## Lecture 25: Deep neural networks continued

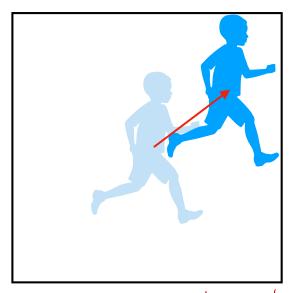
**Professor Ilias Bilionis** 

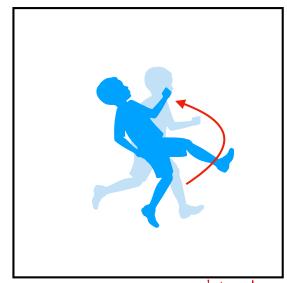
## Exploiting symmetries via data augmentation

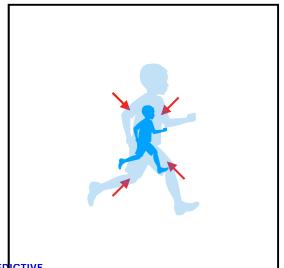


## Invariance of labels









- there are certain transformations that can be applied to the input data that will leave the output data invariant, and these can be exploited to enlarge the data set for training

All these are classified as "boy."



## Idea in data augmentation

