Social cognition and autonomous systems

Cade McCall, PhD





OBSERVE PREDICT ACT















mean cross correlation = .32***, mean peak= .43, mean peak (intense period) = .64



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Agency



Biological motion



Grosbras et al, 2011

Niko Troja, Biomotion lab, Queens University



Biological motion



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Social attention



e.g., Friesen & Kingstone, 1998



Perspective-taking



Apperly et al, 2010



- Observe
 - Movement
 - Gaze



- Agency
- Actions
- Attention
- Awareness



Understanding other minds



Heider & Simmel, 1944



Understanding other minds



Kanske et al, 2016



- Observe
 - Movement
 - Gaze







- Interact
 - Action coordination
 - Joint attention
 - Communication
 - Reciprocity





Interact

- Action coordination
- Joint attention
- Communication
- Reciprocity

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Driving: A social interaction

- **Observe** the behaviour of others
- **Predict** their future behaviour
- Act in line with those predictions
- Interact with others





An example







- Observe
 - Vehicle movement
 - Driver movement
 - Driver gaze



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Critical questions

• Can we **design** to reduce **risk**?



To anthropomorphize?



James Whiting, 2015







or





Critical questions

- Can **design** reduce **risk**?
- How will perceptions of agency shape expectations of culpability?
- Can legal structures enforce fairness and reciprocity?

