

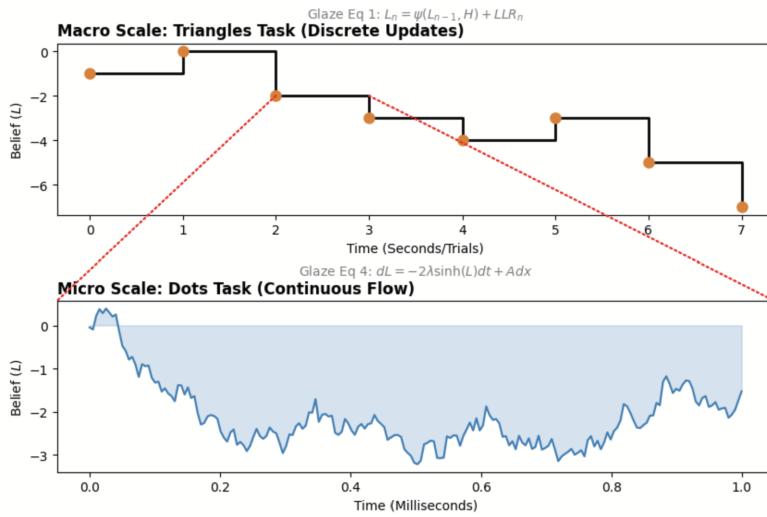
# Continuous Normative Model for decision-making?

Seminar: Models of Learning and Decision Making in Changing Environments  
by Prof. Dr. Lilian Weber  
University of Osnabrück  
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# Motivation and Research question

- Normative models
  - Updates beliefs  $L_n$  based on hazard rates  $h$  and log-likelihood  $LLR_n$ .
  - Beliefs reflect confidence of choices (*left, right*).



Research question:

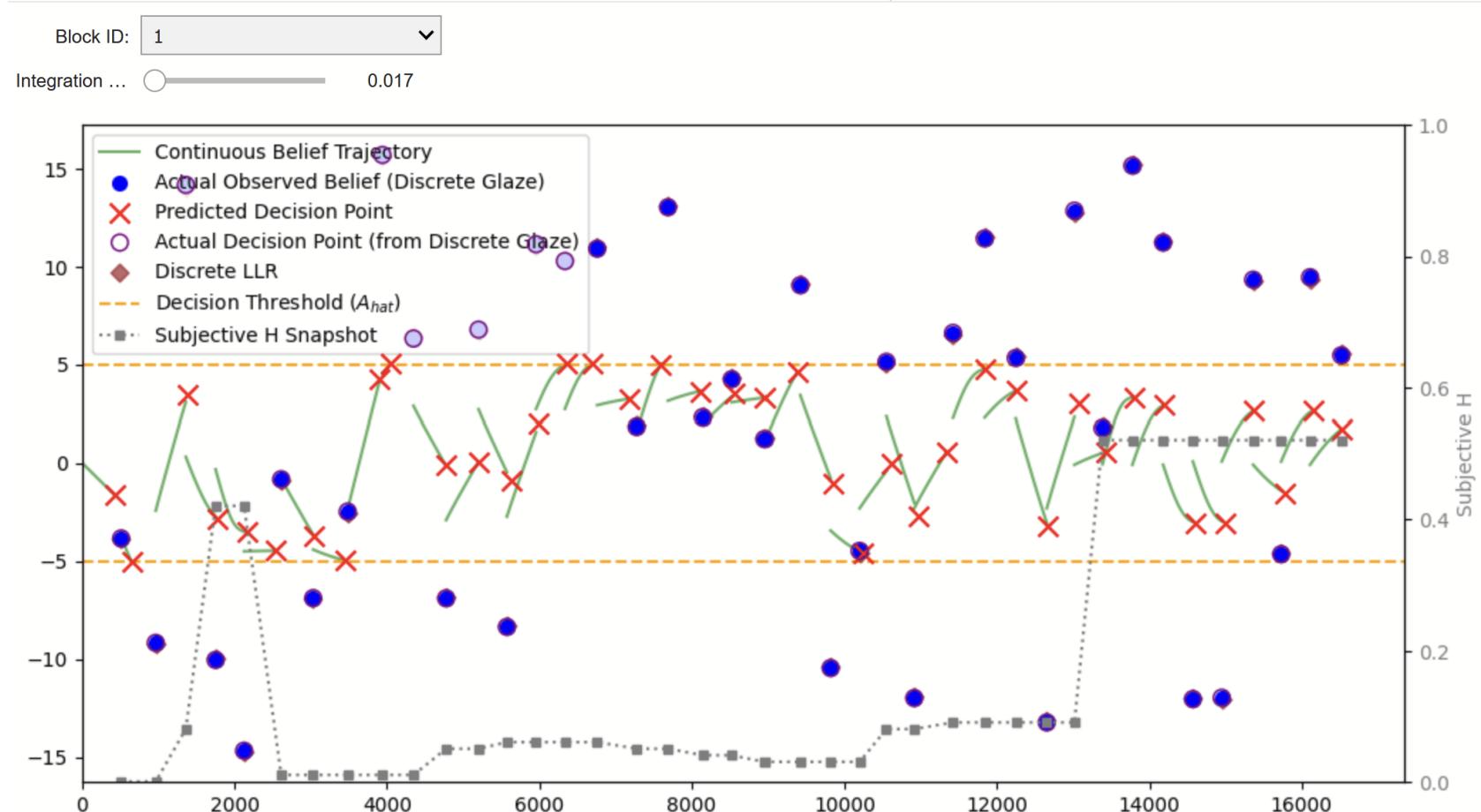
- Can the continuous normative model (CNM) predict the reaction times RT of participants in the triangle task?

A schematic: *CNM* on the triangle task?

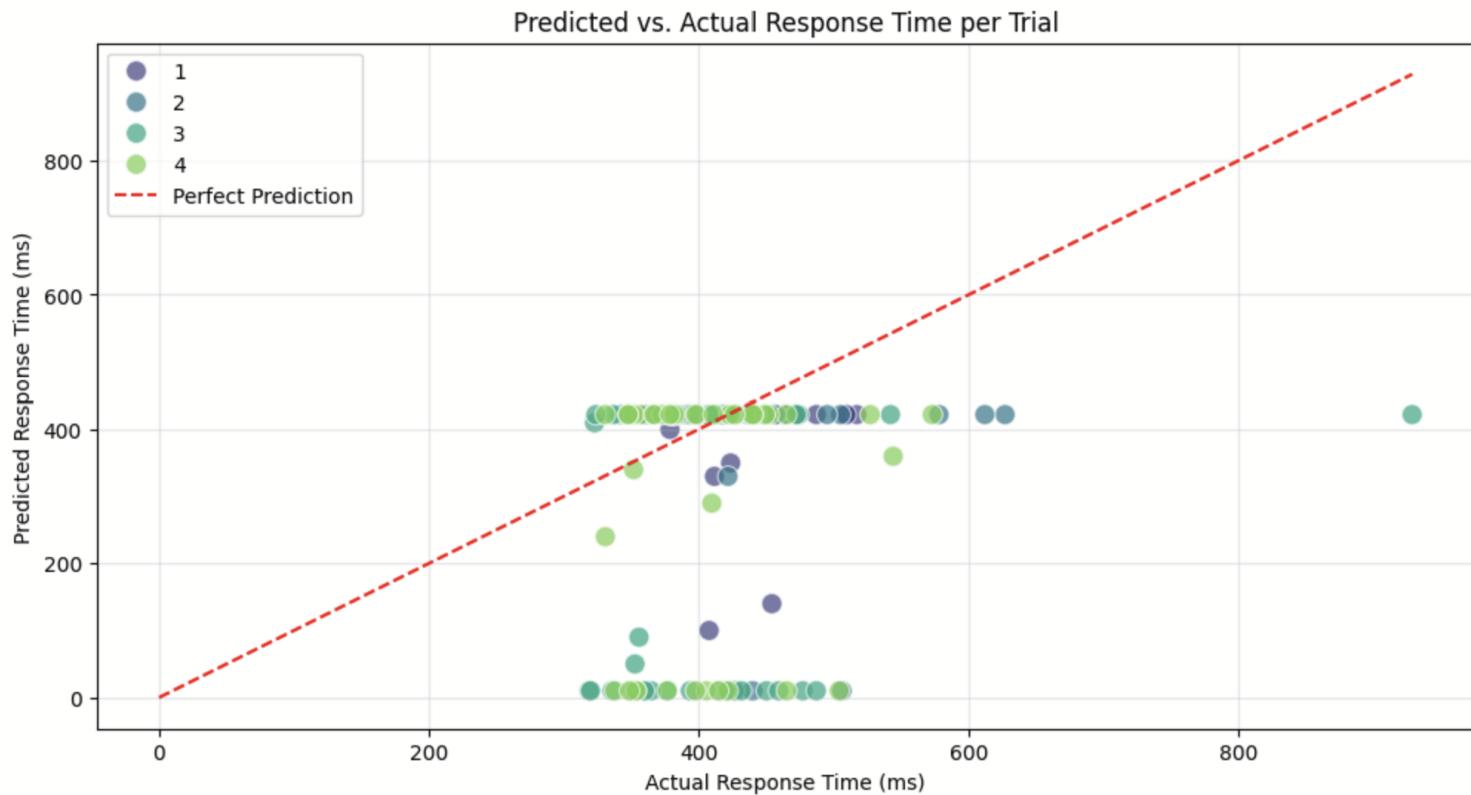
# Preliminary results

# Defining a decision-threshold

Decision-threshold: globally, min distance of predicted RTs and RTs:  $\min(p_{RT} - \hat{p}_{RT})$

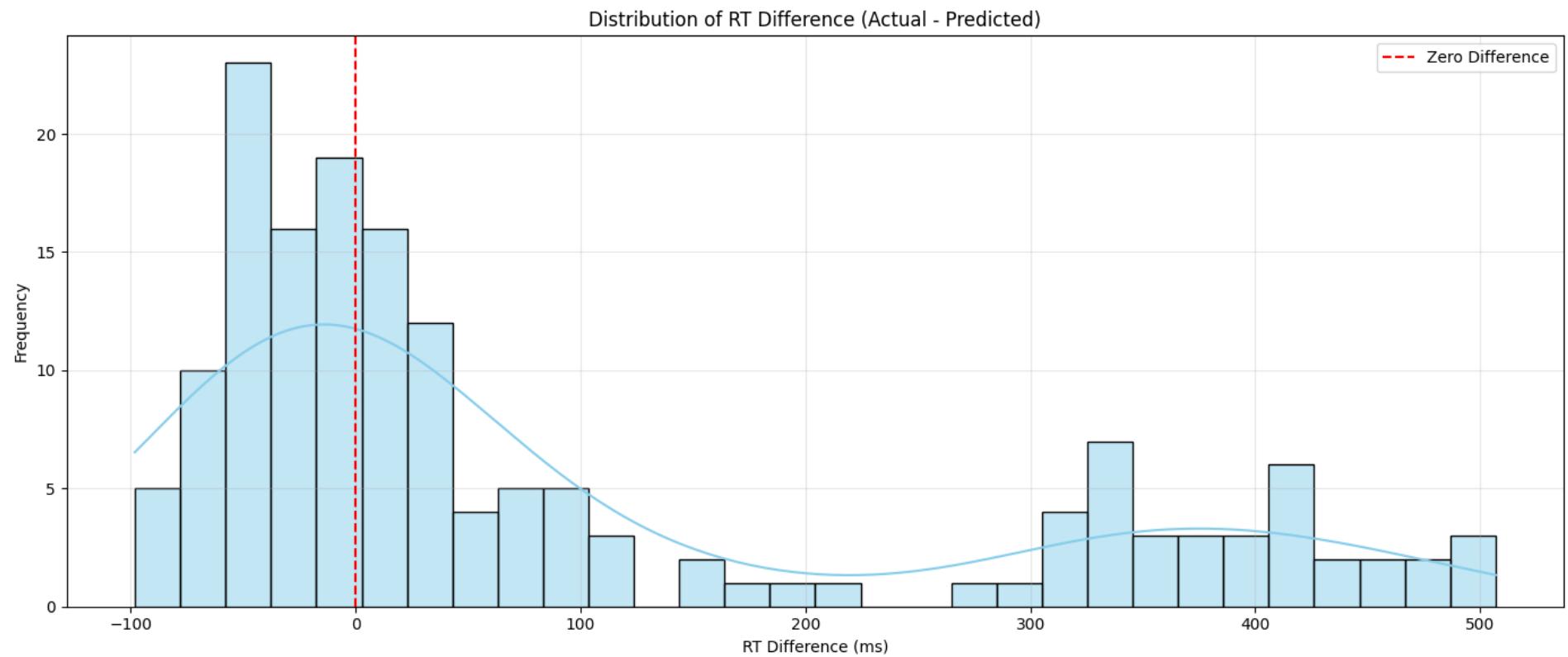


# Does it work? Maybe soon...



- **CNM often runs into timeout (=410ms)**: Decision-threshold is defined globally, hazard rate restraints exceeding decision-threshold.
- **CNM often declares decision at (0ms)**: Currently,  $DNM(n)$  feeds directly into  $CNM(n)$
- **No splitting** of  $LLR_n$  and  $\lambda_n = f(h_n)$

# Distribution of $RT - \hat{RT}$



# Sources

- All figures were created by us.
- Paper: Christopher M Glaze, Joseph W Kable, Joshua I Gold (2015) Normative evidence accumulation in unpredictable environments eLife 4:e08825
- Code: [Glaze repo](#)

# Thanks for your attention!

Questions?