SOC SUMMER WORKSHOP: VISUAL COMPUTING

Dr. Terence Sim

Summer 2023

Instructor: Dr. Terence Sim

- Assoc. Prof., School of Computing, NUS
  - Computer Vision
  - Face recognition, Biometrics
  - Privacy

- Vice Dean, Office of Admissions, NUS
- Ph.D. CMU, MSc. Stanford, S.B. MIT
- Contact: terence.sim@nus.edu.sg or Google me

http://www.comp.nus.edu.sg/~tsim/

TA: Jiang Nan

- Ph.D student at the School of Computing, NUS.
- M. Computing, Information Security, NUS, 2022
- B.S. Computer Science, Southwestern University of Finance and Economics, 2020

- Contact: jiangnan@u.nus.edu

TA: Sun Bangjie

- Ph.D student in School of Computing, National University of Singapore. My research interests include computer vision, sensing and mobile systems, and cyber-physical systems.
- 2016 -- 2020, B.S. in Computer Science, National University of Singapore.
- Contact: sunbangjie@u.nus.edu
- Web page: https://sunbangjie.github.io/

Basic rules

- Attend all lectures!
- Work on the final project (more info later)
- Be courteous and considerate
  - Give your full attention in class
  - Phase 1 will be via Zoom
    - Mute your Zoom mic; unmute only if you wish to speak.
    - Use Zoom “yes”, “no” to respond to questions.
    - Use Zoom chat if you wish to type
  - Phase 2 (in July) will be physical
    - Attend all the physical lessons
    - Bring your own laptop for Phase 2
- Lessons conducted in English

Topic
Introduction, Computer vision overview
Python Crash Course
Linear algebra review
Probability & Statistics review

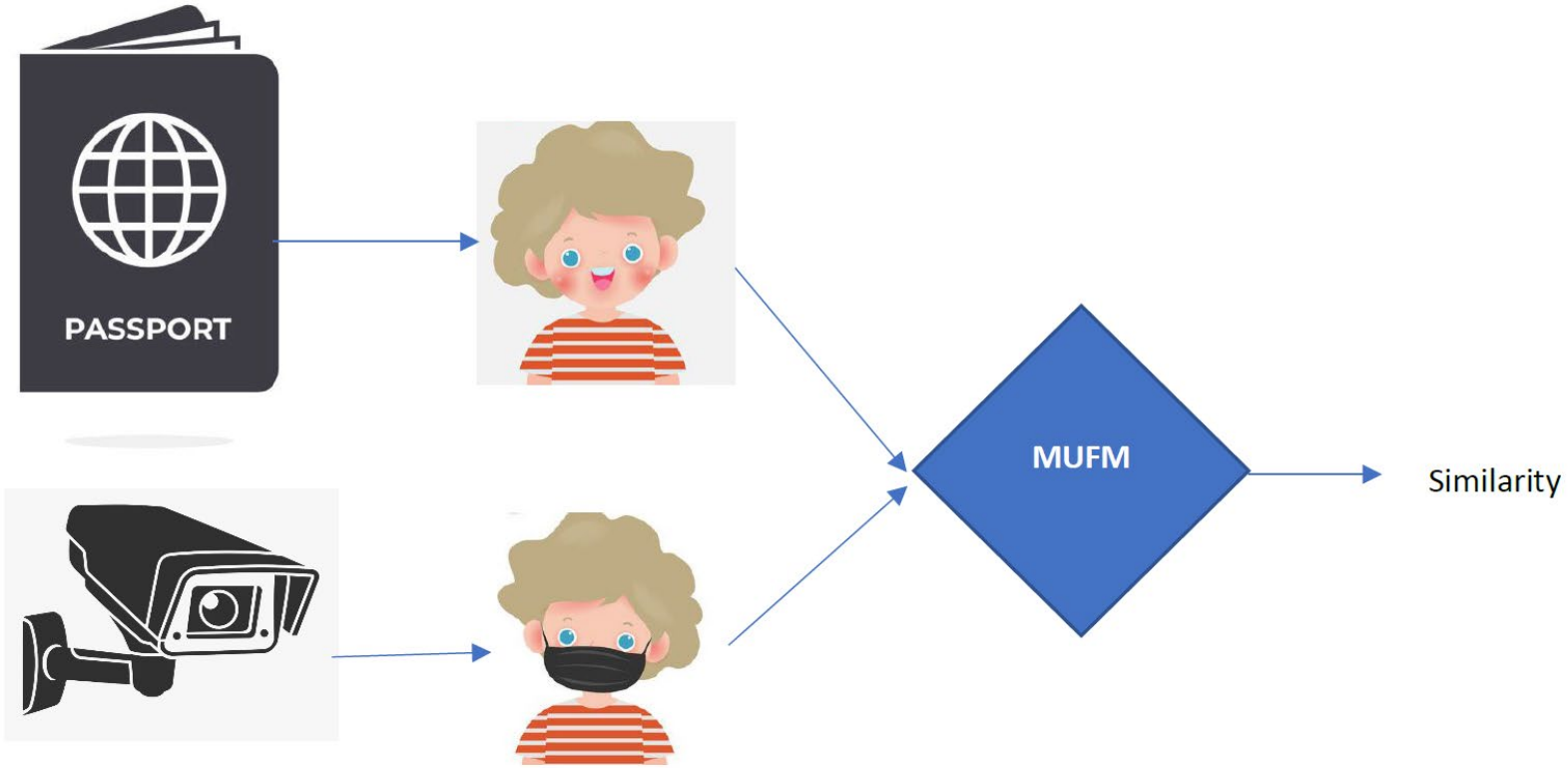
Group project (for Phase 2)

- Choose to do either Project 1 or Project 2
- In a group of 4 people
- Each project will have 3 levels of difficulty
  - Beginner level
  - Expert level
  - Bonus level
- Instructions will be given later in July, in Phase 2.

Project 1: Traffic Sign Recognition

Project 1: Traffic Sign Recognition

Project 2:
Masked-Unmasked Face Matching

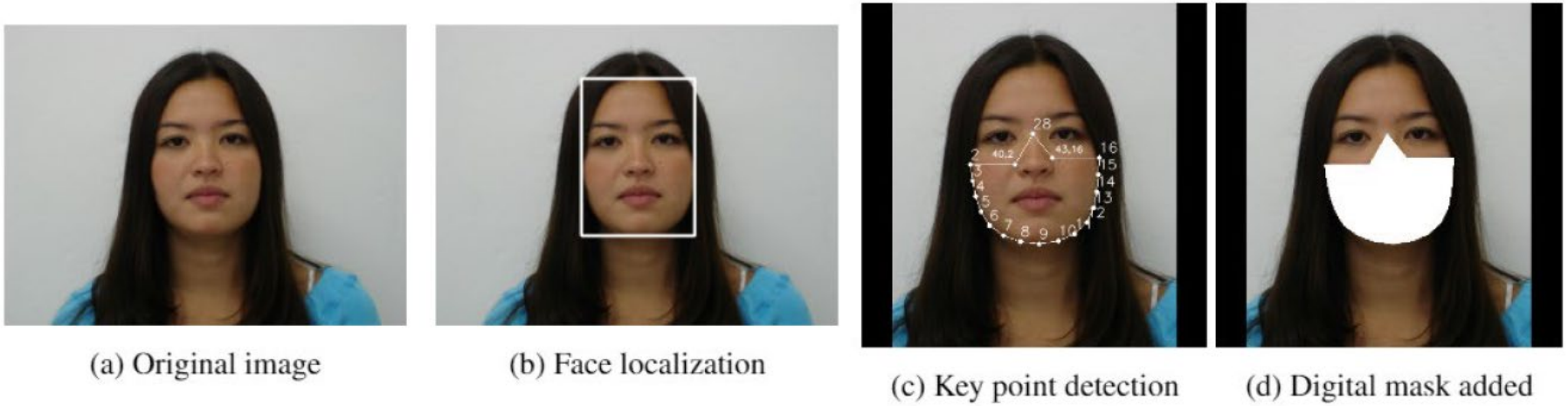


Project 2:
Masked-Unmasked Face Matching

Un Masked – Reference Image

Masked – Probe image

Project 2:
Masked-Unmasked Face Matching



(a) Original image (b) Face localization (c) Key point detection (d) Digital mask added

Synthesizing masked faces

Action needed:

- All course material available in Canvas
  - https://canvas.nus.edu.sg
- Use Discussions to ask questions & discuss
- Take the Phase 1 Quiz in Canvas
  - Mon, 29 May 2023, 7pm to 8pm.
  - Topic: linear algebra, probability, Python
  - Your performance will determine if you get selected for Phase 2 of this course