INF5350

Obligatory exercises following lecture #8 – Characterization

Please submit latest 1-Nov-2019 to Tohid (tohidm@ifi.uio.no)

1. Describe a method to measure dynamic range of a linear CIS with analog output.
2. Describe a method to measure FWC. Assume digital output.
3. Describe a method to measure readnoise without compensating for fixed pattern noise
4. Describe a method to measure DR of a dual exposure HDR sensor where the only difference between the two captures is integration time (Tlong and Tshort).
5. Ref HDR sensor in Q4, there will be specific light level where the Tlong capture just saturates the pixels (let the output saturation value be called S(sat)) and the equivalent Tshort value must be used instead. At this transition point the Tshort pixel value is smaller than the saturation level by a factor equal to Tlong/Tshort. Assuming photon shot noise is the only relevant noise at this point, what is the SNR drop.
6. Is PRNU categorized as temporal noise or fixed pattern noise? Explain your reasoning.
7. A 10b sensor was measured at 50% saturation to have 5DN rms photon shot noise, 6DN rms of PRNU, and 1DN rms VFPN. What is the total noise? What is the PRNU value in % rms?
8. Explain how Hnoise (aka rownoise) can be considered both a temporal noise and a fixed pattern noise.