may use in any way, anytime, anywhere and free of charge, any of my work produced in the process of participating in the courses, provided it is used in class.
IV. I hereby warrant that all my work produced in the process of participating in the courses has the copyright owner's permission or is considered legal use without infringement on a third party's intellectual property rights under the Copyright Act.
V. The contents of the courses are protected by the Copyright Act. Any use beyond the scope of learning the courses shall not proceed without all the permissions required.

☐ I have read and agree to the terms and conditions above.

To National Chengchi University

We will do this next week (Sep. 25)

親簽後下課前交給TA

Student Name：_____(Signature/Seal)

ID No.：_____

Student No.：_____(waived if not a NCCU student)

Date：

Please sign here and hand it over to TA

科目代號(Course #)：306005011
科目名稱：計算機概論
Course Name：Introduction to Computer Science
授課教師：簡士鎰
Instructor：CHIEN SHIH-YI
系所：資管一甲、資管一乙
上課時間 (Session)：五D5 (fri13-15)