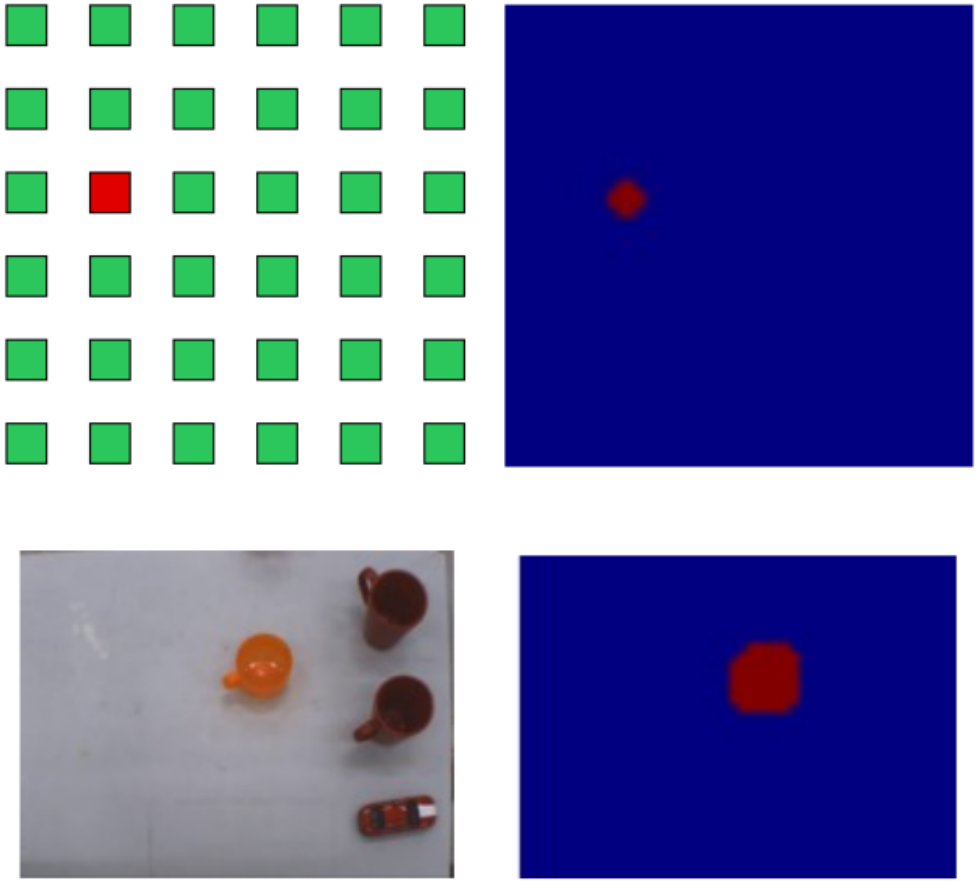
Project overview

Summer school: Neural dynamics
for cognitive robotics

2018

A dynamic field architecture for single feature visual search

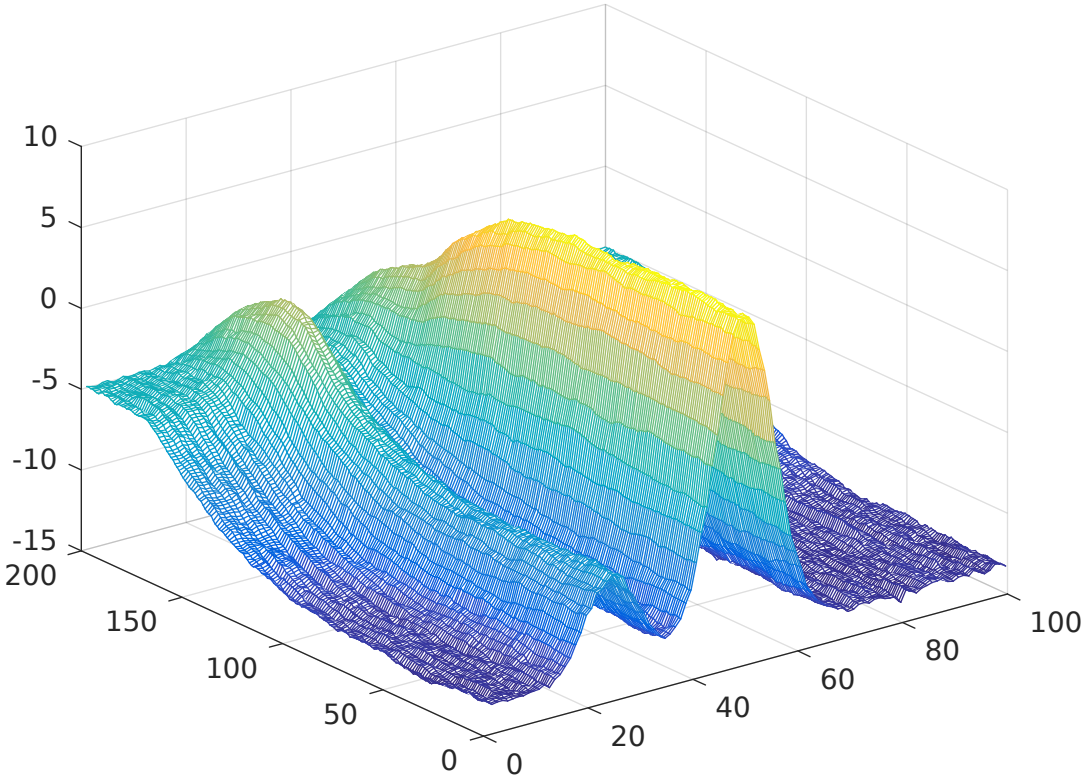
Tutor: Raul Grieben



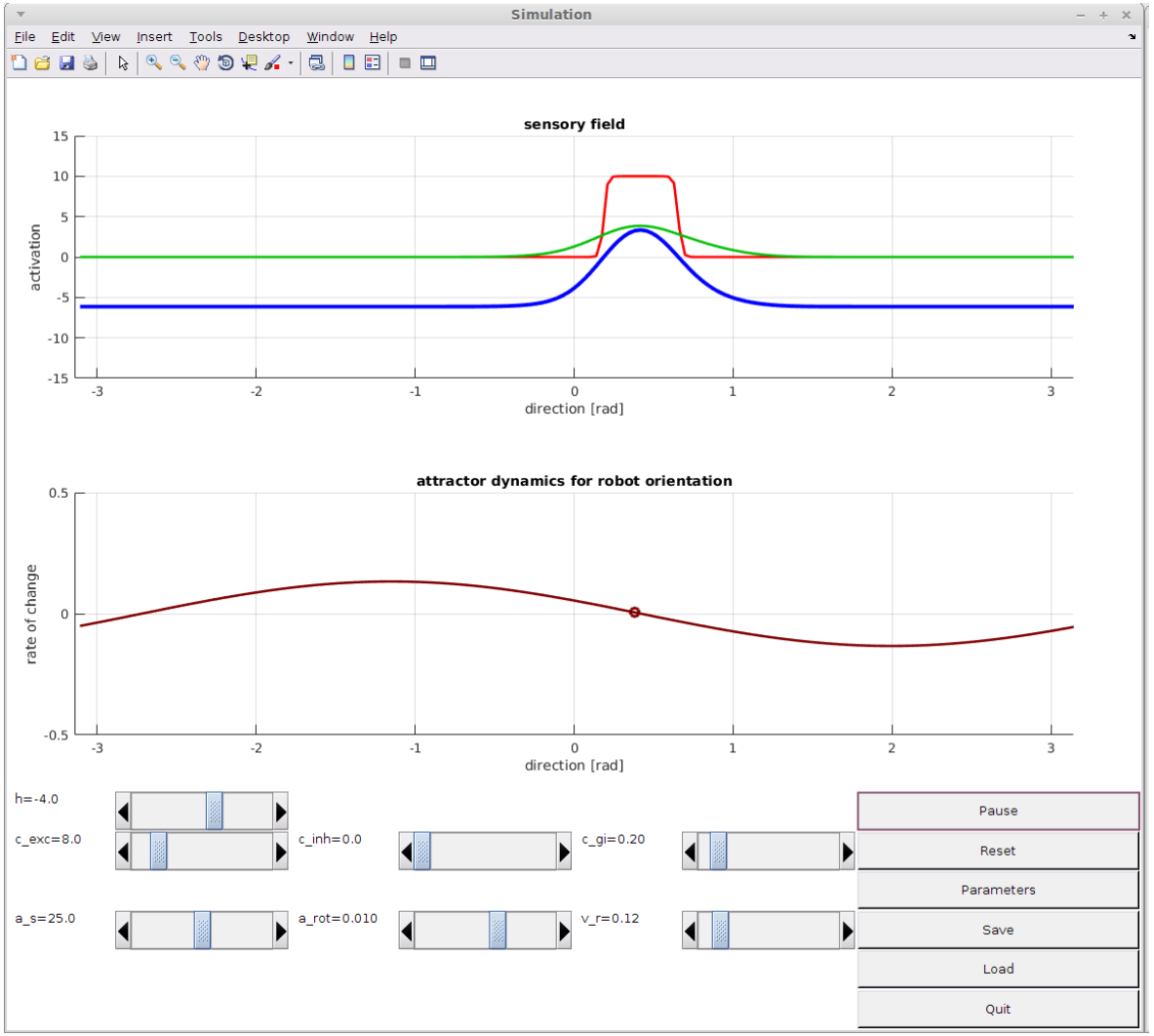
- pop out
- single feature (color)
- memory trace
- reactivation of memories from LTM

[A feature integration theory of attention.
Treisman, A. M., & Gelade, G. (1980). Cognitive psychology, 12, 97-136.]

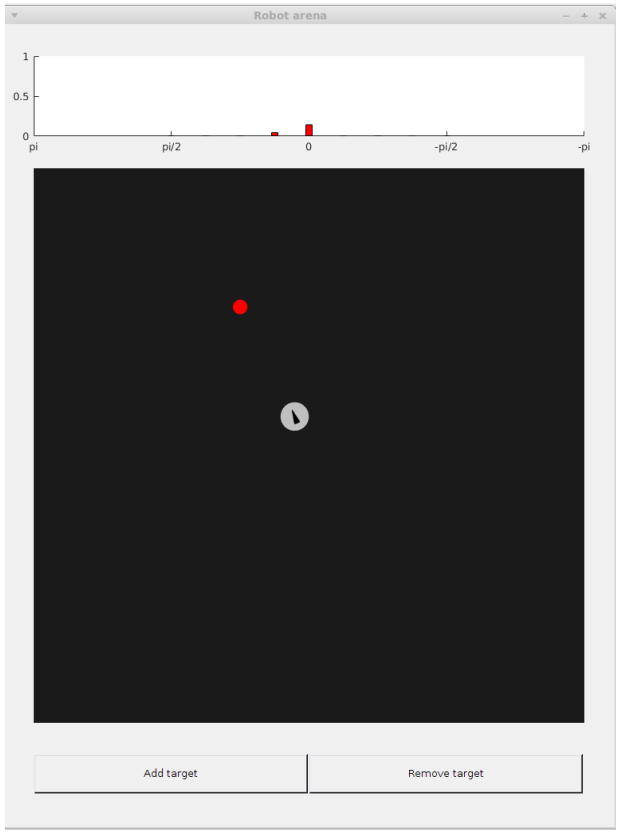
Decision Making



A Behavioral Dynamics for a simulated Robot

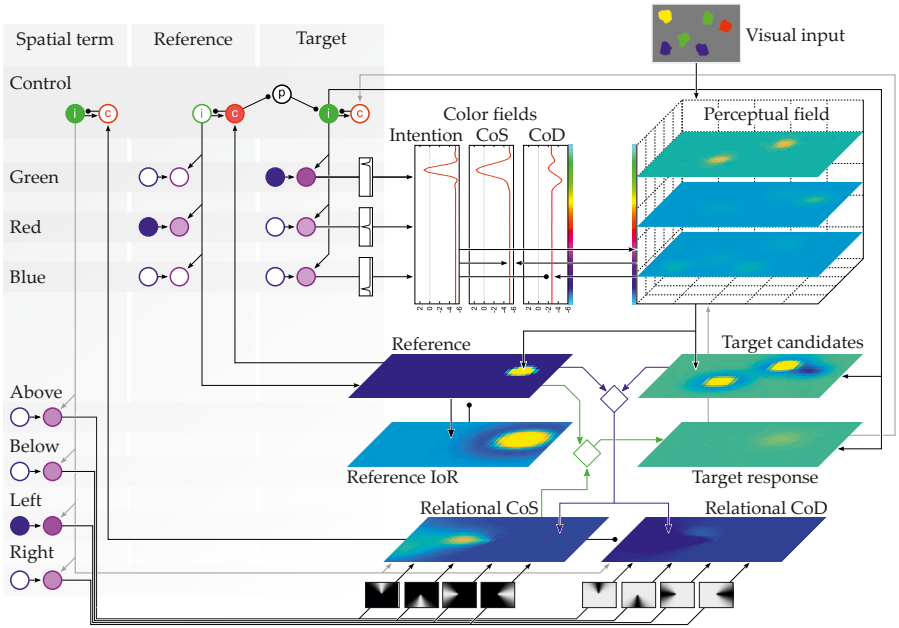


- Simulated Robot approaching targets
- Cosivina Framework

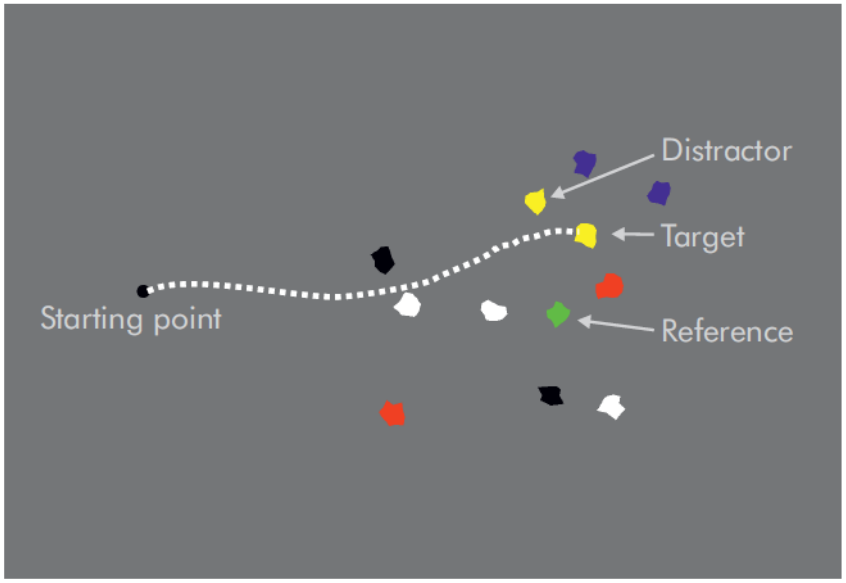


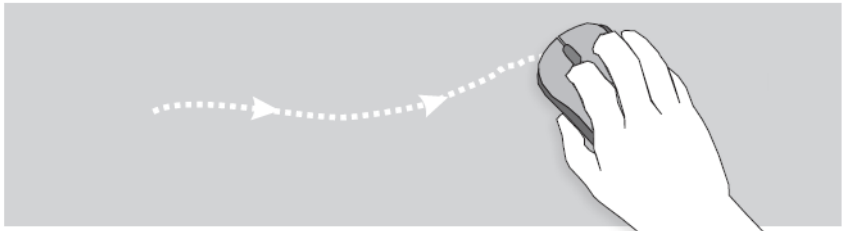
Spatial language grounding (and its motor signatures)

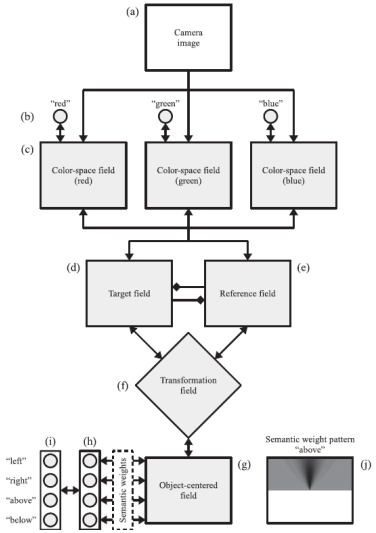
Tutors: Cora Hummert, Mathis Richter and Jonas Lins

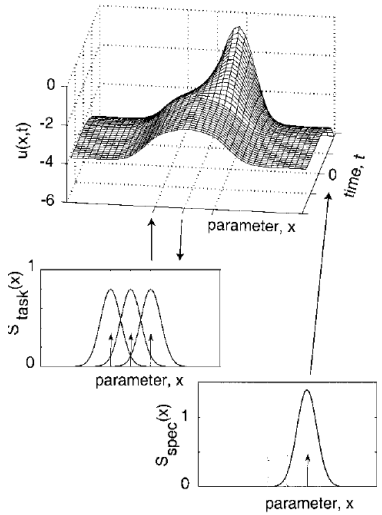


"The yellow dot above the green dot."



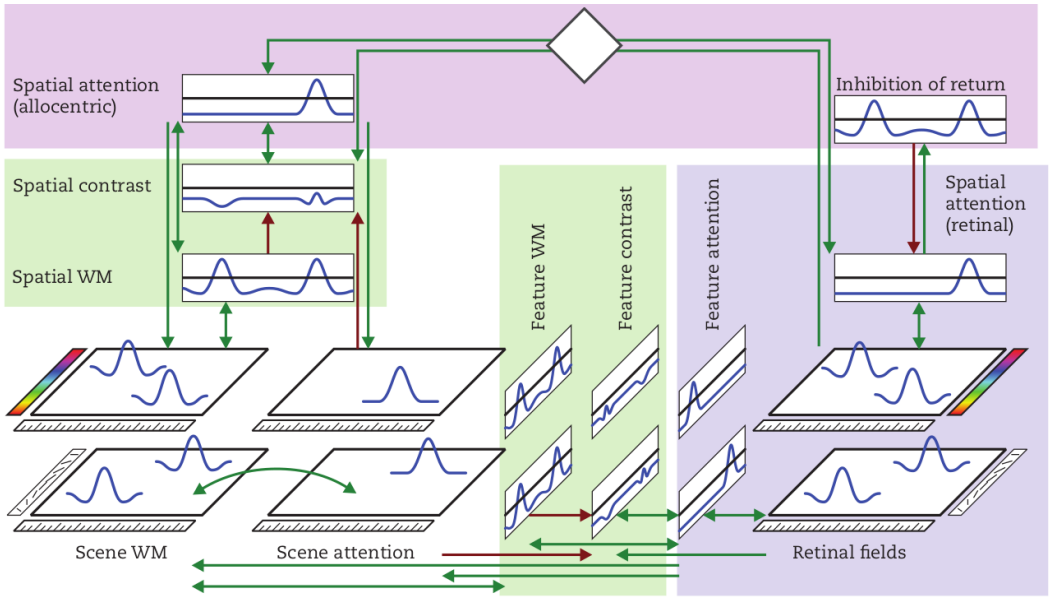






A dynamic field architecture for scene representation

Tutors: Raul Grieben and Jan Tekülve



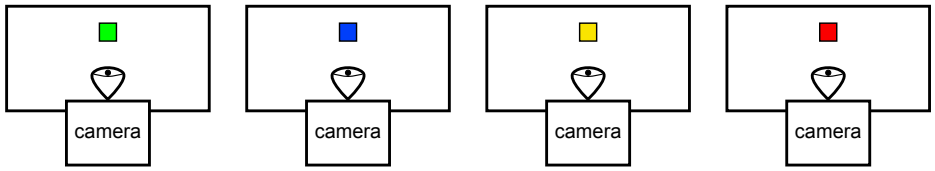
- VWM for objects in a scene
- single feature (color)
- rebuild the model from Chapter 8 (DFT book) in CEDAR

[Integrating 'what' and 'where': Visual working memory for objects in a scene.
Schneegans, S., Spencer, J.P., & Schöner, G. (2015).
In Dynamic thinking: A primer on dynamic field theory (chap. 8). Oxford University Press.]

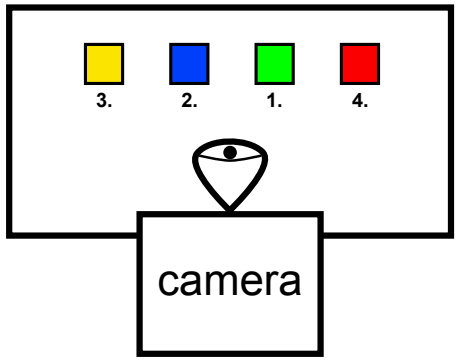
Using serial order to learn and replay a sequence

Tutors: Mathis Richter and Jan Tekülve

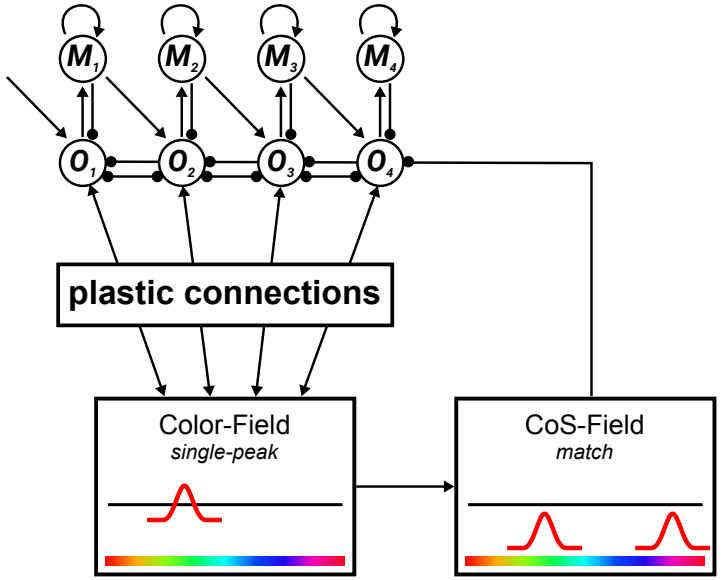
Presentation/Learning



Replay



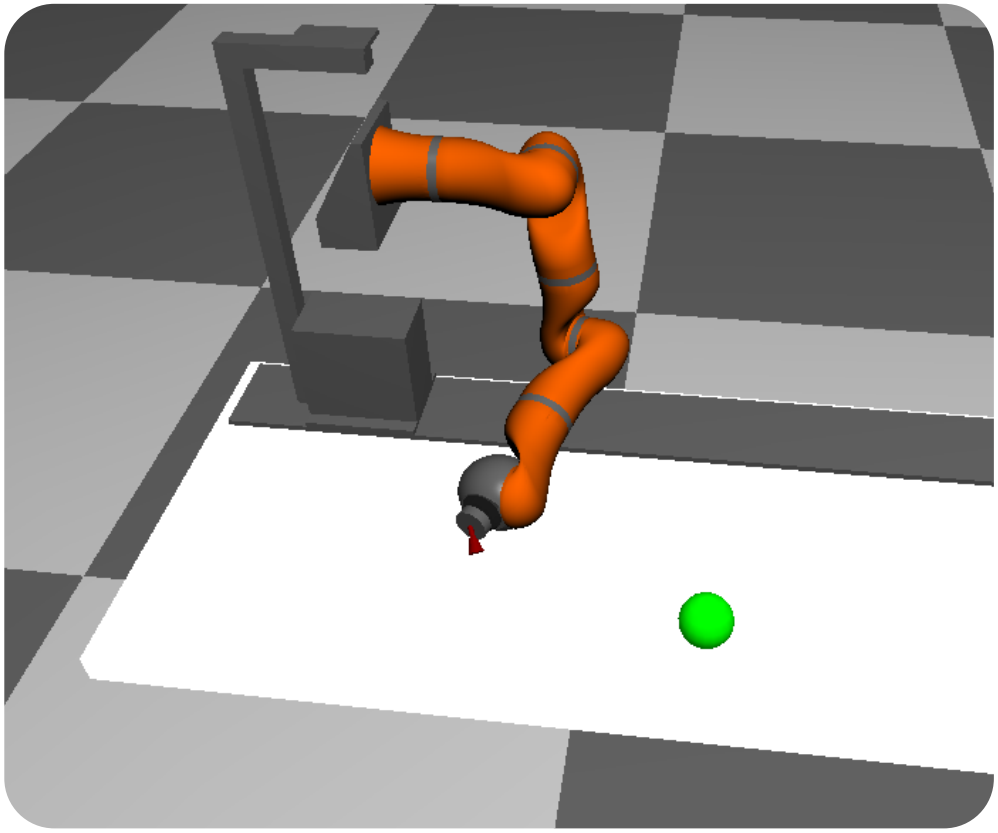
Architecture Sketch

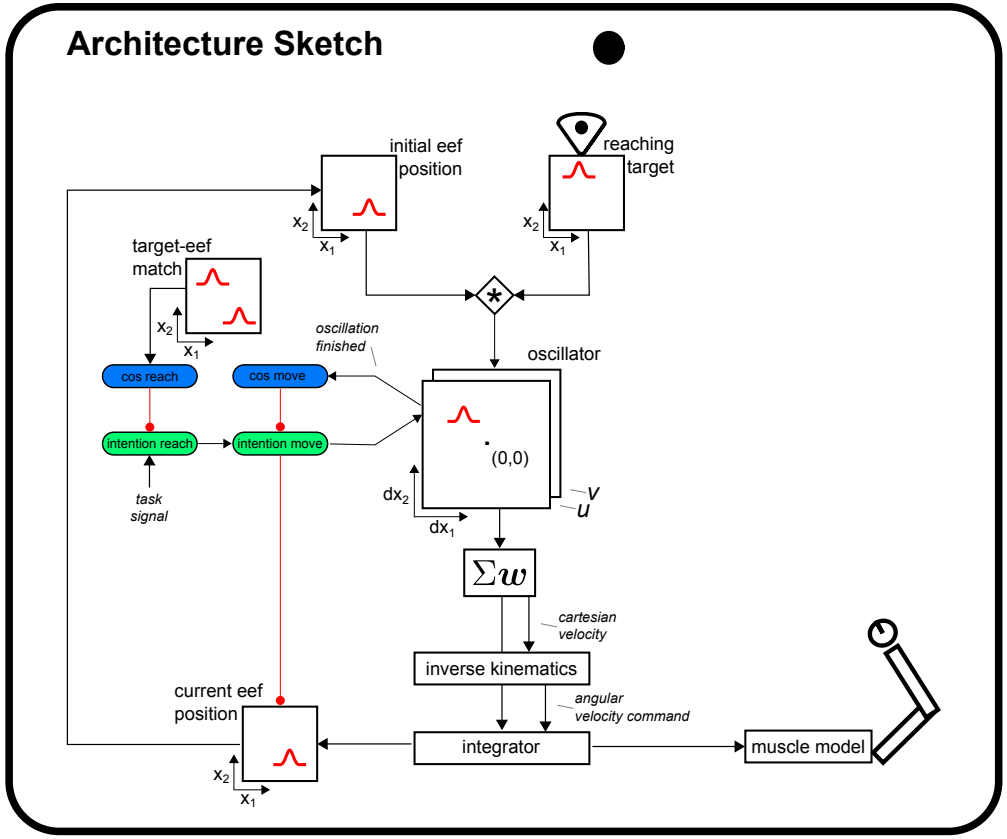


["Autonomous Sequence Generation in Dynamic Field Theory" Sandamirskaya, 2015]

A dynamic field architecture for goal-directed reaching

Tutor: Jan Tekülve





["The neural dynamics of goal-directed arm movements:
a developmental perspective", Zibner, Tekülve, Schöner, 2015]