Lecture 12 Report Requirement

The report only needs to answer the questions below.

Send your report in PDF format to 1430090453@qq.com, named as "report12_[first name][last name].pdf" (e.g., report12_ZhangChen.pdf). Please also include your name (both English and Chinese) at the beginning of the report. The report is due on 10 am, China Standard Time, May 4, 2020.

Report Questions:

"High Flux Passive Imaging with Single-Photon Sensors"

1. Explain the term "dead time" in this paper. Will the dead time affect the detected photons at low flux?
2. Why the PF-SPAD can be used in extreme dynamic range scenes? Explain it using the response curve.
3. Describe the variance of PF-SPAD photon counts of shot noise. Why does it go down to a small value when the incident flux is very big?
4. What is the effect of varying exposure time on SNR for PF-SPAD?
5. What is the limitation of this paper?

"End-to-End Learned, Optically Coded Super-resolution SPAD Camera"

6. What do most SPAD cameras suffer from? How to deal with it?
7. What does the author jointly optimized?
8. What is the Image Formation Model of this paper? Why can we use this Image Formation Model?
9. Why conventional optimization-based methods fail to faithfully reconstruct good quality?
10. Explain the phase retrieval part for the initial round and the next round.