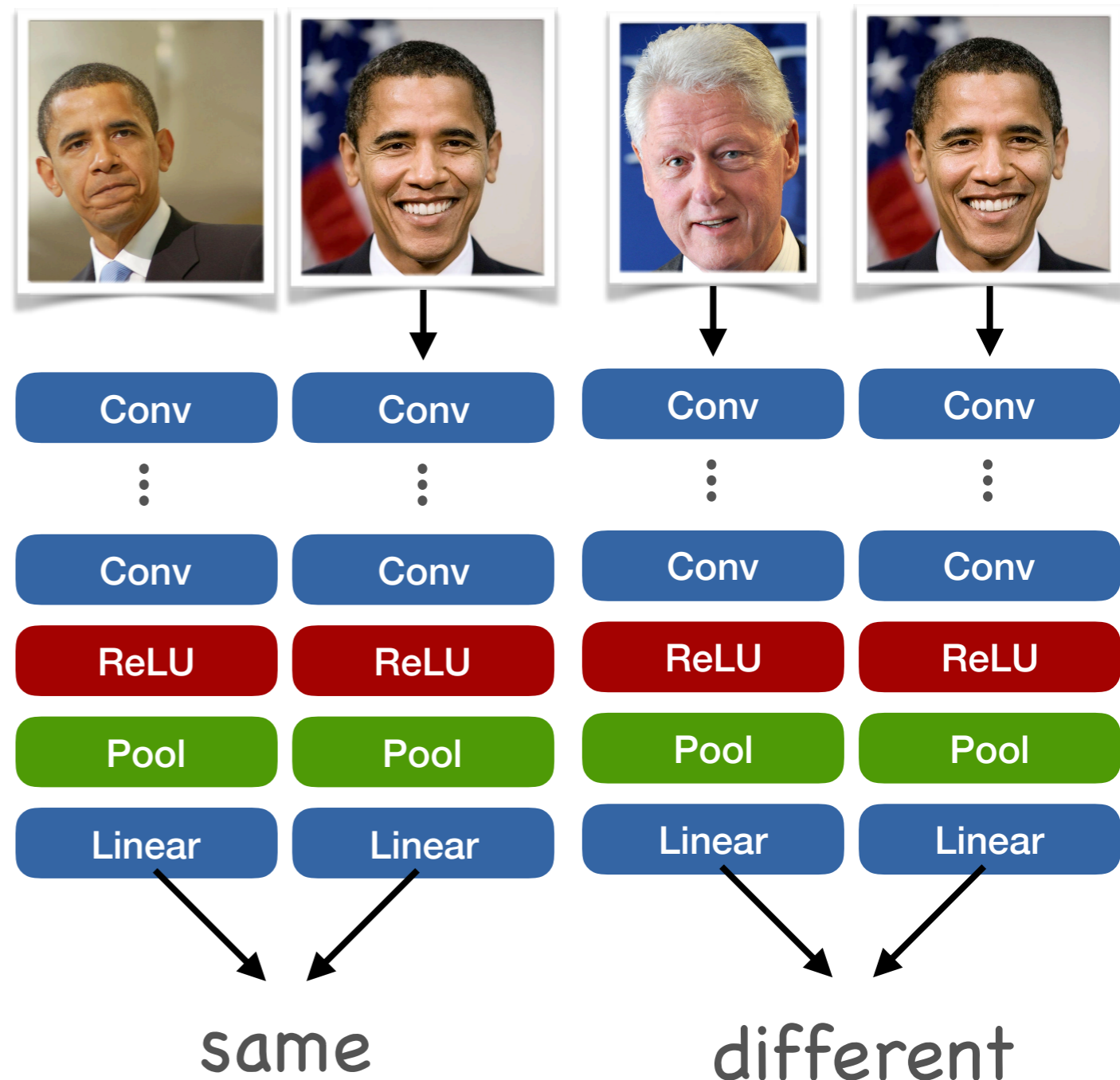


# Contrastive loss

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# Embedding learning

- Embedding network
- Positive and negative samples



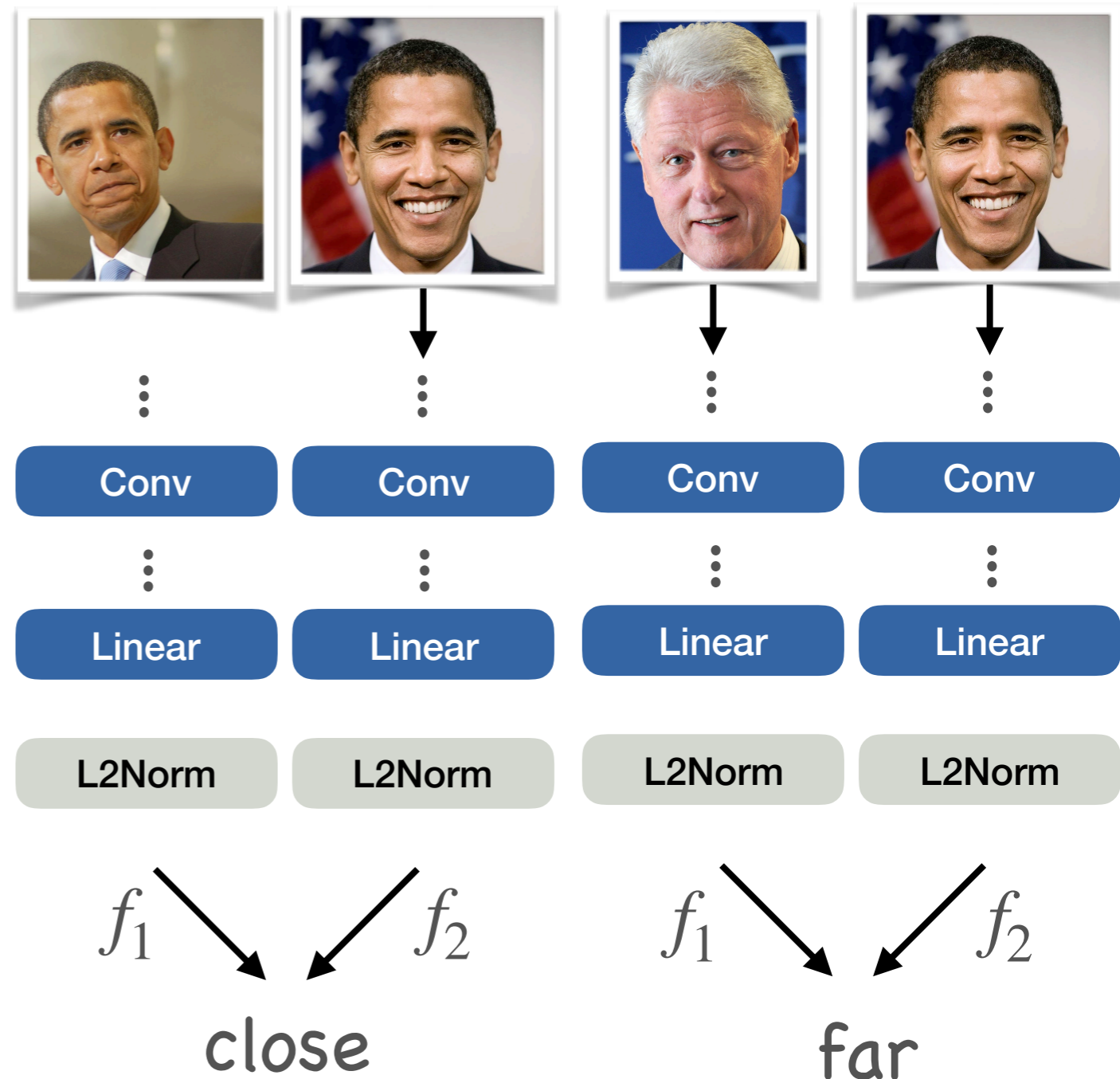
# Objective

- Positives

- $\|f_1 - f_2\| < c$

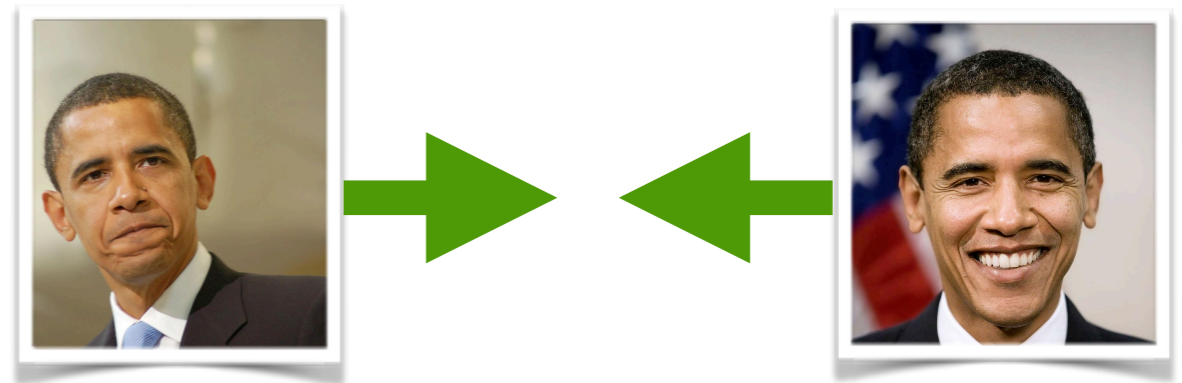
- Negatives

- $\|f_1 - f_2\| > c$



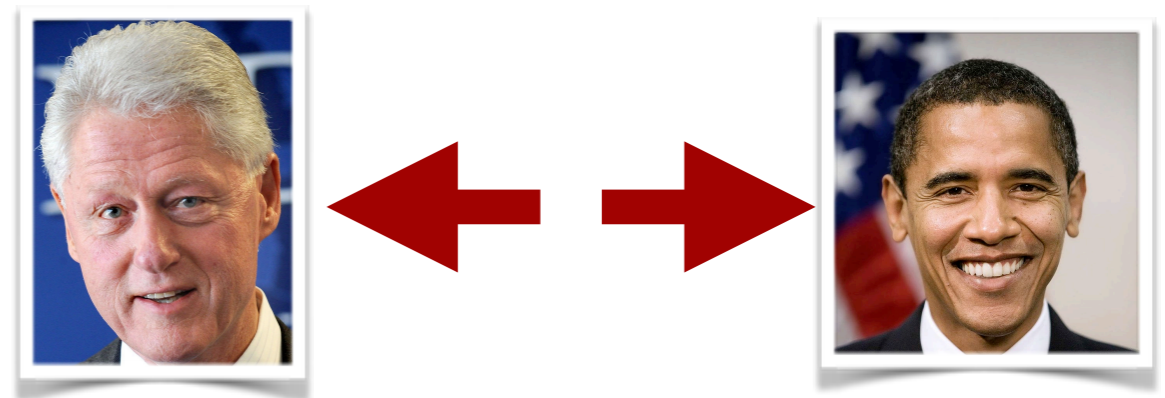
# Contrastive loss

- Collapse positives



- $\|f_i - f_j\|$

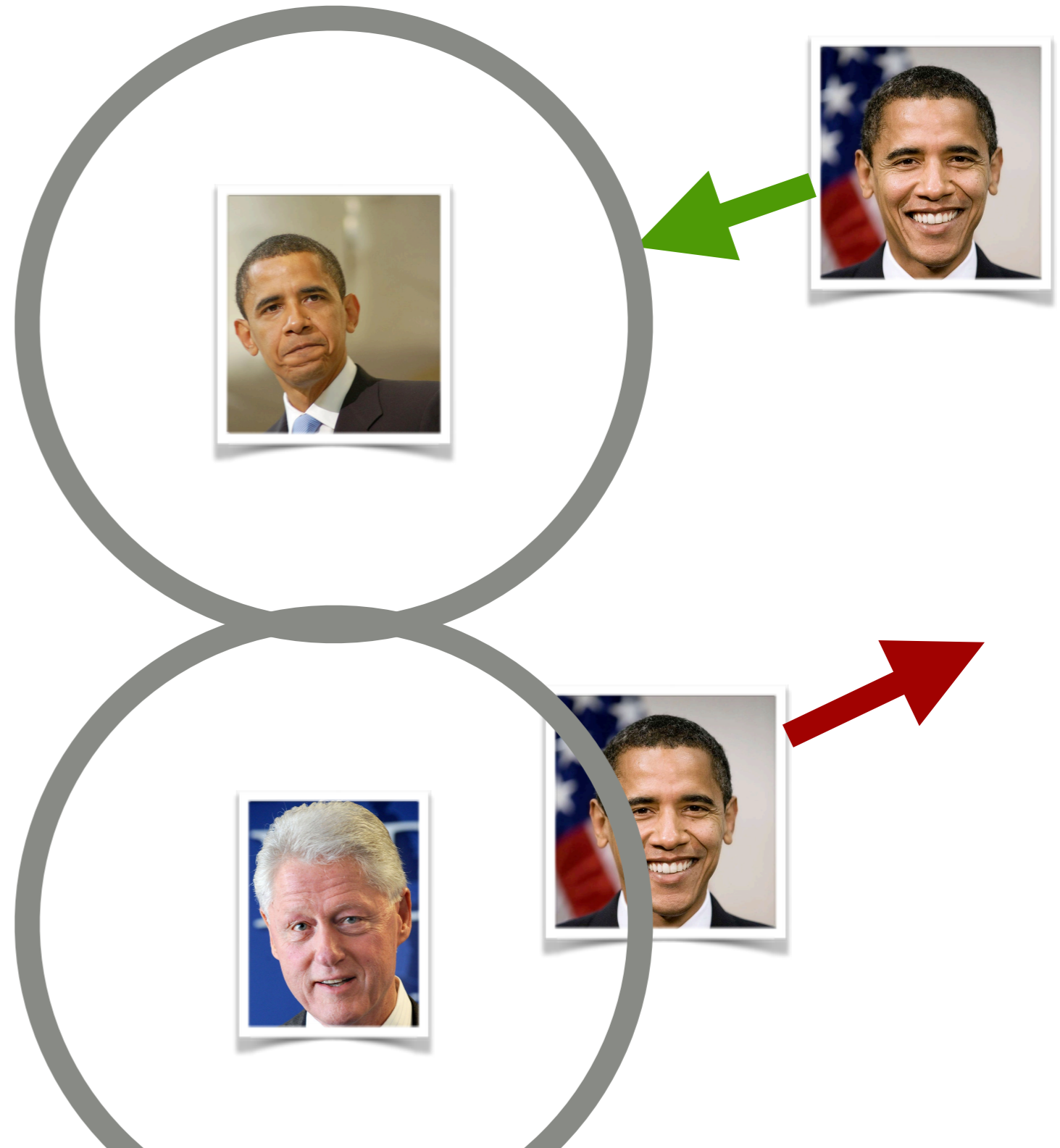
- Separate negatives



- $\max(c - \|f_i - f_j\|, 0)$

# Margin based loss

- Collapse positives
  - $\max(\|f_i - f_j\| - c, 0)$
- Separate negatives
  - $\max(c - \|f_i - f_j\|, 0)$



# Contrastive and margin based losses

- Fix thresholds

