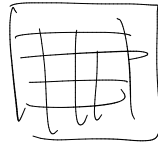


# Architectures (bits)

3 main types:

- convolutions (CNN)



N-dim grid

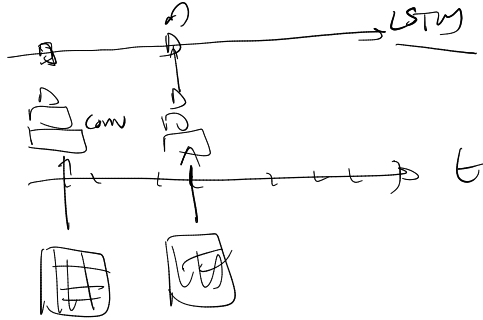
N=1: sound  $\rightarrow$  time  $t$

N=2: images

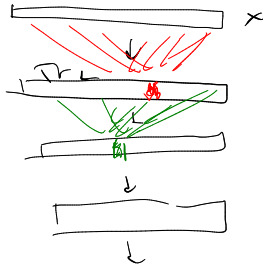
- recurrent networks  $\rightarrow$  LSTM  
 $\rightarrow$  GRU

- attention  $\rightarrow$  transformer  
 $\rightarrow$  GAT

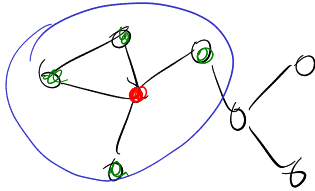
mix them: videos:



Transformers:



Graph-NW



conv  $\leftrightarrow$  message passing

other DP of conv on images?

$$F * g(x) = \int F(y) g(x-y) dy$$

*mask*

Spectral view

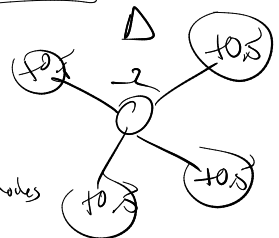
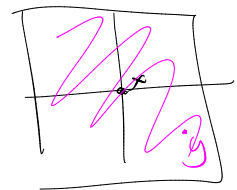
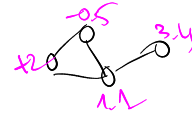
Fourier domain

$$F * g = \hat{F} * \hat{g}$$

for graphs?  $\rightarrow$  Laplacian  $\Delta$   
graph

eigenvectors of graph  $\rightarrow \Delta$

1 eigenvector:  $\mathbb{1}$  over the nodes



$\Delta^n$

$\hookrightarrow$  conv