



deeplearning.ai

End-to-end deep
learning

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

$x - - - - - \rightarrow y$

input
end
↓
 $x \rightarrow y$
output
end
↓

(x, y)

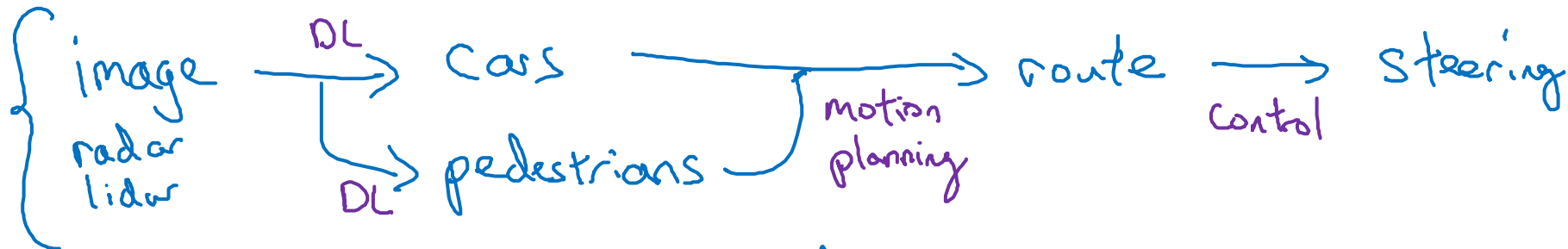
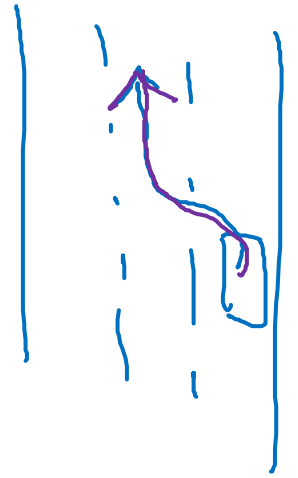
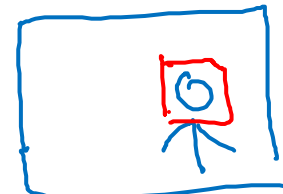
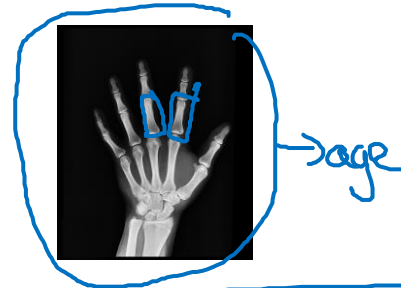
Data.
- - -

Hand-design.

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 \rightarrow steering