

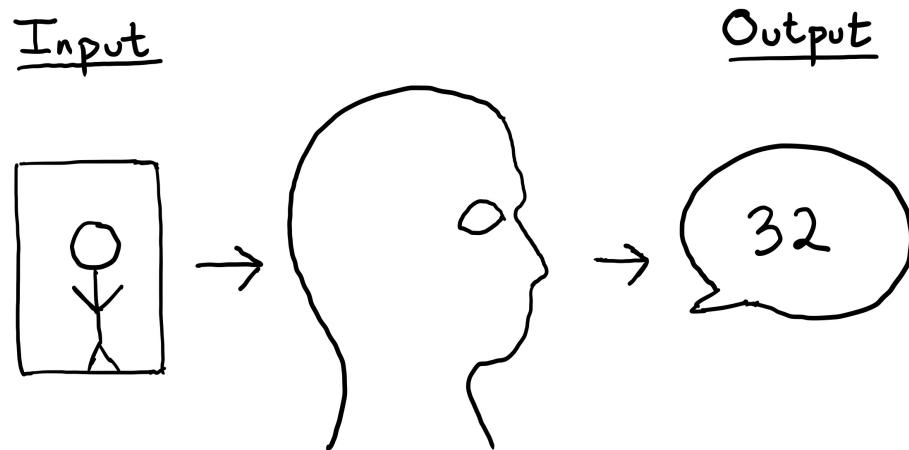
# Protocols: examples?

# Results



<b>Group</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>
<b>1</b>	26.6	20.2	58.6	39.4	34.0	26.2	32.4	28.6	50.8	47.2
<b>2</b>	26.2	20.0	55.2	35.2	30.2	23.0	29.2	31.8	45.8	41.4
<b>3</b>	28.0	23.0	59.0	40.0	27.0	28.0	28.0	32.0	50.0	43.0
<b>4</b>	28.0	23.0	59.0	41.0	31.0	26.0	26.0	35.0	52.0	47.0
<b>5</b>	30.0	18.0	58.0	34.0	30.0	26.0	29.0	37.0	48.0	38.0

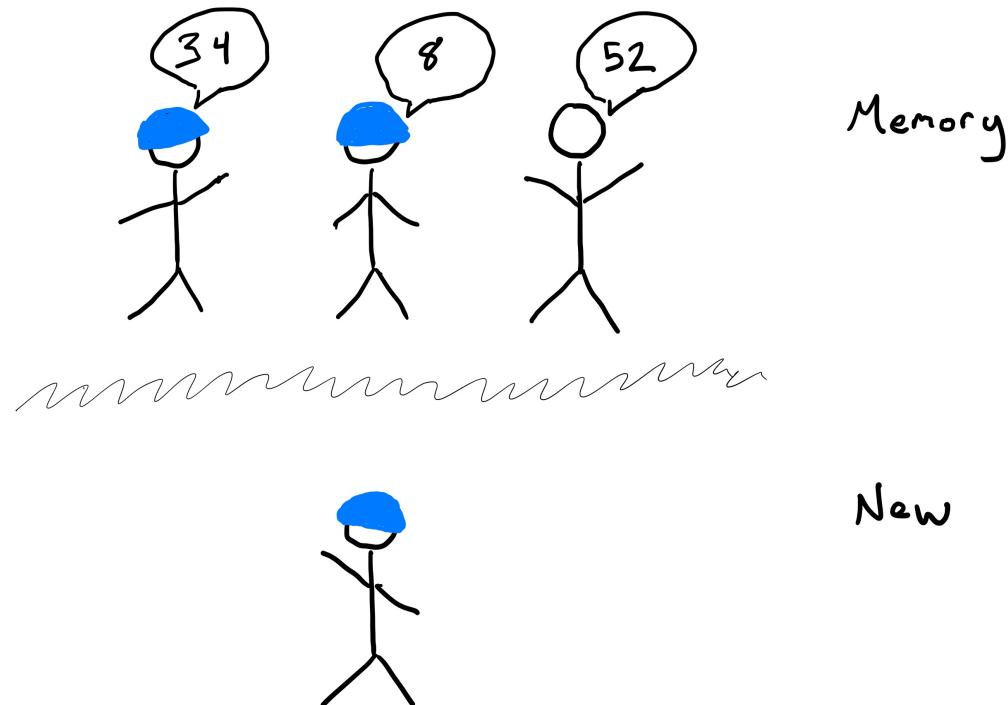
# Predictive Modeling as a Human



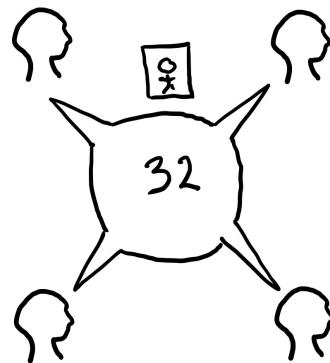
# What features do you look for?



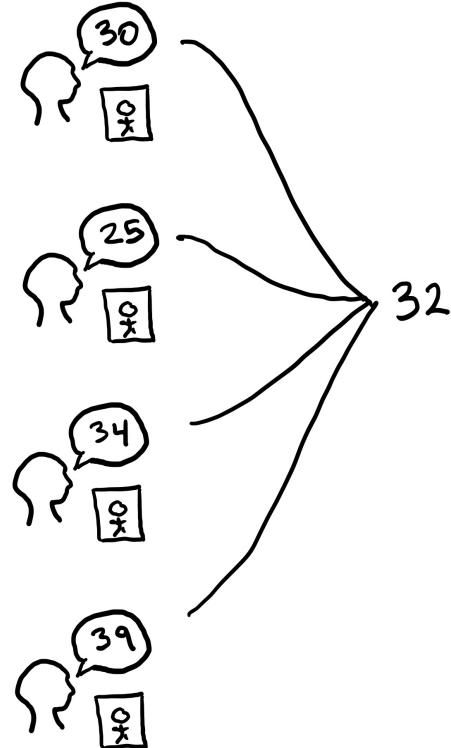
# Training Humans



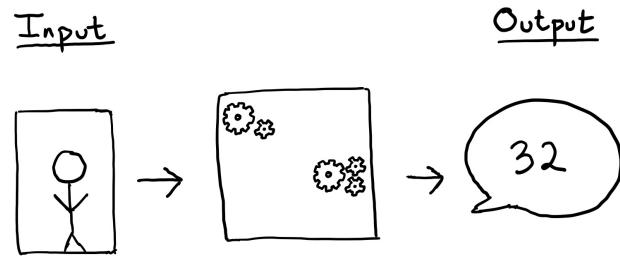
# Human Decision-Making



vs.



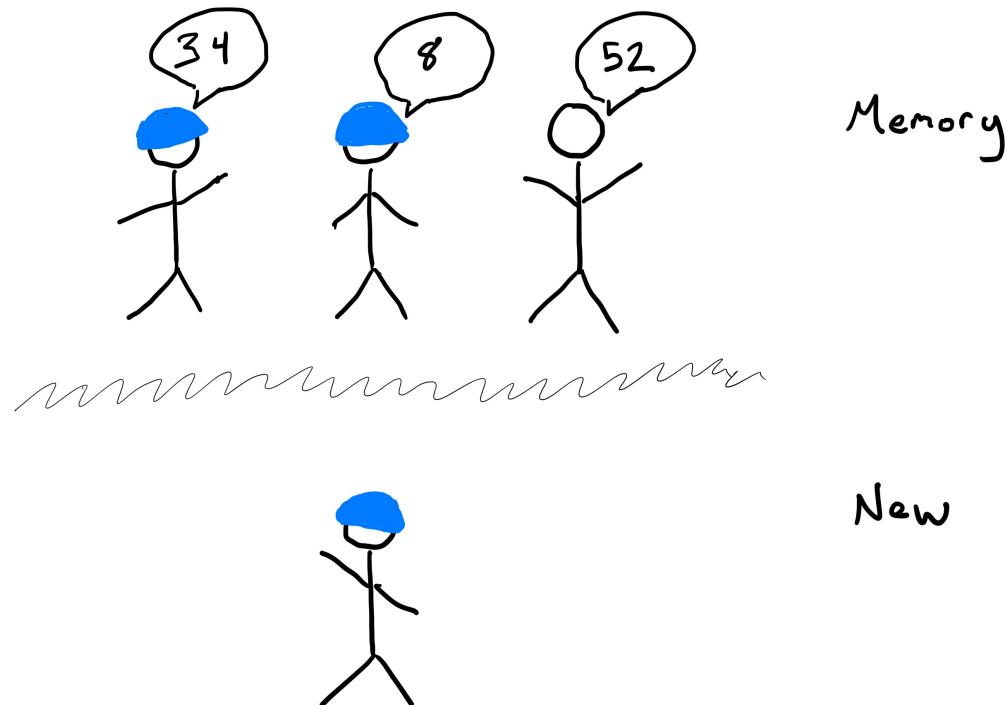
# Predictive Modeling as a Machine



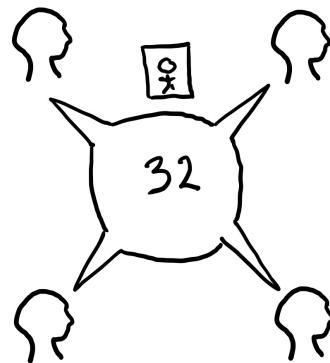
$$x_A \in [0, 255] \rightarrow \begin{matrix} \square & \square & \square \\ \square & \square & \square \\ \square & \square & \square \\ \square & \square & \square \end{matrix} \rightarrow x_A = \begin{pmatrix} x_{A1} \\ x_{A2} \\ \vdots \\ x_{Ab} \end{pmatrix} \longrightarrow x'_A = \begin{pmatrix} x'_{A1} \\ x'_{A2} \\ x'_{A3} \end{pmatrix} \rightarrow \hat{y}_A$$

# Selecting $\hat{f}$

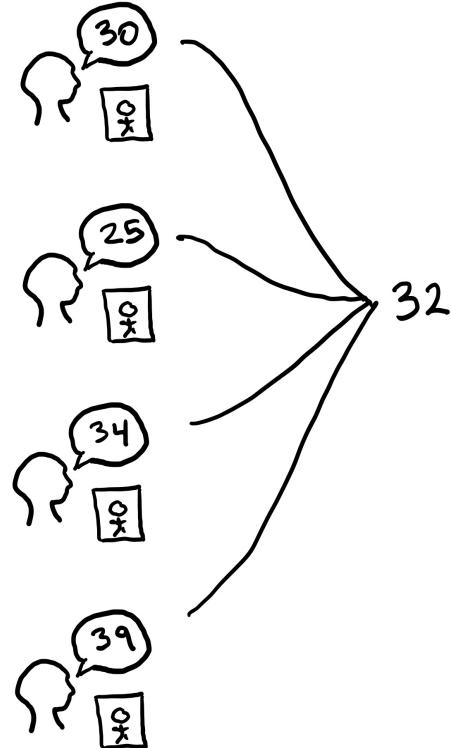
# Training a Machine



# Machine Decision-Making

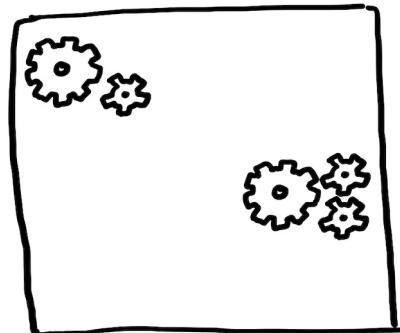


vs.



# In this course

*We will open up the machines.*



## Some recurring themes

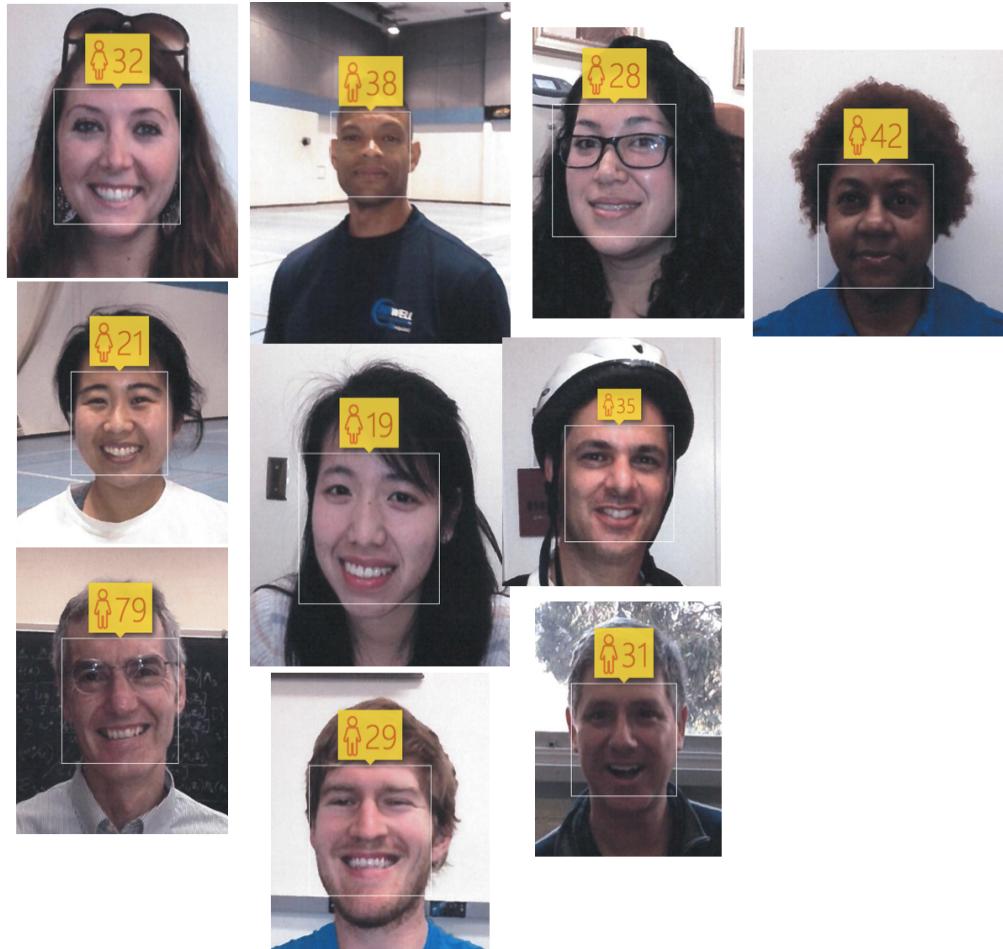
1. Raw data may be messy / uninformative
2. Feature extraction
3. Many choices for  $\hat{f}$ !
4. Learning with ensembles
5. Must be thoughtful about model assessment

# Results



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<b>Actual</b>	23.0	26.0	58.0	51.0	27.0	25.0	22.0	43.0	47.0	61.0

# [www.how-old.net](http://www.how-old.net)



# Results



<b>Group</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>
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<b>Actual</b>	23.0	26.0	58.0	51.0	27.0	25.0	22.0	43.0	47.0	61.0
<b>howold</b>	32.0	21.0	79.0	38.0	19.0	29.0	28.0	35.0	31.0	42.0

