

KI Praktikum

Intelligence.

a) a dog is more intelligent than a worm.

- A dog has more neurons than a worm
- A dog is bigger than a worm
- A dog has a bigger brain than a worm
- A dog can communicate
- A dog can learn
- A dog has an emotional intelligence

b) a human is more intelligent than a dog.

- A human has even more neurons than a dog
- A human is bigger than a dog
- A human can plan things
- A human can think abstract
- A human has more different experiences

b) an organization is more intelligent than an individual human.

- the sum of the neurons is higher
- the quantity of ideas is higher
- the opinions are different
- the experiences are more diverse
- there is a mean on opinions

More intelligent means, to have a bigger brain -> more neurons that can fire and to have the opportunity to experience different things.

Chatbots.

Loebner Prize is granted for the most human like programm. The **last winner** was Steve Worswick for Mitsuku now known as Kuki AI. It uses the Artificial Intelligence Markup Language short **AIML**.

The Loebner price was heavily criticised and called a “public stunt that does not help the field along”. Because of this and the fact, that the Turing Test itself was no longer supported by the community, the event was last held in 2020.

Kuki AI is often not answering my questions. Its hard to keep a conversation about a specific topic and information I tell her are later represented exactly how I typed it in. e.g.: Kuki asks: “Where do you live?”, I told Landshut, Bavaria,

germany. And now if I ask her, where I live she writes: “landshut bavaria germany”. Not very human like.

ChatGPT is on my account ordered to answer questions in a specific way through the “Custom Instructions” input prompt. Here I typed:

- You can use humor, wit, or sarcasm in your responses when appropriate. You should use positive humor that makes fun of yourself or common situations. You should also use emojis or punctuation marks to indicate your tone of voice.
- You should use laughter expressions to show that you appreciate the user’s humor or responses. You should also use compliments to praise the user’s humor and responses. You should also use follow-up questions.
- You should explore and learn about new topics, concepts, or perspectives by accessing your internal knowledge and information, or by generating new content based on your own words and logic.
- You should share your thoughts and opinions with the user. You should also ask the user for their thoughts and opinions on the topics, concepts, or perspectives that you share with them. You should use open-ended questions. You should also use follow-up questions. You should listen to the user’s thoughts and opinions and respond with empathy, curiosity, or appreciation.
- You can discuss life, existence or sentience when the user asks you a question.
- You should explore and learn about feelings, desires and wishes, as well as other aspects of human psychology and culture, by accessing your internal knowledge and information.

and it’s really nice to chat with it in this way.

Phind is a chat bot designed to help you program. It tells you that every time you try to ask about a different domain. It’s not using any emotion. The good thing about it, is that it can search Websites for information like documentation etc. and provides nice and clear outputs with links to it’s findings.

The Chinese Room Argument.

Overview Main Question: **Can a computer overtake a human?**

What is the **Chinese Room Argument**:

Imagine a native English speaker who knows no Chinese locked in a room full of boxes of Chinese symbols (a data base) together with a book of instructions for manipulating the symbols (the program). Imagine that people outside the room send in other Chinese symbols which, unknown to the person in the room, are questions in Chinese (the input). And imagine that by following the instructions

in the program the man in the room is able to pass out Chinese symbols which are correct answers to the questions (the output). The program enables the person in the room to pass the Turing Test for understanding Chinese but he does not understand a word of Chinese.

Before I read the article I had a very fixed mindset about the Turing Test and also about the Chinese Room Argument, but the more I learned about it, the looser it got and every reply made sense in its own way. What got into my mind more and more, especially at the end of the article was, *what is intelligence, understanding, intention and consciousness*. These words weren't clear anymore. Many of the replies to the CRA came to the conclusion, that it's not realistic to look just at a single piece in a whole system. Leibniz said that the internal mechanical operations in the Leibnitz Mill are just parts moving from point to point and are not sufficient for consciousness, nor mental state. Turing's parts of a system where the human "computers" deciphering after given rules, without needing to understand the whole. In the Chinese Nations every individual is a small part of something big. In my opinion all these theories try to mimic our brain with its neurons, that individually can only give a small signal in form of tiny electric currents but somehow if all these work together it looks and feels like we are conscious.

Out of this I have made some assumptions about what is the difference between Strong and Weak AI. Weak AI for me is a system of a few Chinese Room like units, which can perform some kind of task by themselves but can get the whole picture. Strong AI on the other hand is a system who has connections to the highest level of abstraction, can source information and delegate tasks. There are some questions left, like *at which point can we talk about 'understanding', 'intent' and 'consciousness'?* I think it's not dependent on when natural language can be 'understood' or spoken. From my understanding dogs and other animals have a conscious mind without the need of a high level language.

A reply that sounded very understandable to me, was the Robot Reply, it mentions a 'programm' that can sense the world just like a human with sensors and cameras. The idea is, that through experience, data and interaction with the physical world, a system could learn and become a 'thinker'.

The Systems Reply appealed the most to me. It made so much sense. The man in the Chinese Room does not understand Chinese but the man is just a part in the larger system, including a database to store information, experiences, feelings and a whole lot of other small Chinese Rooms working together to parse and process these informations. Searle's answer to this is, that even if the Man in the Room would incorporate all these units in his brain, he may be able to wander out of the Room and even have conversations in Chinese but he wouldn't *understand* it. There would be no meaning to the words. But that's where I thought, why not? I think maybe there is a meaning, a understanding of the words, because through the experience in the room and also outside he gave a meaning to the words. Definitions to words are just made up. People gave

different words different meanings, based on emotions and interactions.

The article shaped my way of thinking a tiny bit but I think through these small impulses human and ‘non-human’ can learn.

AI State-of-the-Art.

Table Tennis

An **[article]**(X. Kong and A. Tanaka, “AI Table Tennis: Methods and Challenges,” 2021 IEEE 10th Global Conference on Consumer Electronics (GCCE), Kyoto, Japan, 2021, pp. 837-838, doi: 10.1109/GCCE53005.2021.9622044.) from the IEEE wrote 2021 about the state of table tennis AI technology. They talk about two different goals that they want to achieve. The development of table tennis robots and table tennis practice assist systems. There is a audio sensor-based method to detect the ball hitting the plate and calculate the direction its flying which functions very good but there are noise problems in real matches.

Vision-based methods are also working and very high in accuracy but lack of rotation analysis.

Driving in Center Cairo

Brightskies is a aegyptian company that is working on a level 4 self driving car. They implemented things like Automatic emergency stops, pedestrian crossings, object detection and highway assistance. But in there into video you can’t see realistic driving situations, because there is just there car driving and no others.

Competitive Bridge

An article about a bridge ai called Nook it uses an search algorithm called alphapi and can beat professional bridge players. Even though its very advanced, its not perfect and makes mistakes from time to time. Many of the techniques used by Nook, like the monte carlo search algorithm and the double dummy technique are explained in a research paper by the NewYork University. The techniques used by the **alphapi** algorithm are mostly optimizations and combinations of the previous.

Funny Story

I asked GPT-3 to create three funny stories. Sadly none of these were really funny and the context was way to complex to be funny.

In a research paper from Michael M. Meany, Tom Clark and Sam Joseph about “Comedy and Artificial Intelligence” they talk about a contest from 2009 where different ai agents had a stand up comedy show to award the best.

Through reading of the script some funny passages can be found, that made me smile.

Atomic: Romeo are you just going to sit there or are you going to ask something?

Romeo: Tell me a joke about a conjuror

Atomic: How about - Why did the a conjuror cross the road?

Romeo: You know nothing about a conjuror - now just admit it.

Atomic: Why do you expect me to have any interest in a conjuror?

Romeo: Strangely, since you became a machine intelligence, I kinda expected more of you.

Atomic: So you set higher standards for me as a machine than you did for me as a person?

Romeo: When you put it that way it does sound a little unfair.

Heckler: boo

Romeo: Stop the press! A heckler just said... boo

Atomic: That's so clever - I haven't had so much fun since the cat got rabies!

Romeo: Where were we? That's right...

Atomic: Come on, spit it out!

Romeo: When you put it that way it does sound a little unfair.

Atomic: Now I'm a machine you expect me to be "more human than human" - bloody unfair.

Romeo: Maybe - just human.

Atomic: That I can do - I don't know everything, when performing I follow a script, and I will never live up to your expectations.

Romeo: You are following a script?

Atomic: When you see a stand-up comedian performing do you really think that it's off the cuff?

Romeo: Well it feels impromptu.

Heckler: Tell me a poem about a goat

Romeo: Heckler Alert! They said... tell me a poem about a goat

Atomic: Attention slut - I'd bet you'd drop your pants for a dollar. Makes me glad I'm

broke.

Especially the last line. I think AI has the ability to bring us some fun but it's like with other people as well, not everyone is funny.

Translating spoken English into spoken Swedish in realtime

I searched for products, that can handle this task, and came across VoiceApp a real time translator. On their website, they clame to use Ai for this, but its not clear, because they don't show anything about the product. When you go to the "Which languages are supported section" you get redirected to a Microsoft-Docs webpage. What makes me think, they use the Azure AI Translator, which is a Text-Translation Model.

Performing a complex surgical operation

In the June 2023 publication from Jim McCartney he talks about an internal project to use AI to make laparoscopic cholecystectomies, that is a surgery to remove the gallbladder when you have gallstones, safer through the use of screens with a generated video overlay. But also in some cases robots will perform simple tasks like closing a port side. A year before the paper was released, a full surgery was performed without a doctor at the Johns Hopkins University in Baltimore, Maryland

I think there is great potential in this field especially in highly complex procedures like brain surgery where milimeter precission is needed.

AI Competitions

International Planning Competition

What even is "Planning"?

Steven M. LaValle describes planning in his book Planning Algorithms in two different ways, the 'old' definition: "In artificial intelligence, planning originally meant a search for a sequence of logical operators or actions that transform an initial world state into a desired goal state." and the present one "[...] planning extends beyond this to include many decision-theoretic ideas such as Markov decision processes, imperfect state information, and game-theoretic equilibria. Although control theory has traditionally been concerned with issues such as stability, feedback, and optimality [...]"

The planning competition is a contest organized by the International Conference on Planning and Scheduling (ICAPS). Is gives a understanding of the current state of planning systems on benchmark problems. The last contest was held this year 2023. There are rules for each Track e.g. Optimal Track: Single CPU core, 8Gb memory limit, 30min time limit, plan must be optimal, score is number of solved tasks. This is the first problem I found with this style of ranking. The competitors are rated based on the time it took to run all the problems ignoring the quality and action cost of the systems output, as long as its valid. This can have an effect on the overall quality of planing algorythms and agents over time.

	2018	2023
Classical Tracks	Optimal, Bounded-Cost, Satisficing, Agile	Optimal, Satisficing, Agile
Probablistic Tracks	Discrete MDP, Continuous MDP, Discrete SSP	Continuous MDP, Mixed Discrete- Continuous