

CSE473/573 Summer 2018 - Homework 1

Due date: 4th June 2018, 11.59 PM

May 30, 2018

Understand the key concepts and answer the questions concisely

1 Virtual Cinematography - 20%

Watch this 50 minute video on key technologies used in virtual cinematography

https://www.youtube.com/watch?v=VKx_DZp_OEI

Quickly skim through the full video, pick a movie and explain the technology behind the scenes. Elaborate on light-stage capture technology shown in the video and your insights on how it can be improved

2 Vision Specific Processor - Movidius Myriad - 20%

Watch this 5 minute video on vision specific processors

<https://www.youtube.com/watch?v=hD3RYGJgH4A>

Now answer to the key question of why we need vision specific processors? What are the architectural differences between conventional processors and vision specific processors?

3 Google Project Tango - 20%

Watch this 30 minute video on project Tango from Google Developers

<https://www.youtube.com/watch?v=CHV9xTGD4Ws>

What are the core technologies of Project Tango? Which demo captured your interest? Explain the working principle behind that demo

4 Halide - High Performance Image Processing - 20%

Watch this 25 minute video on Halide Language

<https://www.youtube.com/watch?v=3uiEyEKjiOM>

Explain in your own words about - poor locality, redundant recompute and poor parallelism while implementing image processing algorithms by citing the example shown in the video

5 Face2Face: Real-time Face Capture and Reenactment - 20%

Watch this 7 minute video on Real-time Face Capture and Reenactment

<https://www.youtube.com/watch?v=ohmajJTcpNk>

Does this technique use Depth data? Does this technique any training data? What happens if there is not enough training data? you may find the answer here <https://www.youtube.com/watch?v=ttGUiwfTYvg> Finally, comment on the ethical issues related to this technology <https://goo.gl/dZGwoa>