

# Residual Networks

CS 4277 Deep Learning

Kennesaw State University

## Residual Networks

- ▶ Conv nets improve by adding more layers, but only to a point

## Sequential Processing

Recall that a 3-layer network can be defined by:

$$\mathbf{h}_1 = \mathbf{f}_1(\mathbf{x}, \phi_1)$$

$$\mathbf{h}_2 = \mathbf{f}_2(\mathbf{h}_1, \phi_2)$$

$$\mathbf{h}_3 = \mathbf{f}_3(\mathbf{h}_2, \phi_3)$$

$$\mathbf{y} = \mathbf{f}_4(\mathbf{h}_3, \phi_4)$$

where each  $\phi_k$  is composed of the weights,  $\Omega$ , and biases,  $\beta$  in Layer  $k$ .