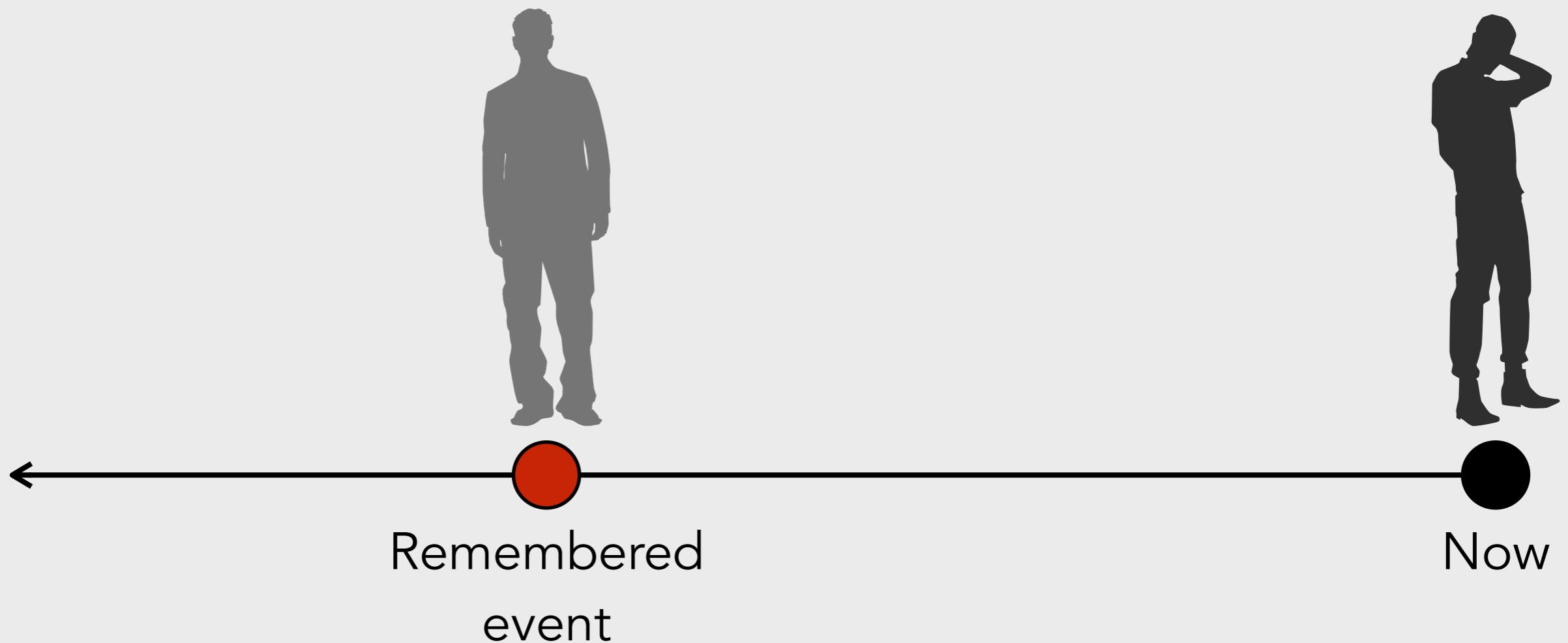
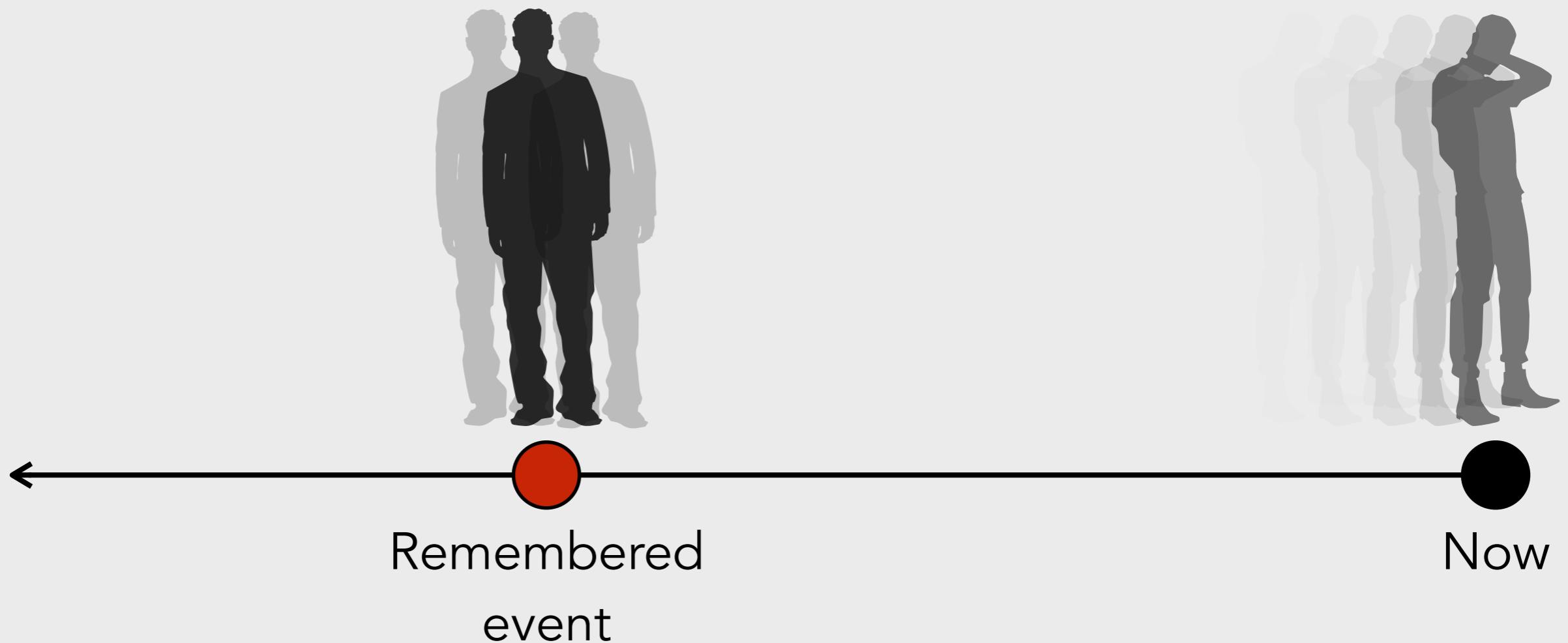


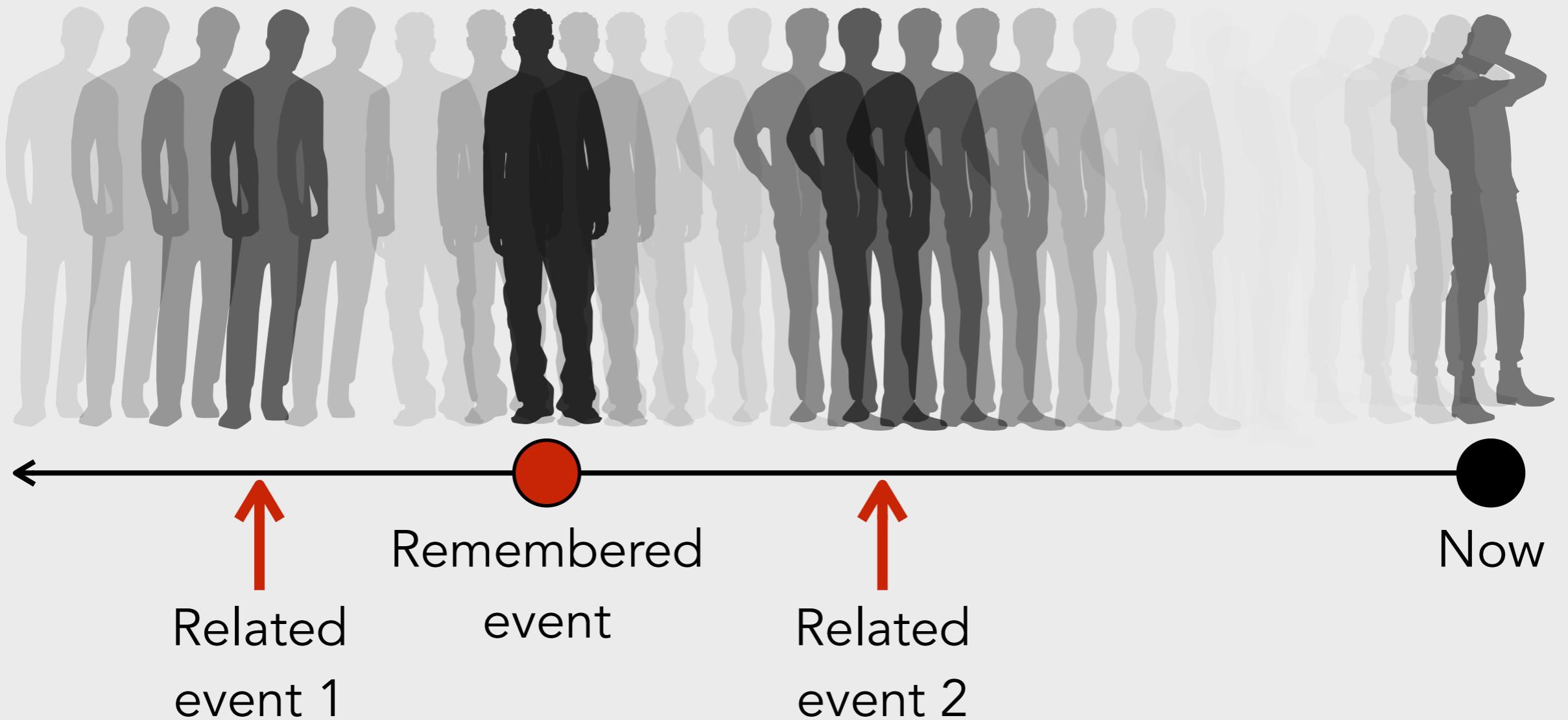
Where do we “go” when we remember?



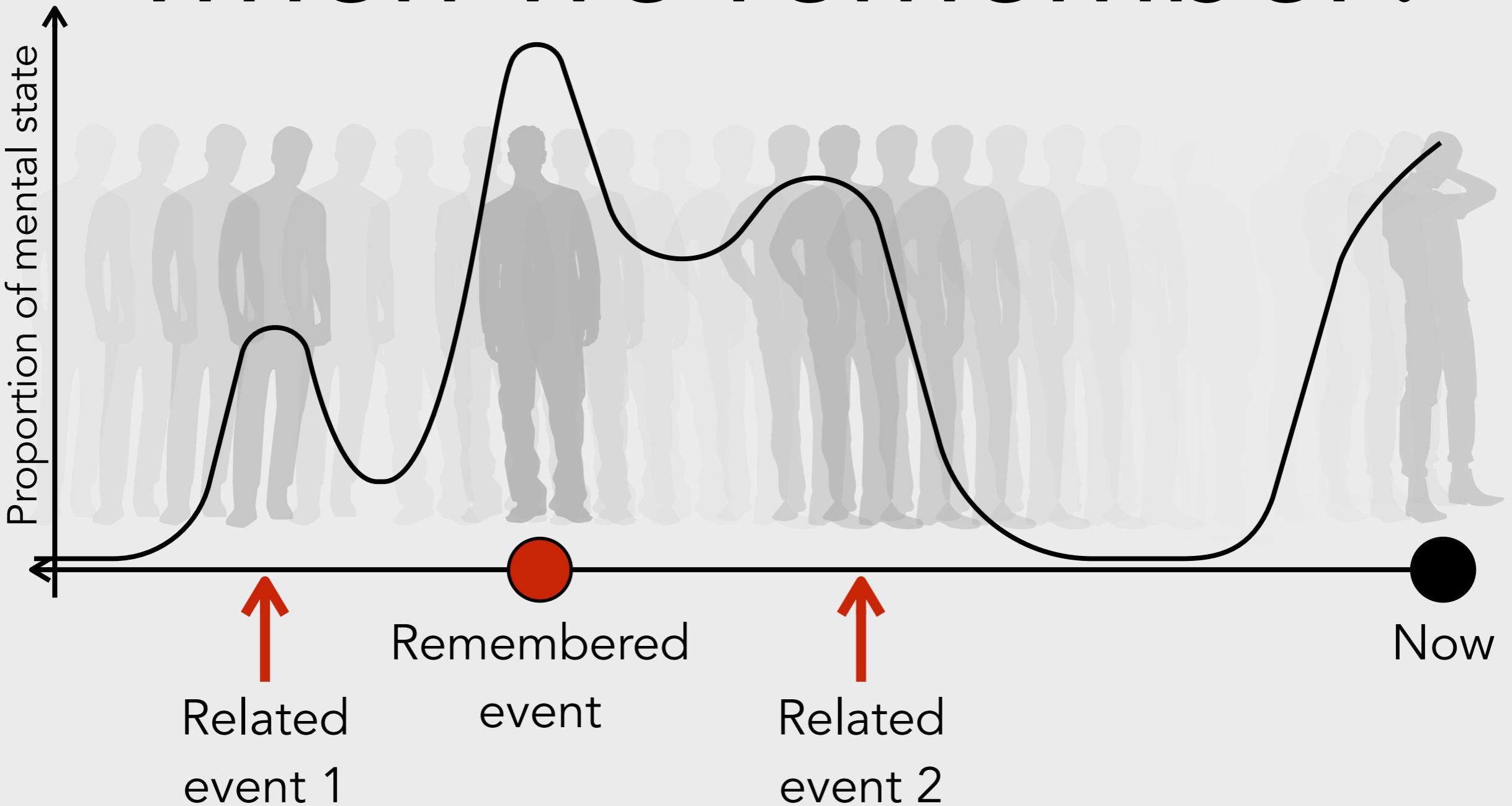
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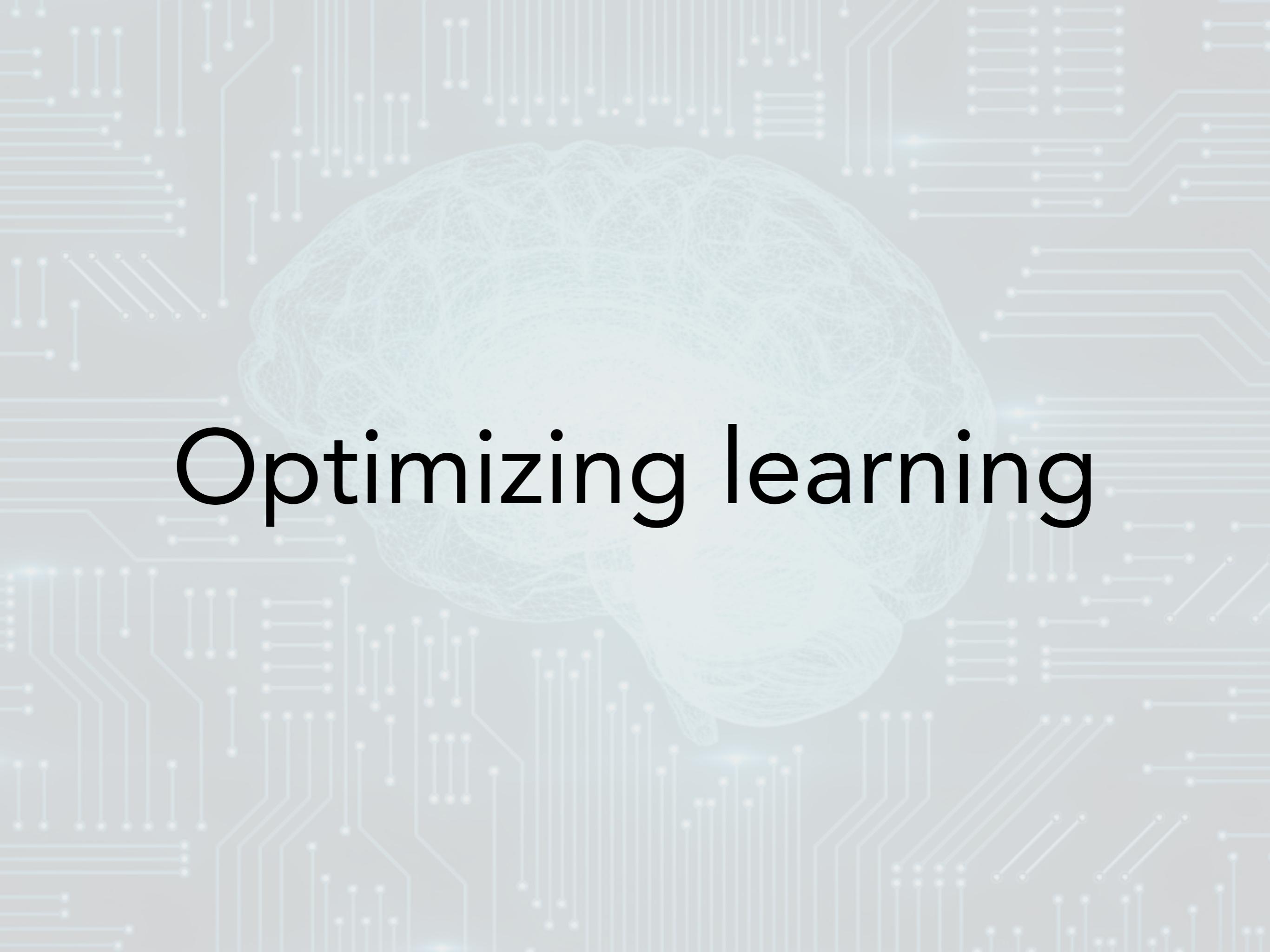


Where do we “go” when we remember?

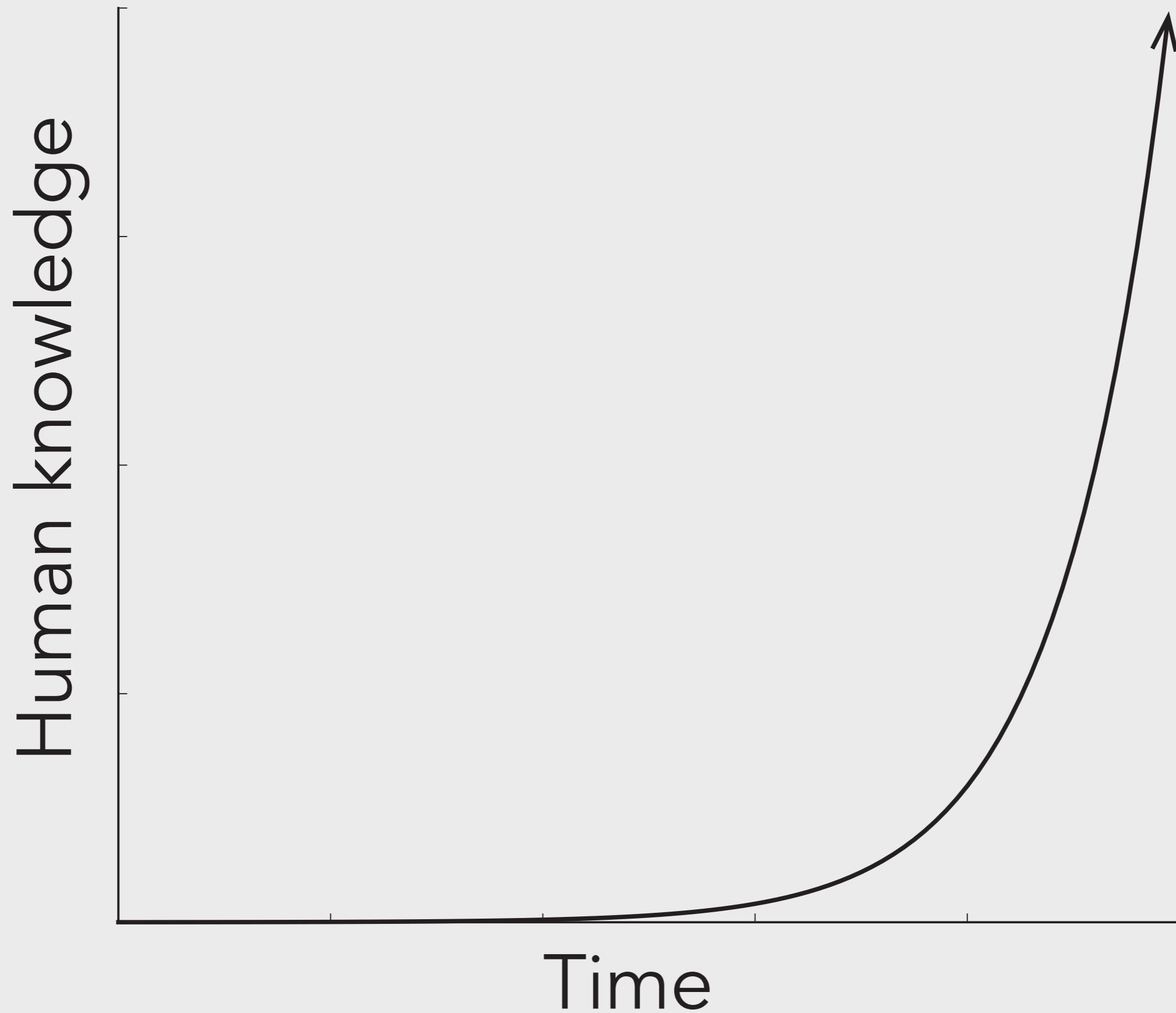


Where do we “go” when we remember?





Optimizing learning



Imagine you could (in a few hours)...

- Become conversational in a new language
- Memorize several textbook-sized chunks of information
- Learn an undergraduate degree's worth of material
- Learn a doctorate's worth of material

Ongoing work in my lab...

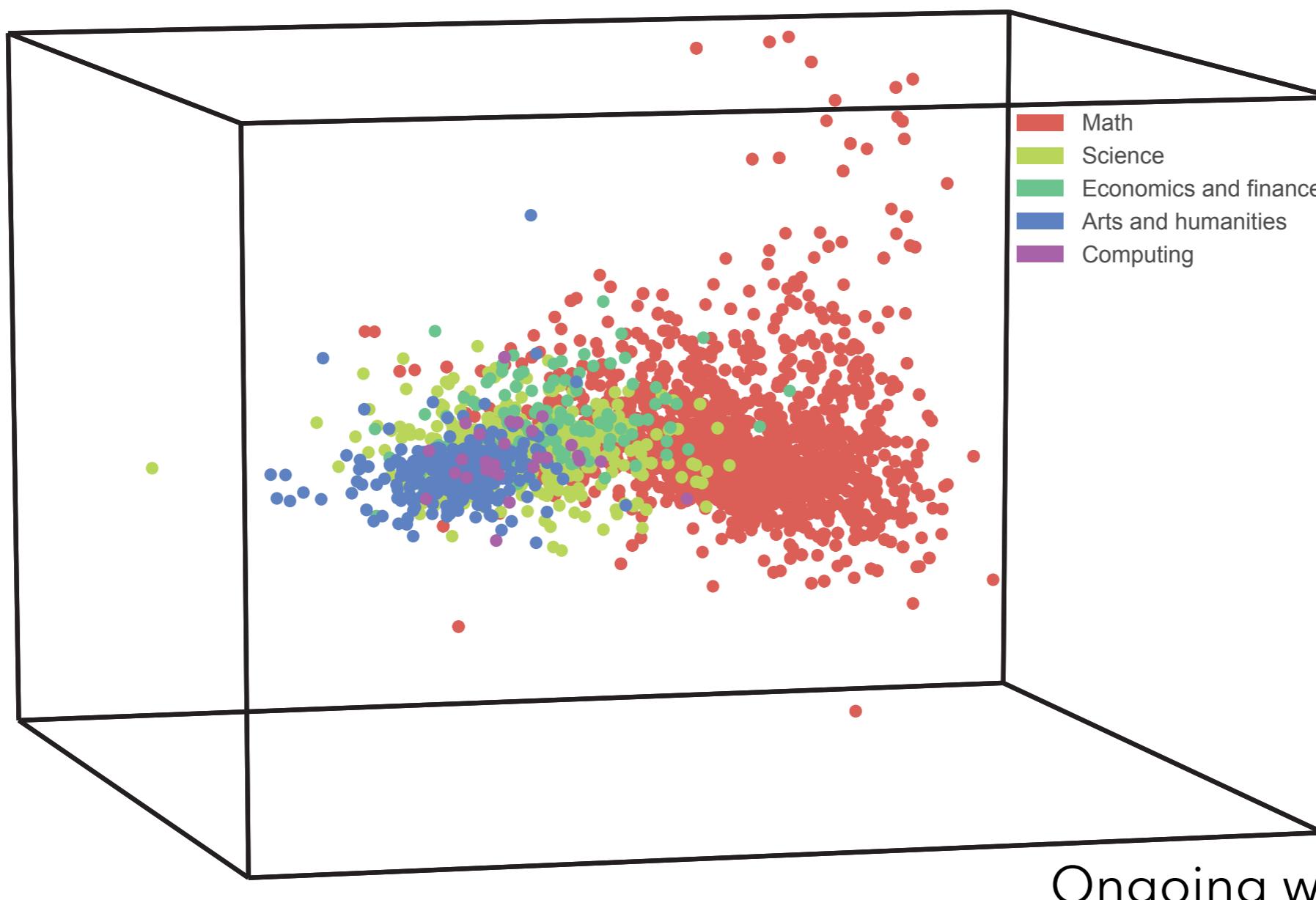
How might an optimal AI teacher work?

- Keep track of learning goals and dependencies
- Continually update estimates of knowledge (what you already know) and learning potential (how easily you could learn specific new stuff)
- **In each new moment, teach you whatever will get you closest to your goal**

Ongoing work in my lab...

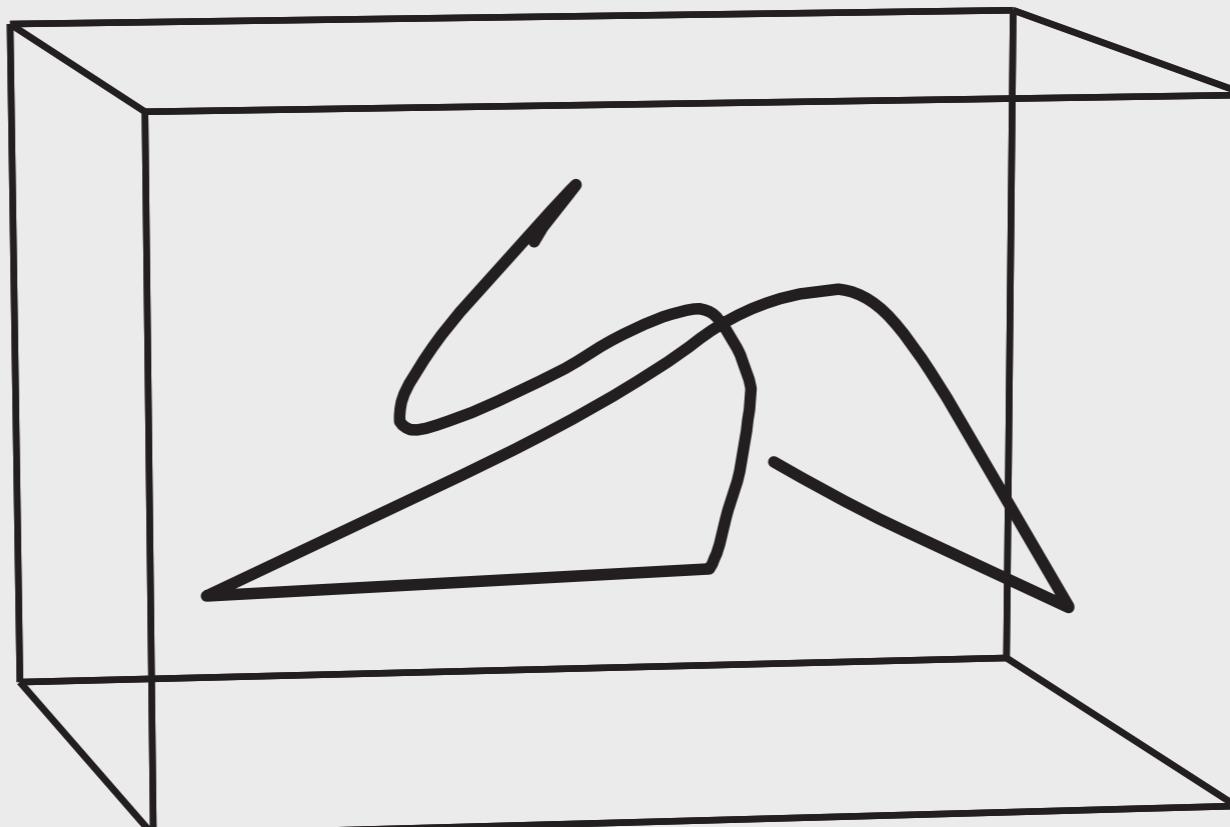
Modeling Khan Academy content

All courses



Modeling Khan Academy content

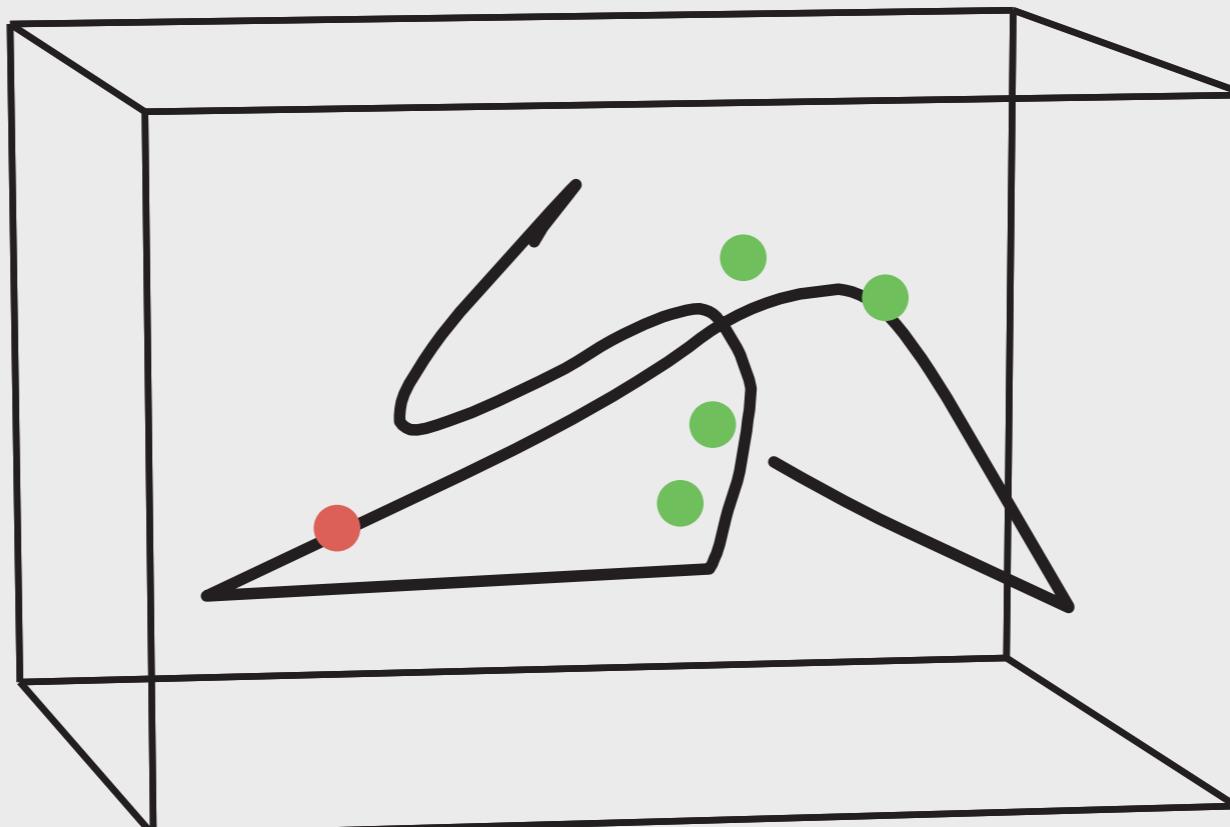
Single video (dynamic)



Ongoing work in my lab...

Modeling Khan Academy content

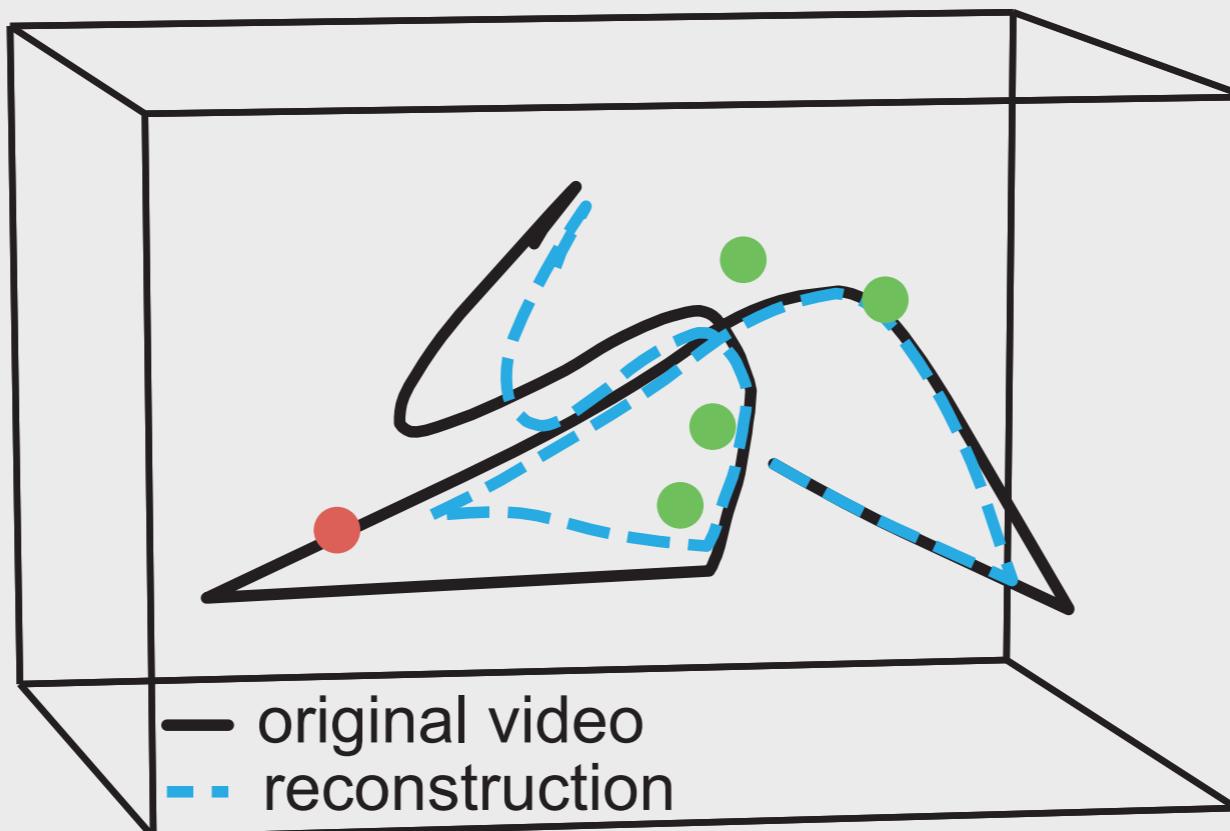
Single video (dynamic)



Ongoing work in my lab...

Modeling Khan Academy content

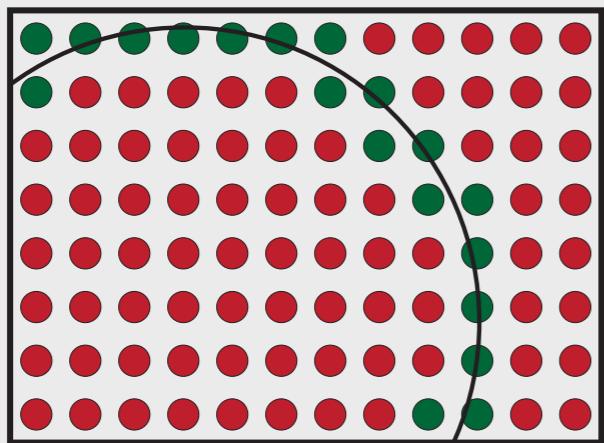
Single video (dynamic)



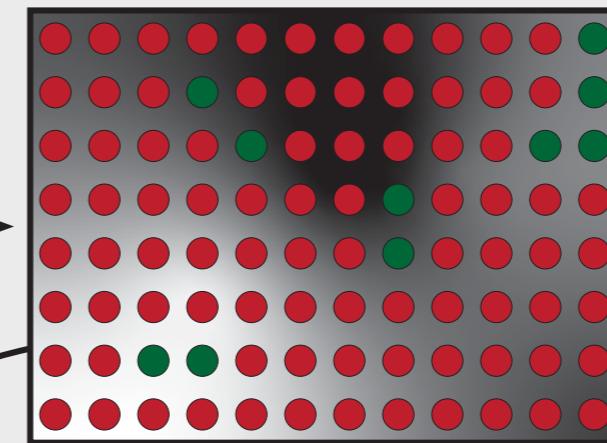
Ongoing work in my lab...

How might an optimal AI teacher work?

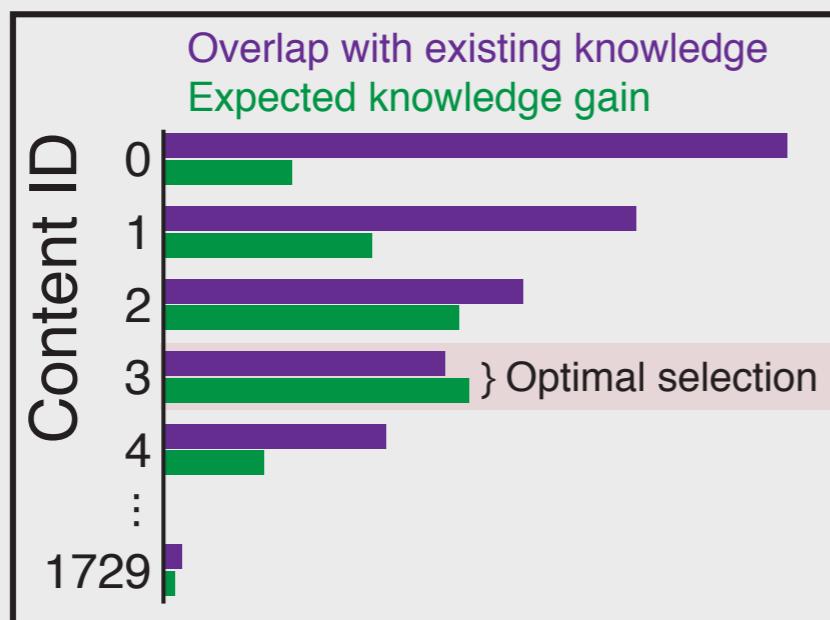
Select learning goal



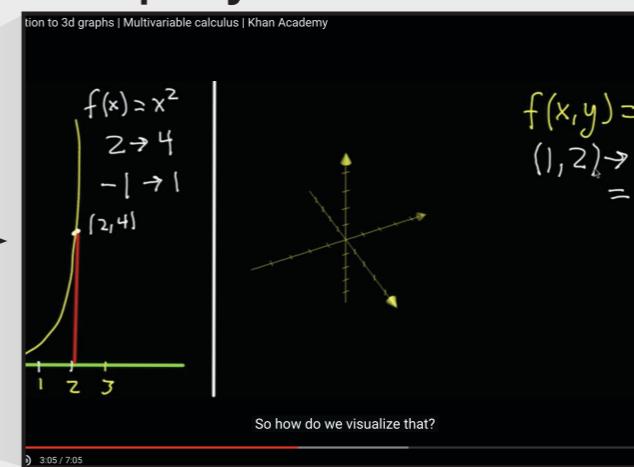
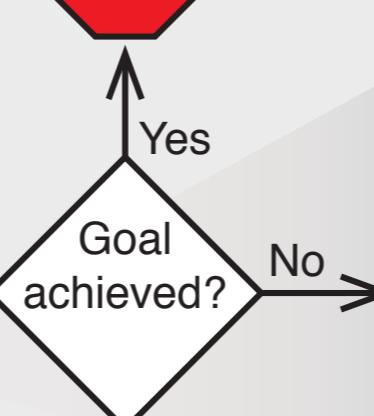
Map knowledge and learning



Update model



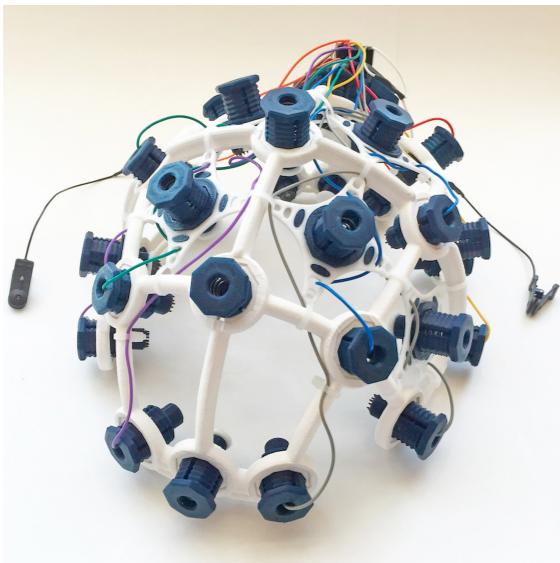
STOP



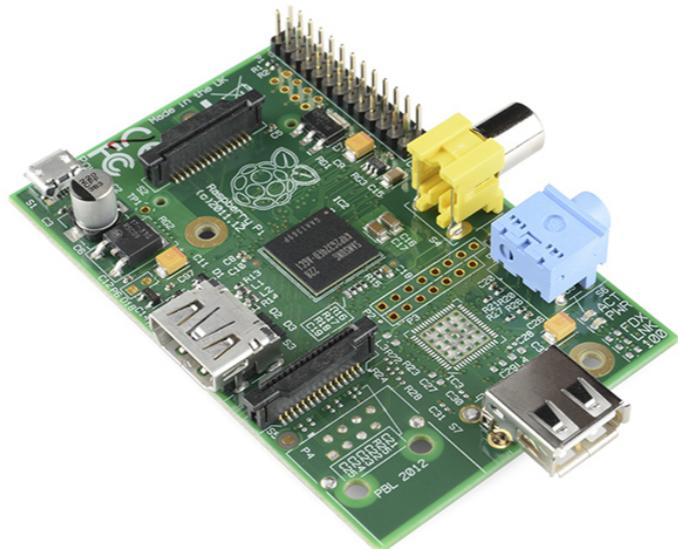
Ongoing work in my lab...

Optimizing learning in real classrooms

OpenBCI headset



Raspberry Pi



Touchscreen



+

+

Ongoing work in my lab...

Conversation as wireless transfer of memories between thought spaces



Modeling the flow of information across people

- Communication between **experts** vs. **non-experts**
- Communication between **close friends** vs. **strangers**
- Communication between **doctors** and **patients**
- What makes effective **teachers** and **leaders**? Can this be learned?
- What makes effective **students** and **followers**?
- How can we relate to people who have had **different experiences**?
- Is there a **limit** to how effectively people can communicate? Can communication be **augmented**?