CA BRIEFING

25 MARKS

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Overview

- Part A: Vision systems on the edge (10 marks)
- Part B: An intelligent vision system (15 marks) on suggested topics.
- Peer evaluation form (for all CAs in the whole certificate).
  - Fill in the form “IS Graduate Cert Intelligent Sensing Systems Project Peer Evaluation.docx” (available in VSE Day 4 folder)
- Individual project report (for all CAs in the whole certificate).
  - Page limit: Up to 2 pages
  - Template refers to “IS Graduate Cert Intelligent Sensing Systems Project Individual Report.doc” (available in VSE Day 4 folder)

Part A

Objective: Build a vision system on the edge using Intel neural computer stick (NCS) and 200DK developer kit. Each 'big' group will be issued 1 NCS and 1 200DK. (each 'small' group will work on either NCS or 200DK only).

Deliverables

- Two reports (1 for NCS, 1 for 200DK, 2 pages each report) on your developed system, same report template with ISSM.
- Source code.
- Demo file (such as screen recoding of your developed system).

Grading: An interesting and useful demo (10 marks)

Note: Innovation is not evaluated in this assignment, so that pre-trained models can be used. For example, can you run your other CA (you already built machine learning model) on NCS and developer kit?

Deadline: 20 October 2019, 2359hrs (return 200DK and NCS to me on day 1 of RTAVS course on 21 October 2019)

Part B

Objective: Build an intelligent vision system based on suggested topics (see following slides).

Deliverables

- A brief report (8-10 pages) on your developed system. Report template: Same template used in ISSM CA.
- Source code.
- A demo file (such as screen recoding of your developed system).

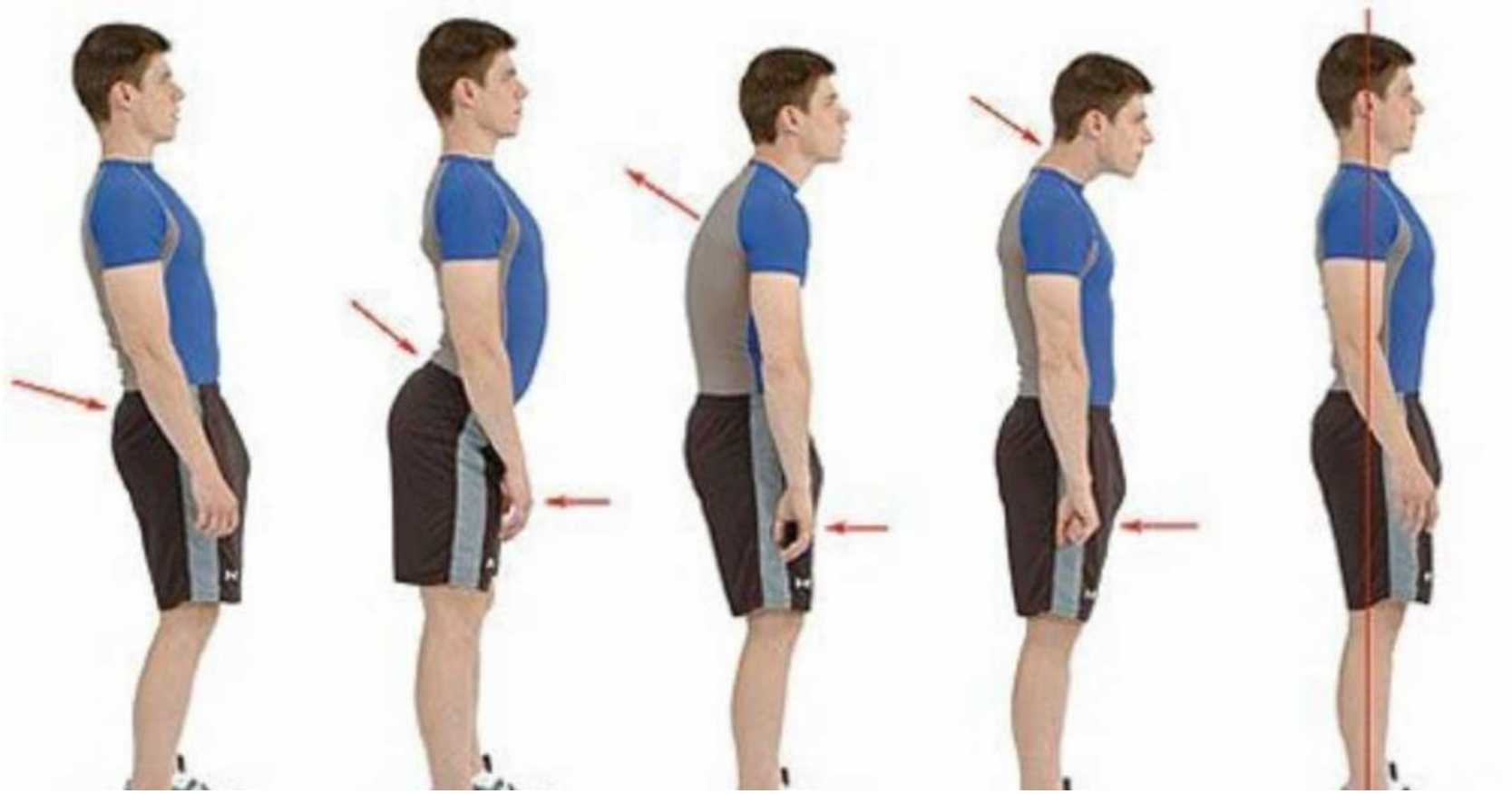
Grading: Technical approach (10 marks), report writing + demo (5 marks).

Submission deadline: 20 November 2019, 2359 hrs. (one week after exam)

For your CA team at http://bit.ly/2kj97Qy

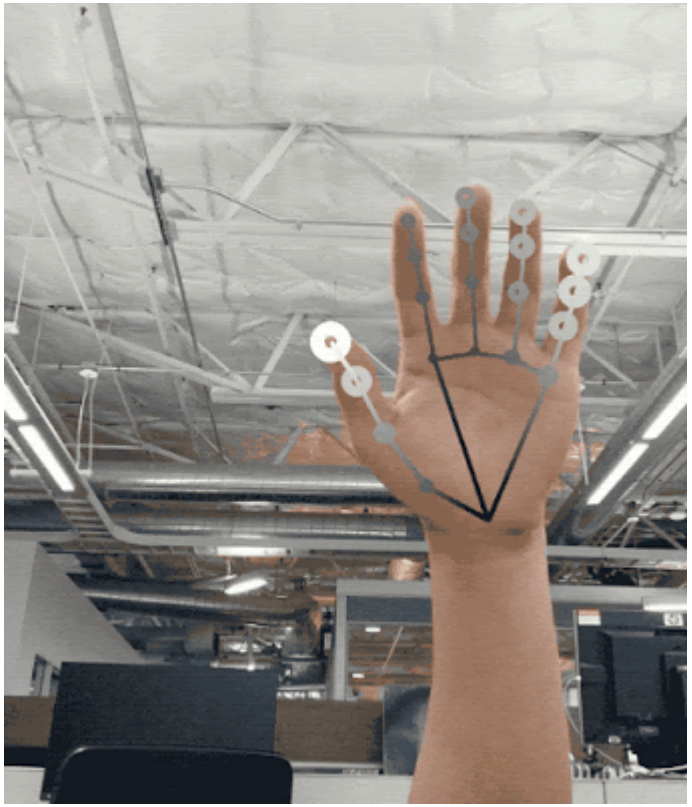
Human body action recognition

- Human posture extraction (openPose, human body segmentation)
- Human action recognition



Hand/gesture recognition

- Hand detection/tracking, gesture recognition



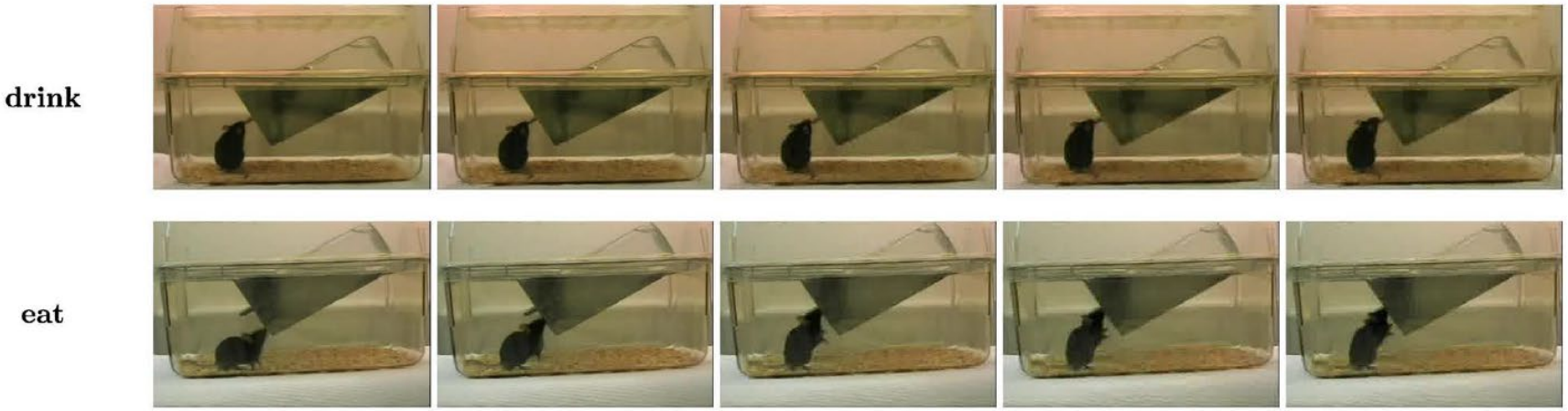
Reference: https://ai.googleblog.com/2019/08/on-device-real-time-hand-tracking-with.html

Video analytics in classroom

- Face-based verification using photos available in LumiNUS
- Attention/facial expression recognition in classroom
- Classroom behavior analyzing

Behaviour video classification

- Internet shot video classification (e.g., TikTok)
- Video classification in biomedical domain, such as mouse behaviour classification
- Dataset: https://cbmm.mit.edu/mouse-dataset
- Reference: https://www.researchgate.net/publication/331381550_Applying_Deep_Learning_Models_to_Mouse_Behavior_Recognition



Crowd surveillance

- Crowd counting, person re-identification in public surveillance
- Reference: https://github.com/gjy3035/Awesome-Crowd-Counting

Your proposed topic

- If you really want to propose your own topic, please discuss with me.

- **Deepfake Detection Challenge** (start in October 2019), https://deepfakedetectionchallenge.ai/

Thank You.

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