Mechanisms of System 1

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Outline

- Our reference book
- Reccap: System 1 vs. System 2
- Automatic Reactions of System 1
- Mechanisms of System 1
  - Priming Effect
  - Florida Effect
  - Halo Effect
  - WYSIATI
- Using Neural-Networks To Simulate System 1
Reccap: System 1 vs. System 2

The Invisible Gorilla

Selective Attention Test
from Simons & Chabris (1999)
Reccap: System 1 and System 2

- System 1 works automatically, effortlessly, quickly, no sense of control
Reccap: System 1 and System 2

- System 1 works automatically, effortlessly, quickly, no sense of control
- System 2 needs attention, effortful mental activities, follows rules, and works slow and lazy
System 1

Bananas  Vomit
You experienced some unpleasant memories and images
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Your face twisted slightly in an expression of disgust
Automatic Reactions of System 1

- You experienced some unpleasant memories and images
- Your face twisted slightly in an expression of disgust
- You may even pull back your head
You experienced some unpleasant memories and images
Your face twisted slightly in an expression of disgust
You may even pull back your head
Your heart beats a bit faster
Mechanisms of System 1

- Why?
Mechanisms of System 1

- Why?
- Your mind automatically assumed a temporal sequence and a causal connection between *banana* and *vomit*, forming a scenario that *banana* caused *sickness*, which further caused *vomit*. 
Mechanisms of System 1

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  - A word evokes memories, which evoke emotions, which in turn evoke facial expressions, which intensify the feelings to which they link . . .
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- The essential feature is the coherence:
- A word evokes memories, which evoke emotions, which in turn evoke facial expressions, which intensify the feelings to which they link . . .
- Psychologists’ representation: ideas are nodes in a vast **network** (associative memory), in which each idea is linked to many others.
Mechanisms of Associative Activation: Priming Effect

- Please search the internet of Campusmensa Poppelsdorf. What meals do you like?
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- *Priming Effect*
- *Priming Effect* goes beyond concepts and words
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After finishing this task, two groups are asked to walk to another office, to do another experiment.
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This walk was the target.
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After finishing this task, two groups are asked to walk to another office, to do another experiment.

- This walk was the target.
- Student in group two walked significantly more slowly than others.
Why?

Group two played with words associated with the elderly, such as Florida, forgetful, bald, grey, wrinkle. These words prime thoughts of old age, though the word old is never mentioned. These thoughts prime a behavior, walking slowly.
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Mechanisms of Associative Activation: Florida Effect

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- These words prime thoughts of old age, though the word old is never mentioned
- These thoughts prime a behaviour, walking slowly
Primbing phenomena arise in System 1, and you have no conscious access to them.
Halo Effect: Exaggerated Emotional Coherence

- If you like a girl's appearance, you probably hope to like everything of her.
- If you dislike the appearance of a beggar, you probably dislike his everything.

Halo Effect plays a large role in shaping our view of people and situation. By utilizing Halo Effect, System 1 generates simpler and more coherent things than the real.
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- Suppress ambiguity in text understanding, e.g. bank, apple
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- WYSIATI: What You See Is All There IS
- System 1 constructs the best possible story that incorporates ideas current activated
- The measure of success for System 1 is the coherence of the story it manages to create
- The amount and the quality of the data are irrelevant
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- How shall we deal with the sparse data problem in neural-networks?
- If this neural-network is an AI system, it shall not be defeated by the sparse data problem.
Using Neural-Networks To Simulate System 1

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- After the training process, the neural-network can associate a new image with the most compatible category.
- That is purely a behaviour of System 1.
- How shall we deal with the sparse data problem in neural-networks?
- If this neural-network is an AI system, it shall not be defeated by the sparse data problem.
- Let us equip it with WYSIATI, Halo Effect, Priming Effect.