



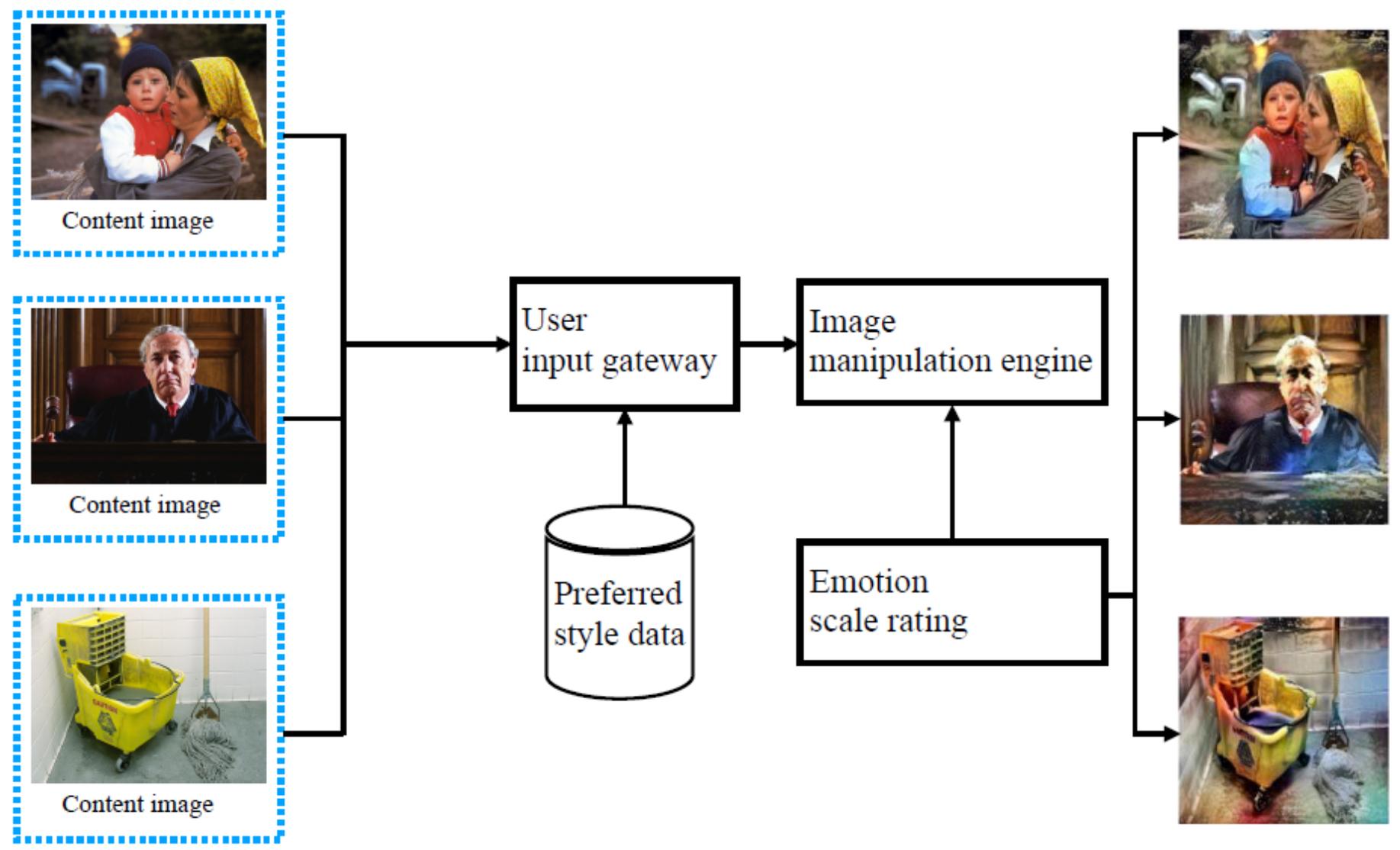
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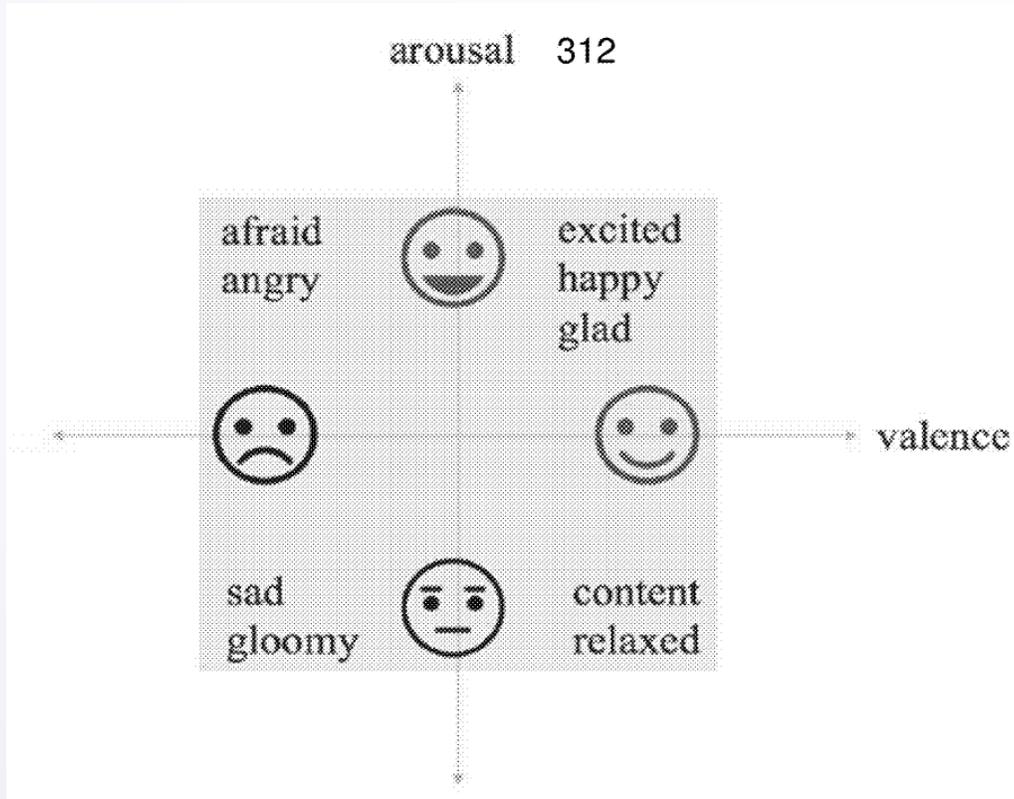
## Technology Brief of CityU's IP

—  
Customizable Emotion Modification for Image and  
Video  
(IDF#663, US 16/381,172)

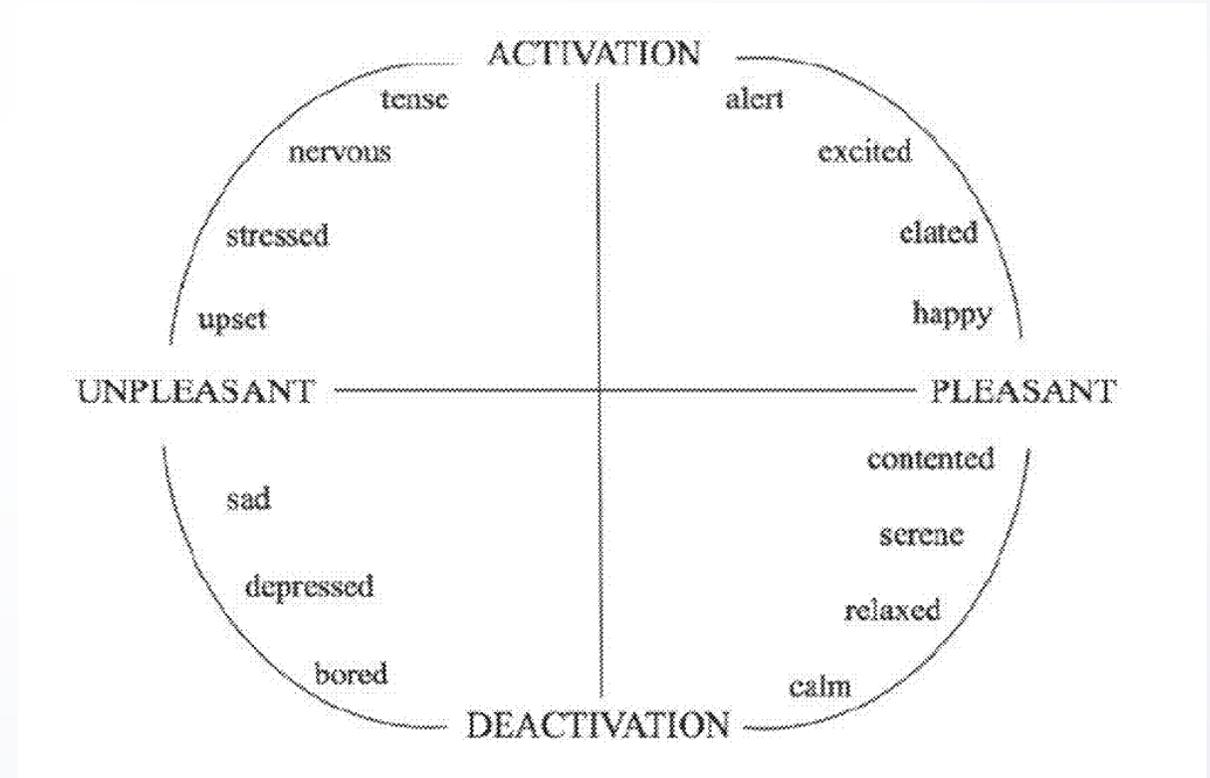
# Customizable Emotion Modification for Image and Video



# Customizable Emotion Modification for Image and Video

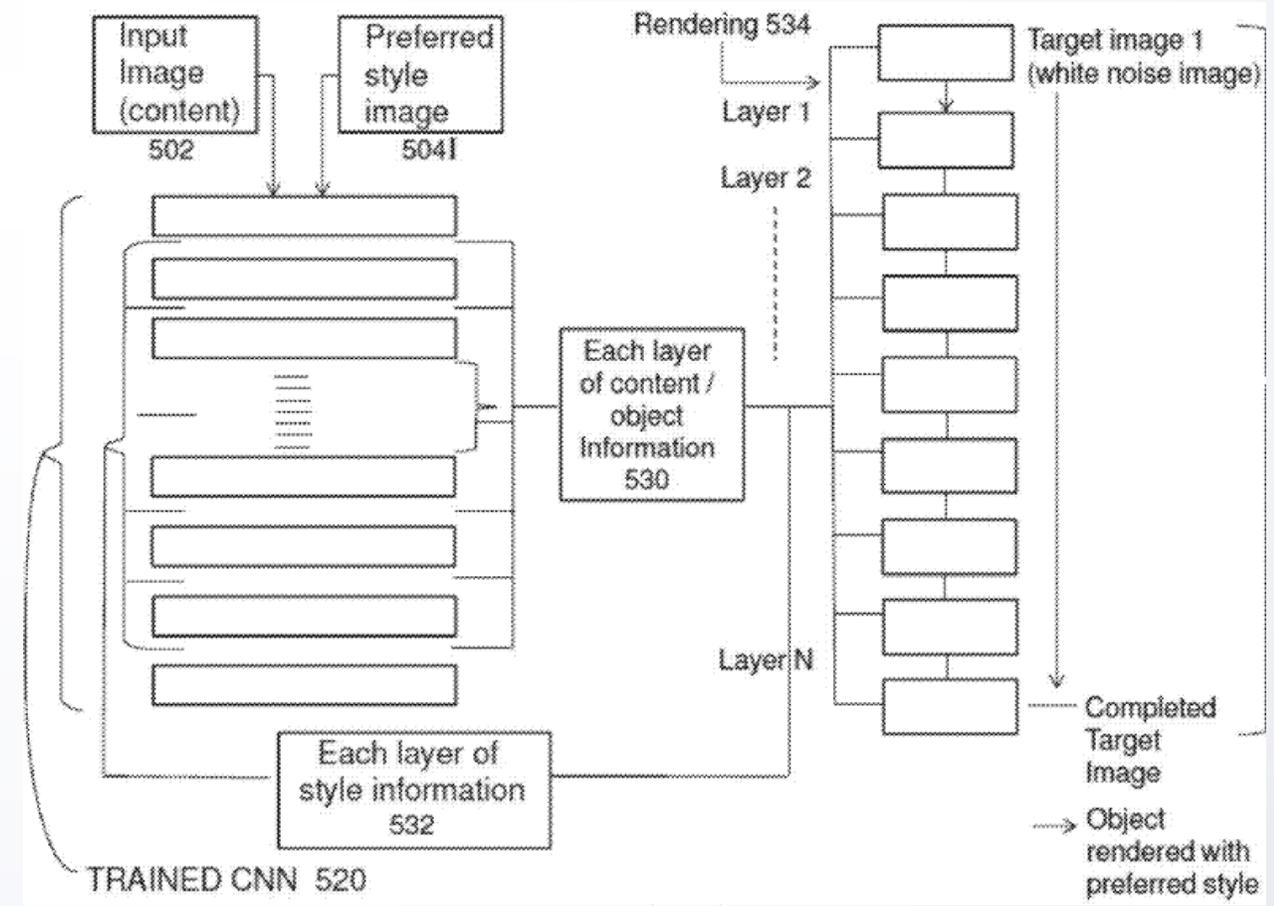
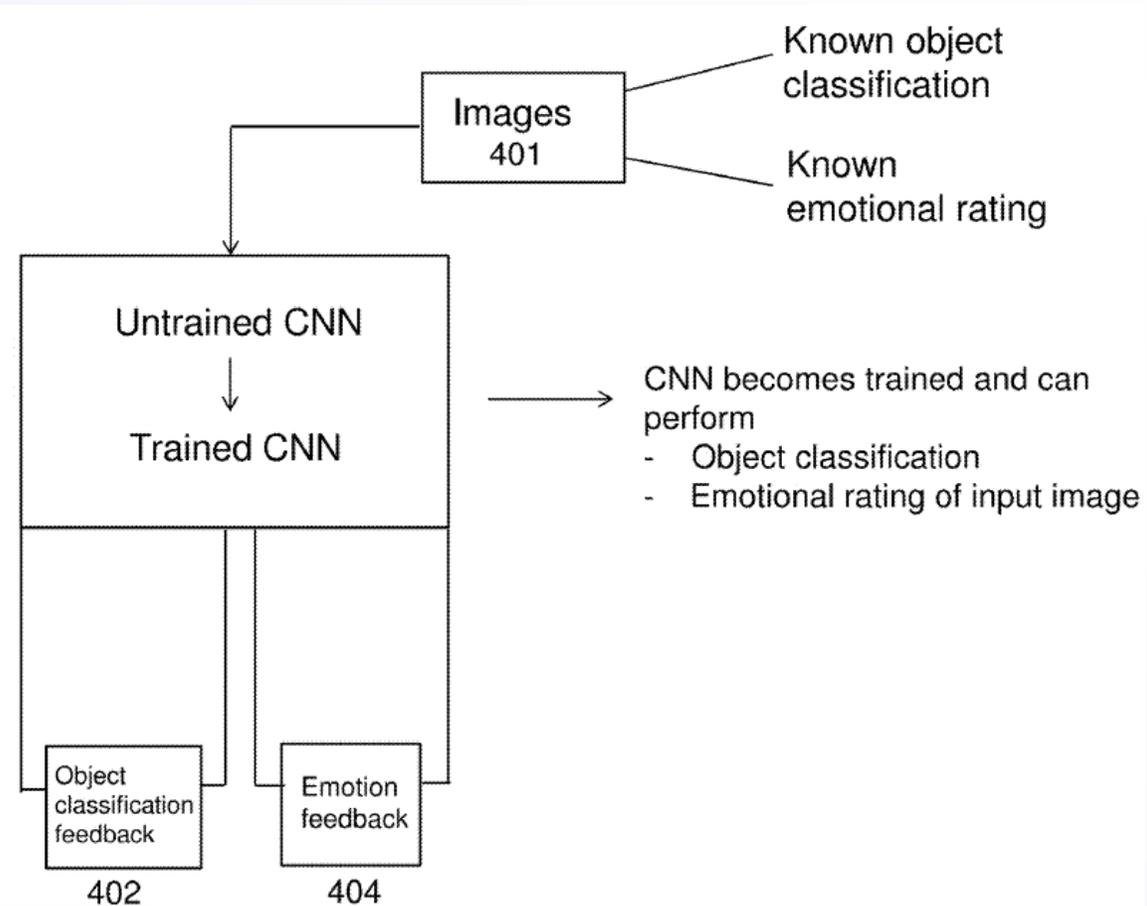


An example of a valence-arousal (VA) emotion model used by the emotion analysis engine



An example of a circumplex model of affect used by the emotion analysis engine

# Customizable Emotion Modification for Image and Video





# Customizable Emotion Modification for Image and Video



## Advantages:

- Flexible for any number of style images and any number of target images
- Can utilize multiple datasets to empirically extract emotion information
- Not limited to a particular model, or even emotion features at all, and can learn individual preferences
- Can extract image features of any category that can be applied to any image or video content
- Images can be both labelled and modified within the system itself

# Customizable Emotion Modification for Image and Video



## **Applications:**

- Visual Application
- A tool for content creators
- As a protective device for parents to filter content for their children
- Mental health protection
- Advertising



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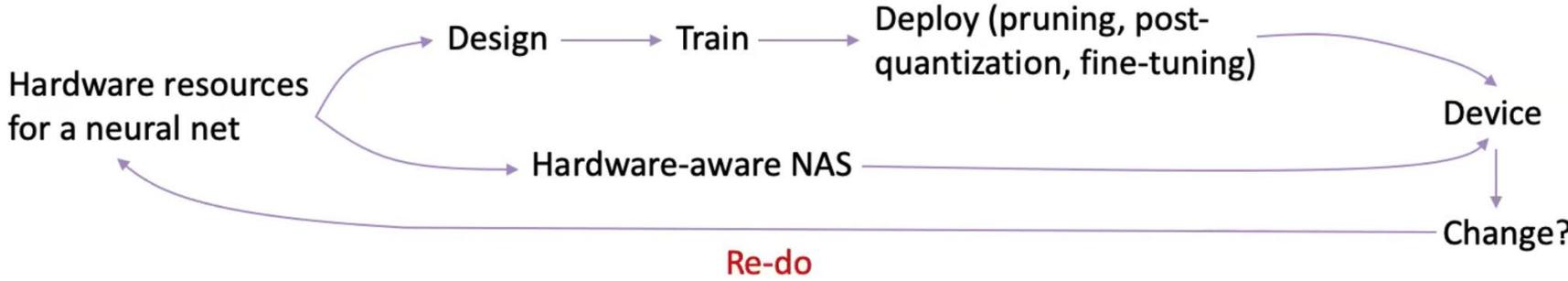
—  
Fully Nested Neural Network for Adaptive  
Compression and Quantization  
(IDF# 854, US 17/000,612)

<https://www.ijcai.org/Proceedings/2020/288>

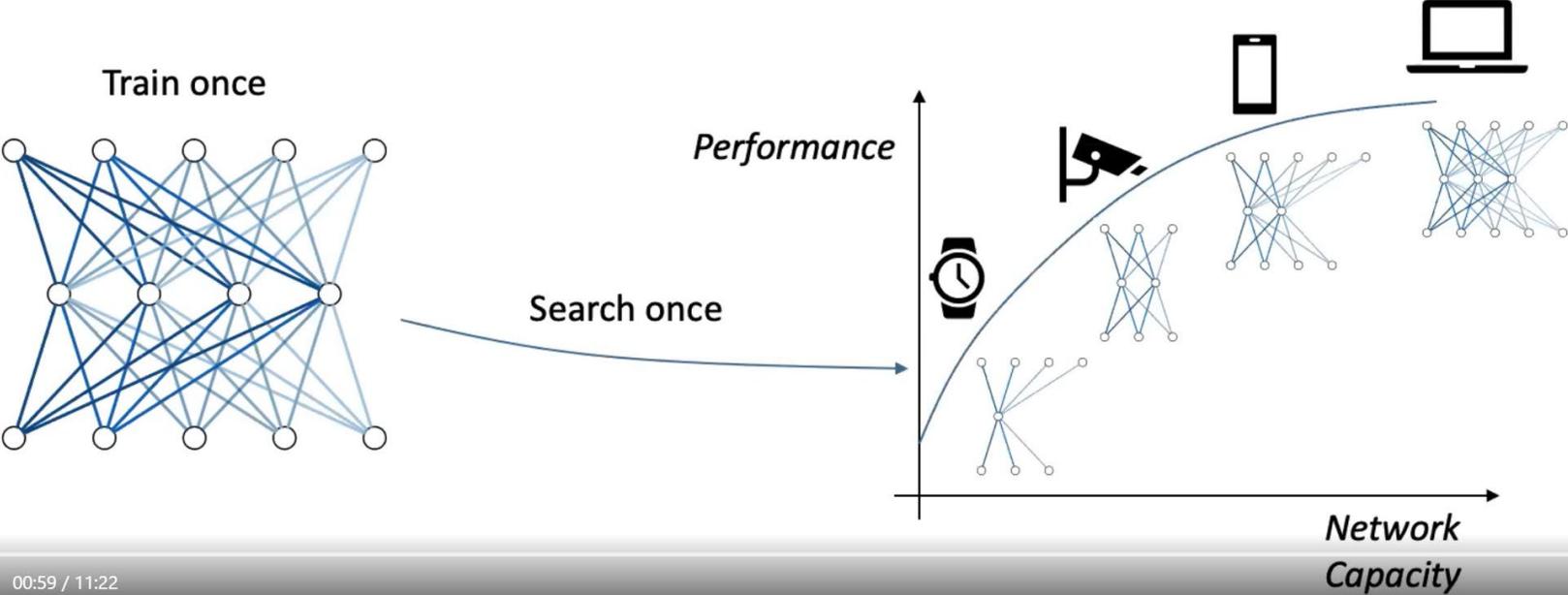
# Fully Nested Neural Network for Adaptive Compression and Quantization



## BACKGROUND



## Solution?



# Fully Nested Neural Network for Adaptive Compression and Quantization

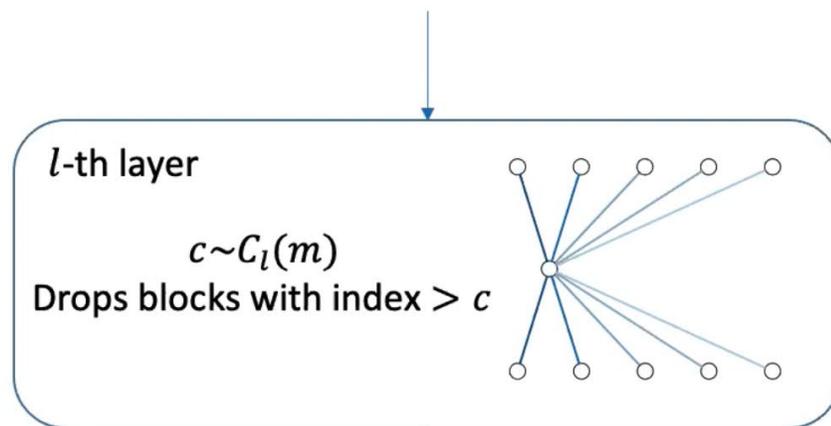
## ORDERED DROPOUT



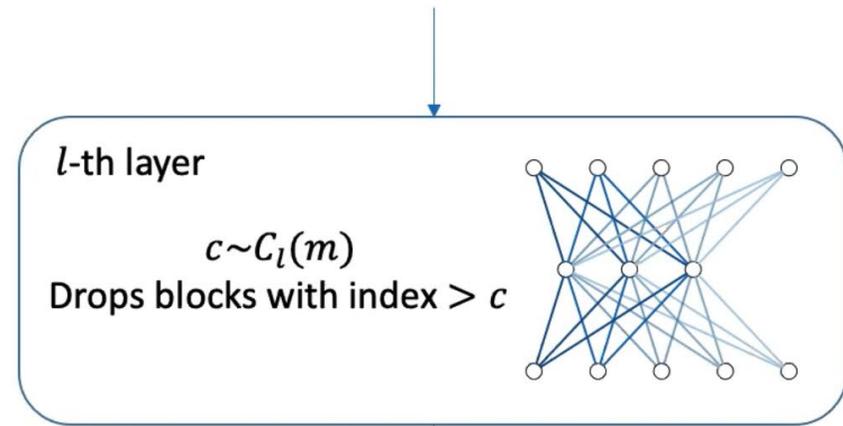
*Ordered dropout* - a method to mimic *testing-time blocks removal* in training time.

We show that, *the residual information is learned via ordered dropout.*

$C_l(m)$  is a categorical distribution over the block indices  $m \in \{1, \dots, M\}$  at the  $l$ -th layer.



z-th iteration



(z + 1)-th iteration

# Fully Nested Neural Network for Adaptive Compression and Quantization



## **Advantages:**

- Applicable to wide range of neural network components
- Better prediction accuracy
- More flexibility for deploying a neural network

## **Applications:**

- Autonomous Self Driving Vehicle
- Video Surveillance & Analytic
- Intellignet IoT Device
- Smart Home Business