Project outline for SPP “The Active Self”

Perceived body extension as a force field

We are:

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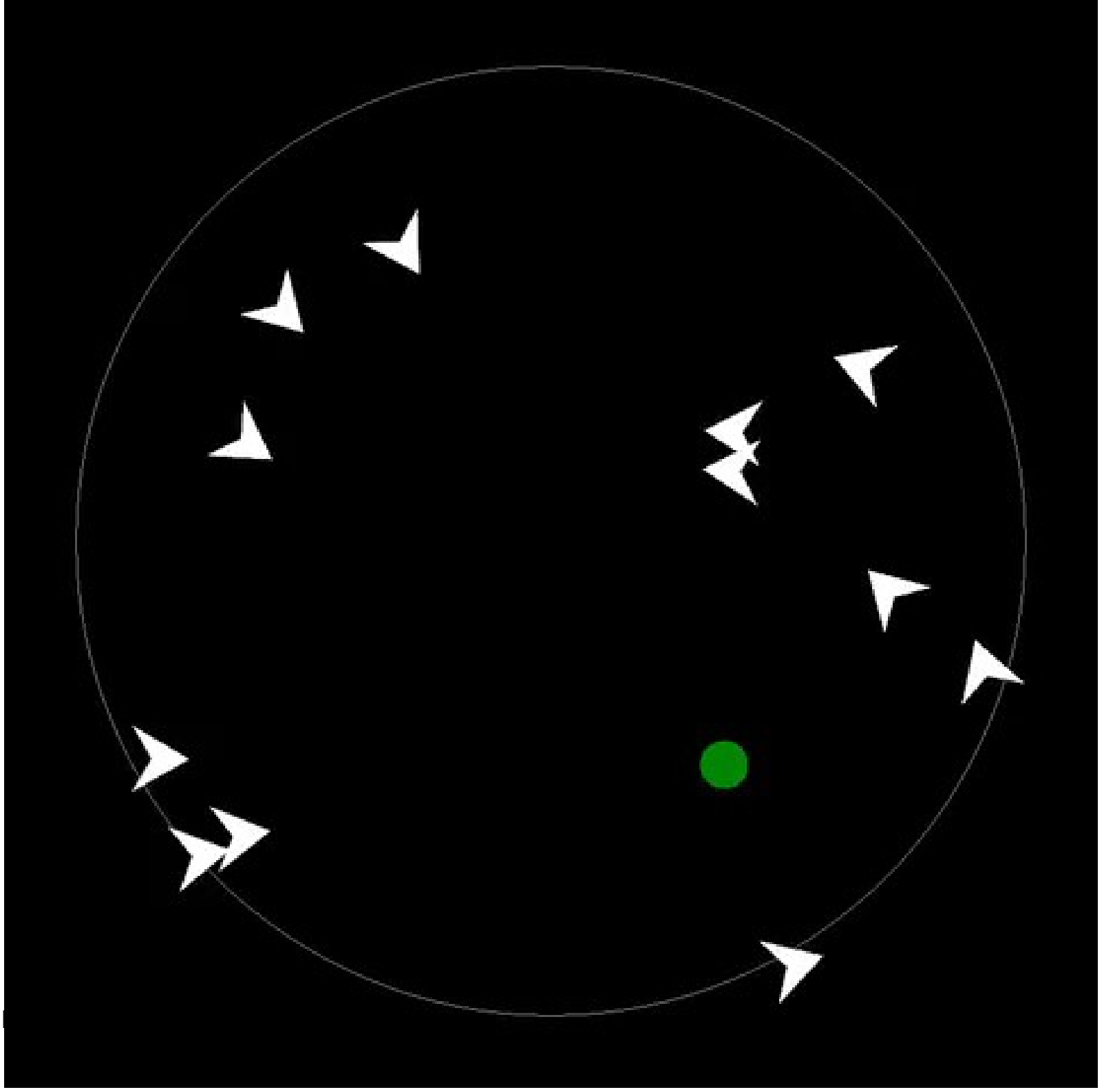
Research background:

How do infants and adults detect and perceive goal-directed motion

+ mathematical modeling (Simkovic & Träuble, 2014, 2015)

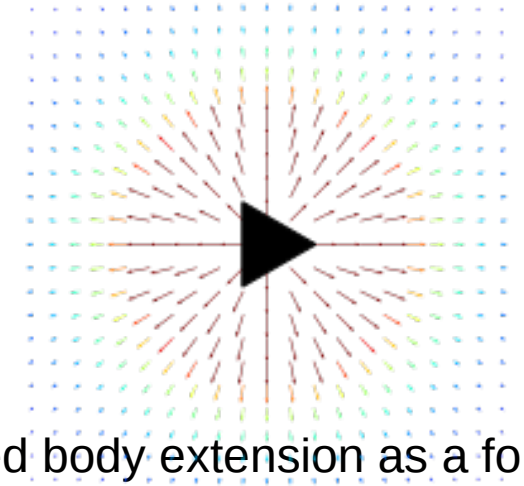


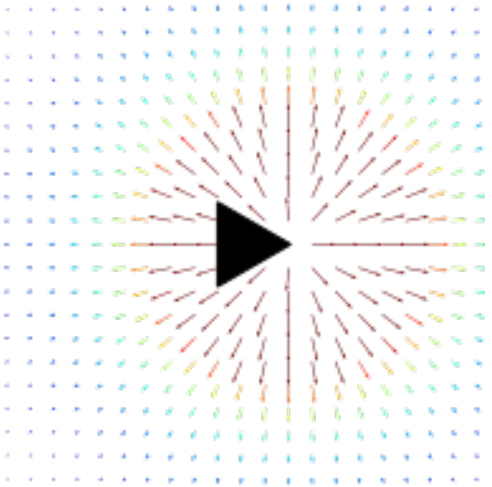
Simkovic & Träuble (2014)

Finding: The perceived object (darts) positions and boundaries are displaced from their actual location and boundary

Current question: What does the movement from contact avoidance tasks tell us about the perceived body (own as well as that of others) extension?

Simkovic & Träuble (2014): Displaced force field



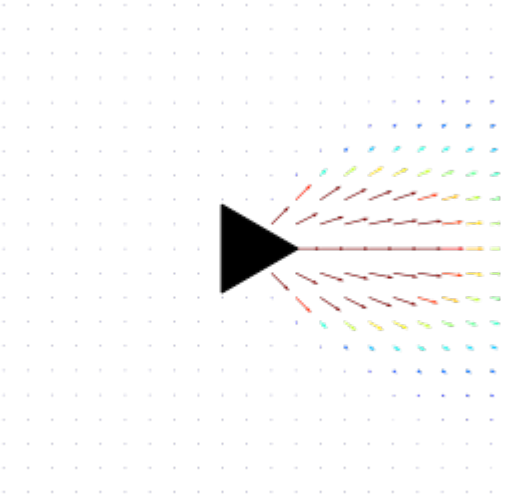


Extensions to the force field model

Own body as a force source

Additional force sources: gaze/head orientation

Explore various force field shapes



Contact avoidance tasks

Bird-eye view a la Simkovic & Träuble (2014)

First-person view with Virtual Reality

Static scenes: boarding crowded subway/ crowded elevator cabin

Dynamic scenes: avoid contact with moving agents

Participants: children (6 and older) and adults

What does the movement from contact avoidance tasks tell us about the perceived body extension?

Estimate weights of force sources and the respective force shapes

Hierarchical probabilistic generative model

Generative model + VR = Turing test

Can human observers discern model-generated movements from human movements?

Thank You for Your attention

Check out the visualization of the force model in action from Simkovic & Träuble (2014) at http://vimeo.com/89325231

References:

Šimkovic, M., & Träuble, B. (2014). Perceived displacement explains wolfpack effect. Frontiers in psychology, 5.

Šimkovic, M., & Träuble, B. (2015). Pursuit tracks chase: exploring the role of eye movements in the detection of chasing. PeerJ, 3, e1243.