Gradient as Edge Detector:

- Gradient Magnitude

  $$\nabla I^2 = (\delta I/\delta x)^2 + (\delta I/\delta y)^2$$

- Gradient Magnitude represents the strength of Edge

- Gradient Orientation

  $$\Theta = \tan^{-1}\left((\partial I/\partial x)/(\partial I/\partial y)\right)$$