

- ▶ Define a pointwise nonlinearity
- ▶ Define a graph perceptron
- ▶ Give a recursive definition of a GNN

- ▶ Explain how a GNN can be transferred across different graphs

- ▶ GNNs are particular cases of FCNNs. Why?
- ▶ The FCNN does better than the GNN in the training set. Explain.
- ▶ Is this always a good thing?

- ▶ GNNs outperform FCNNs because they leverage signal symmetries to multiply the elements of the dataset

- ▶ Define a graph filter bank.
- ▶ Explain graph filter banks in the GFT domain.
- ▶ Filter banks scatter energy across multiple outputs. Explain.

- ▶ Define frames and tight frames.
- ▶ Is it difficult to design a tight frame?
- ▶ What is good about tight frames?

- ▶ Define a MIMO graph filter as a collection of filters
  
  
  
  
  
  
  
  
  
  
- ▶ Define a MIMO graph filter using matrix notation

- ▶ Give a recursive definition for a GNN with multiple features
  
- ▶ Draw and describe a block diagram for a multiple features GNN with 3 layers. The GNN has  $F_0$ ,  $F_1$ ,  $F_2$ , and  $F_3$  features at layers 0 (the input) 1, 2, and 3 (the output).
  
- ▶ Do a good job. This is the workhorse of ML on graphs.



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