

Definition of an edge

- An edge is an extended, significant, local change in image intensity.
- Extended: the change in intensity shouldn't just occur across a few pixels but on a whole series.
- Significant: the difference in intensity between left of the edge and right of the edge should be significant, e.g. not just two pixel-values brighter.
- Local: the change in intensity is local, and not somehow separated/spread across the image.

Definition of Noise

- Noise is deviation of a (pixel) value from its expected value.
- Noise is random changes in pixel values
- $$x \rightarrow x + n$$

↑
actual

↑
expected
- Source of noise (first and preferred explanation):
Anything within the imaging system that causes a change, e.g. electrical interference, optical aberration
- Source of noise (second explanation):
Anything that causes a change, e.g. atmospheric disturbance