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 $\quad x \longrightarrow y$

- Less hand-designing of components needed

$x \dashrightarrow y$

Cons:

- May need large amount of data $\quad x \longrightarrow y \quad (x, y)$
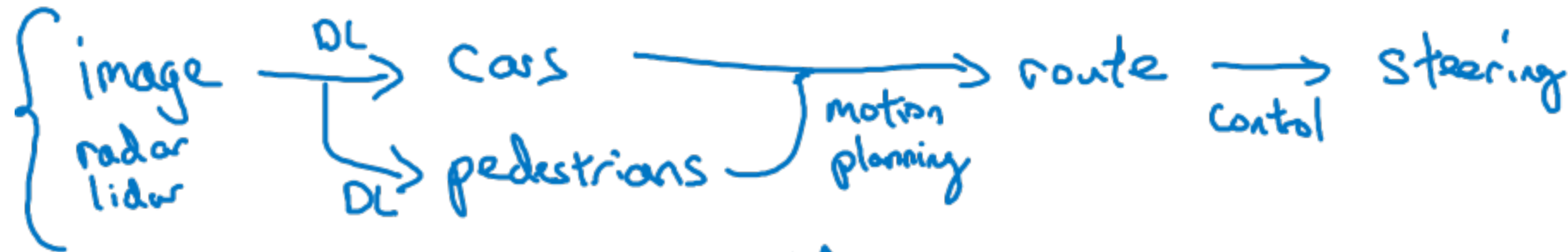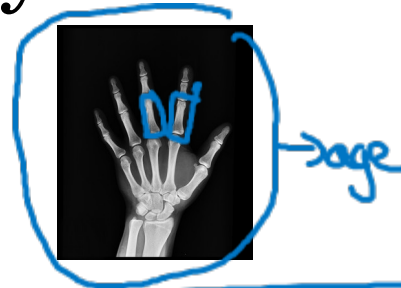
- Excludes potentially useful hand-designed components

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?

$X \rightarrow y$

$\rightarrow$ age

image
radar
lidar $\left\{ \begin{array}{l} \end{array} \right.$ $\xrightarrow{DL}$ Cars $\xrightarrow{DL}$ pedestrians $\left. \begin{array}{l} \end{array} \right\}$ motion planning $\rightarrow$ route $\xrightarrow{Control}$ steering

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

$\rightarrow$ image $\longrightarrow$ steering

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