



deeplearning.ai

End-to-end deep  
learning

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Whether to use  
end-to-end learning

# Pros and cons of end-to-end deep learning

## Pros:

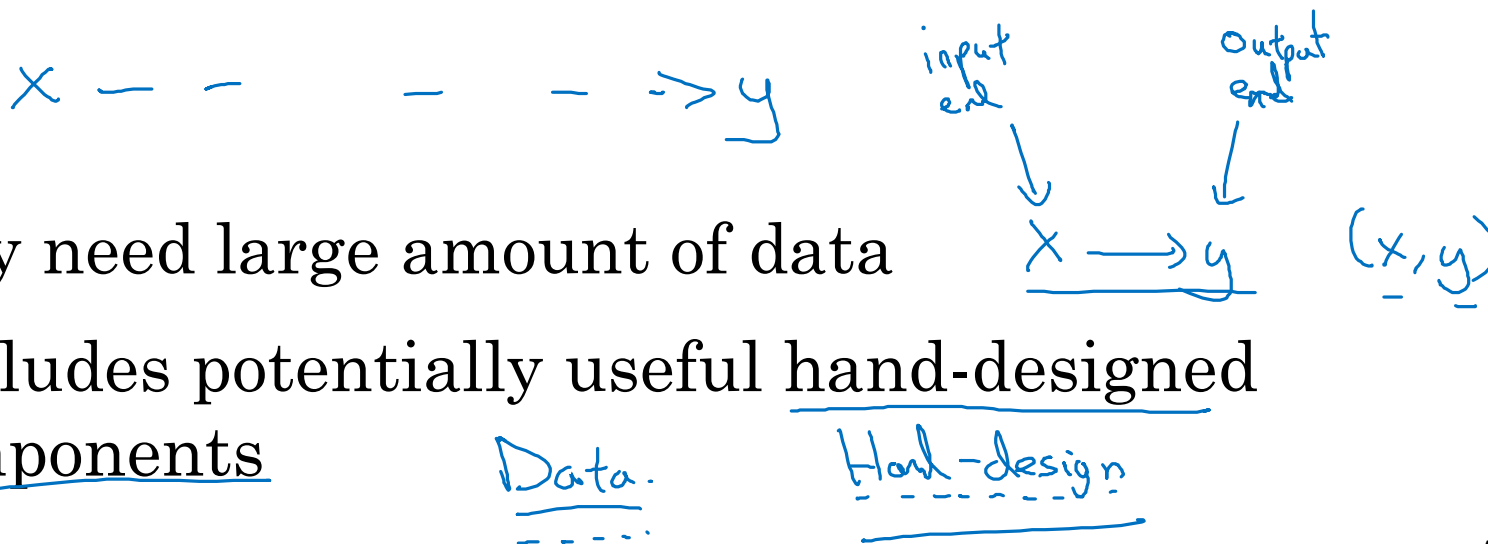
- Let the data speak
- Less hand-designing of components needed

$x \rightarrow y$

→ "phonemes"  
\_c\_ \_a\_ \_t\_

## Cons:

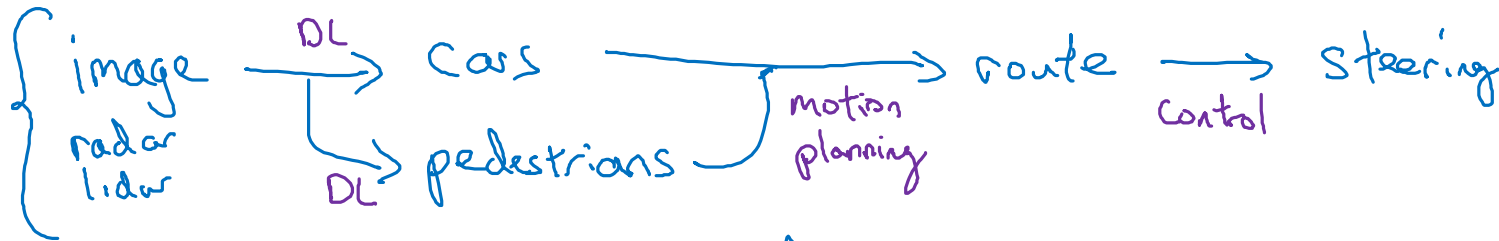
- May need large amount of data
- Excludes potentially useful hand-designed components



# Applying end-to-end deep learning

Key question: Do you have sufficient data to learn a function of the complexity needed to map  $x$  to  $y$ ?

$x \rightarrow y$



- Use DL to learn individual components
- Carefully choose  $x \rightarrow y$  depending what tasks you can get data for.

$\rightarrow$  image  $\longrightarrow$  steering

