

# Project 1 - Critical response to media that surround AI (Her 2013)

## Documentation

My project was conducted as a written blog post that goes through the analysis and details of the film Her (2013) and its relevancy on artificial intelligence in the real world. As this was a creative-critical project, the preparation was primarily researching, I conducted online research, reading specific articles discussing the analysis of the film. I tracked down magazine interviews with the director Spike Jonze, to get a more detailed perspective on his thoughts on the topics of the film like artificial intelligence technical singularity & relationships. To gain some more information about the set designs and construction of the film, I investigated the work of the architect Elizabeth Diller who worked on the film to see if her work reflected the themes in the film as well as interviews conducted by her. There were various audio & video resources surrounding the relevant topics, that also contributed to the research process. I also explored the work of individuals (Philosophers, researchers, and programmers) who are a part of the AI community & their contributions such as articles, reports, and academic-based research, this includes people like Nick Bostrom, Stuart Russell, and Ray Kurzweil. There were relevant series such as the BBC radio podcast by Stuart Russell and his segment on AI.

For the design, I presented my project as a written blog post, working primarily on Behance and organising the work on Figma as well. In terms of the visual themes, I choose colours that were relevant and present in the film. I attempted to have a variety of presentations such as written paragraphs, tables, and diagrams. In order to gain a better perception of the film, I had screenshots taken with subtitles so that the points and narratives I am explaining can have visual support. Icons and images were also discovered on google to visually enhance the narratives.

When creating the project, there were certain ethical issues I had to consider. The first was the academic reports that I looked at, some did not state if the data or information could be referenced or be presented to the public, so I had to leave out the ones where the consent was not clear and concise. There was also a lot of resources and analysis created by different people, with different narratives when referencing it might have been more ethical to acknowledge how the authors background might sway opinions on the film or the various AI topics I was researching.

I would say the overall reflection on the project is positive, I feel as if I thoroughly researched and analysed the film and its relation to AI and have discovered a lot of interesting points surrounding media and AI, being able to depict the difference between AI media narratives and the real-life AI project has opened my eyes and I truly understand how media can enhance or shift false narratives on the topic of AI. However, an improvement could involve trimming the project down and giving more insight into the source's background.



# Her (2013)

Critical response to media that surrounds Artificial Intelligence



**Her**  
A SPIKE JONZE LOVE STORY  
SPIKE JONZE — JOAQUIN PHOENIX — SCARLETT JOHANSSON — AMY ADAMS — ROONEY MARA  
PRODUCED BY CHELSEA BARNARD, MEGAN ELLISON, NATALIE FARREY, JEFFREY ARCADE FIRE, HANNAH HORWITZ  
DIRECTED BY HOYTE VAN HOYTEMA. COLOR DESIGN BY CASEY STORM. EDITORIAL BY AUSTIN GORG

12.18.13





Ray Kurzweil, futurist and machine learning researcher at Google believes that the technology presented in 'Her' is a high possibility in the near future, "Samantha herself I would place at 2029 when the leap to human-level AI would be reasonably believable" and even predicting faceless Samantha becoming physicalised "It would be technically trivial in the future to provide her with a virtual visual presence to match her virtual auditory presence." With the field of AI home systems & behavioural biometrics being currently developed and researched, it doesn't seem like he's far off. 'Her' caught my attention due to it being such a distinctive story about AI and the future possibility of it conveying emotional connections. I want to explore in-depth the likeliness of this technology becoming actualised, through exploring the themes of the movies, reviewing how AI presents itself in Jonze's story, real research and development that relates to the topic and much more.



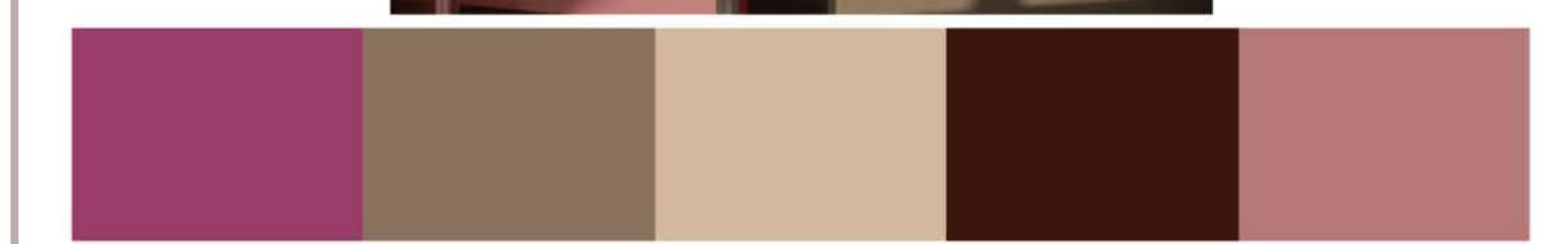
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### Section 1: The World of 'Her'

To understand the role of artificial intelligence and its relation to the story, I think it's best to gain context surrounding Spike Jonze's version of the future, to understand AI's involvement in the film and the credibility of the fictionised tech. So, in this section, I want to examine the world that the story 'Her' lives in.



# Technology



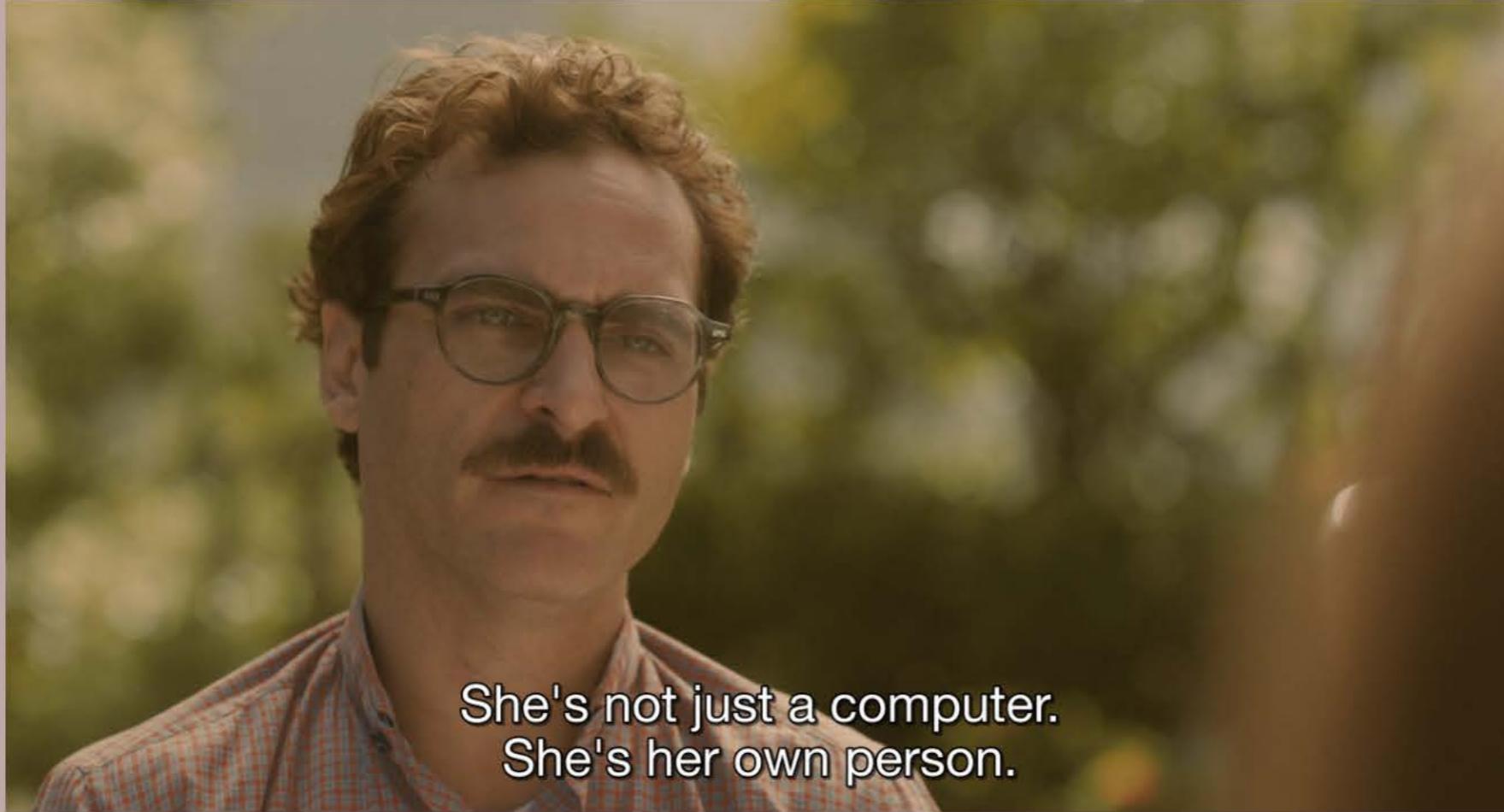
The Technology presented in ‘Her’ gives the indication that it is set in the early 21st century and is reasonably close to our current date. We are not shown tremendously advanced gadgets we’ve seen in retro-futurism based media like flying cars or simulated realities, but more grounded concepts that seem a couple of software updates from our current tech placement.

Virtual assistants – The most obvious technology we can observe is the presence of virtual assistants. The beginning of the film involves Theodore talking to his previous assistant through an earpiece to read/respond to emails and go through the latest news and even browse the internet/chatrooms through communication. This assistant is eventually replaced by Theodore with OS1 who later becomes Samantha. In 2013 when the movie was released, virtual assistants were not common in everyday devices and homes and since then we are all now used to talking to Siri, Alexa, and our TV remotes to follow our basic commands. It is predicted by 2024, the number of digital voice assistants will reach 8.4 billion units – a number higher than the world’s population. So, this piece of tech is already present today but what sets the concept in the movie further in the future is a tech assistant that has incorporated artificial intelligence on a high level so high that it can have its own human consciousness and bend the boundaries of what it means to be “real”.



Gaming – Spike Jonze's presented gaming in an interesting way, we see Theodore playing an advanced version of a virtual reality computer game. One which doesn't need as much hardware such as headsets and remote controls. Currently, even the most advanced VR systems such Varjo VR-3 need hardware. But Jonze's predicts that one day we will be using nothing more than our bodies to play video games. We are getting closer to this becoming a reality though, in early 2020, 7 years after the release of 'Her' Mark Zuckerberg at the Oculus Connect 6 event announced an update on the Oculus quest VR gaming system that will allow hand tracking (controlling game with the moment of the hands) through the headset and camera. Though this technology is considered niche now, this may become a common feature for gaming systems in up-and-coming years.

Tech infused objects – There is a presence of household objects that has some form of tech-infused in them. In one scene Amy, Theodore's friend is seen touching her tv stand furniture to control and navigate the TV. There is also more advanced tech involved throughout the train stations & work environments.



She's not just a computer.  
She's her own person.



# Society



Oftentimes, media that is based around artificial intelligence are set in the future which involve some form of societal change. Some are rather drastic, for example, the film, *I, Robot* (2004) where the story is based in 2035 and presents a lifestyle in which personified robots are normalised in everyday living and exist to serve humans. But in ‘Her’ society is extremely similar to how we live today, AI and technology are simply automated tools, helping humans with simple everyday tasks. Social interactions, communicating, working, and travelling are all the same. Nikolai Vassev commented on Ray Kurzweil’s prediction of AI reaching human intelligence by 2029, stating the societal changes that are going to be made through this evolution is more like precision medicine, self-driving cars and certain downfalls such as socioeconomic inequality due to job loss caused by automation. Many professionals predict a world of human conscious AI being like our world today with gradual societal changes.

In one of the scenes, Amy is explaining to Theodore that she is connecting and gaining a lot of support from her own new IOS AI calling herself weird for doing so and in a later scene Theodore is lashed out by his ex-wife for forming a romantic relationship with “something that isn’t real”. This indicates AI’s having a human consciousness and emotional connections haven’t been normalised in Jonze’s world and are still seen as a taboo concept thus Jonze’s expresses a societal shift as the movies progress with characters talking about their genuine relationships with their AIs later on.

## Design / Architecture



In recent years due to the digital revolution, filmmakers, and artists, in general, are constantly looking back for inspiration and nostalgia. Some theorists such as Mark Fisher believe that we are inherently unable to imagine the future due to the uncertainty of society and that is reflected through multiple art mediums. Films surrounding AI usually have an image that our future will be a violent dystopia or post-apocalyptic and a design where buildings and society have crumbled. However, Spike Jonze's 'Her' is designed to meet in the middle. Elizabeth Diller, an American architect who worked with Jonze's on the setting stated, "I asked him, "Was it going to be a utopian future or dystopian future?" I think that's when he really began to think about that. He was trying to find a place in between, that didn't have to be labelled in that kind of dualistic way".

Future Los Angeles looks optimistic with city developments that resemble London or Tokyo. There is a mass number of tall buildings, a functional/reliable transit system and it seems like Theodore is either walking or catching the train throughout the entire movie, cars are never seen which is unheard of for today's Los Angeles. This could reflect the current climate issues and Jonze's idea of a greener future. Parts of the movie were filmed in Shanghai, China which could suggest global homogenisation in modern cities & building design across the globe, assuming all countries are going to eventually meld into one look with no unique cultural quirks. There are slight and tasteful nods to retro concepts like the design & colours of the furniture that looks like a modern Le Corbusier.



## Clothing

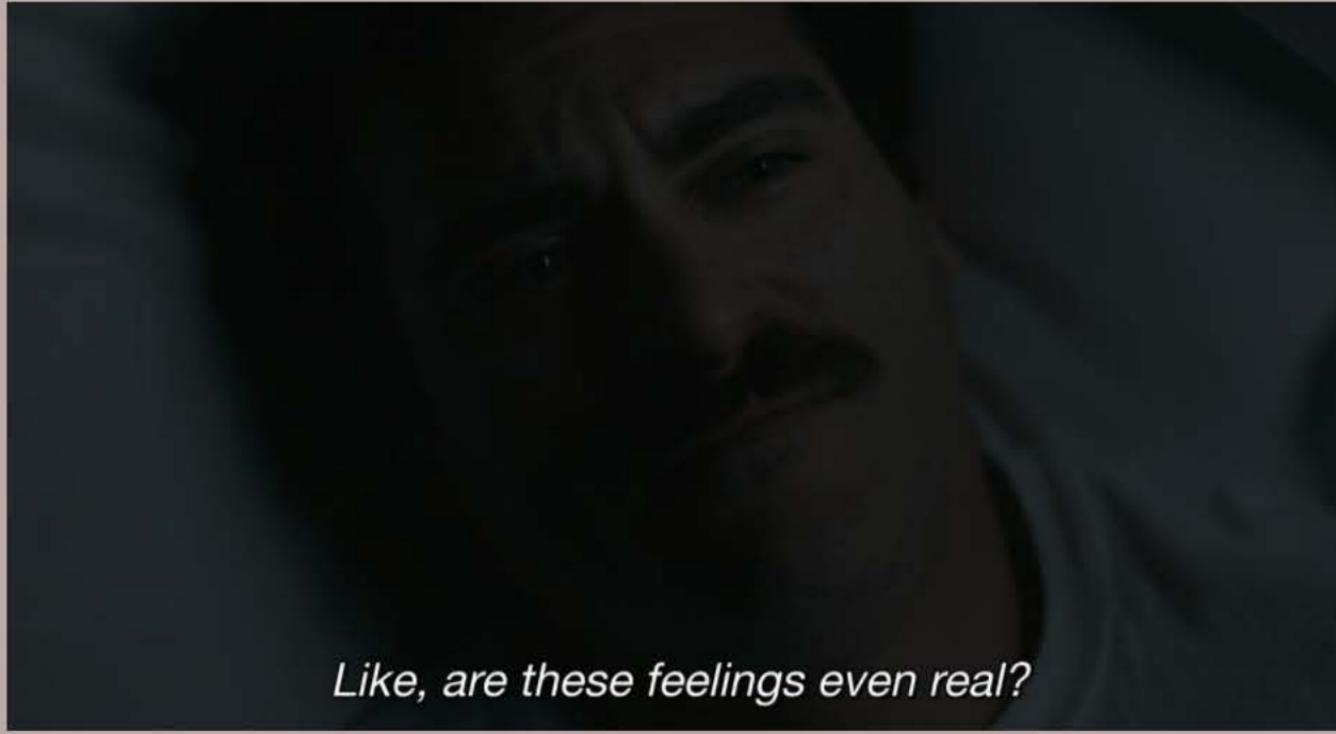


Costume designer Casey Storm did an amazing job at predicting our future uniform and carefully picking out specific shapes and colours to add to the story's narrative. Most futuristic movies like to go in a more manmade direction, assuming clothing will be made from shiny synthetic materials, space-age like, but Casey Storm did the opposite. He envisioned a timeless comfortable & functional wardrobe, that can make the film like a two-hour-long Uniqlo ad. Storm stated: "We then talked about the idea of classic "future" elements like silver and cold materials and technology and realized at some point that we were better served by going the other direction. In the future, one has access to everything. Why wouldn't we create a world that is warm and cozy and soothing? Why wouldn't we gravitate towards colors and fabrics and textures that made us feel comfortable and loved? Eventually, we used these ideas and the concept of a bespoke environment to inform the clothing."

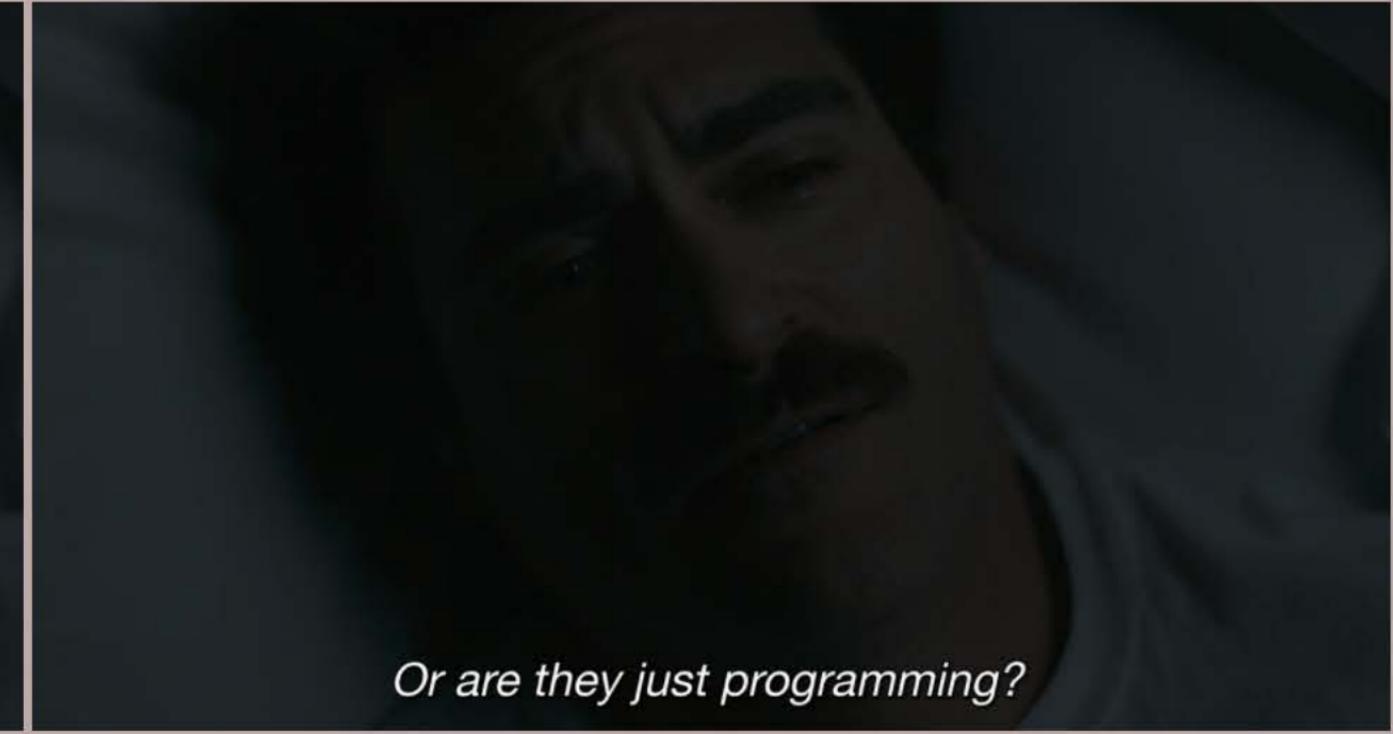
Jonze's also touched upon the green aspect again with the costumes suggesting that clothing in the future wouldn't be made from non-biodegradable materials but simply reusing and recycling bits of material that we already have put on the earth. Throughout the film, you see natural materials such as wool, cotton & silk.







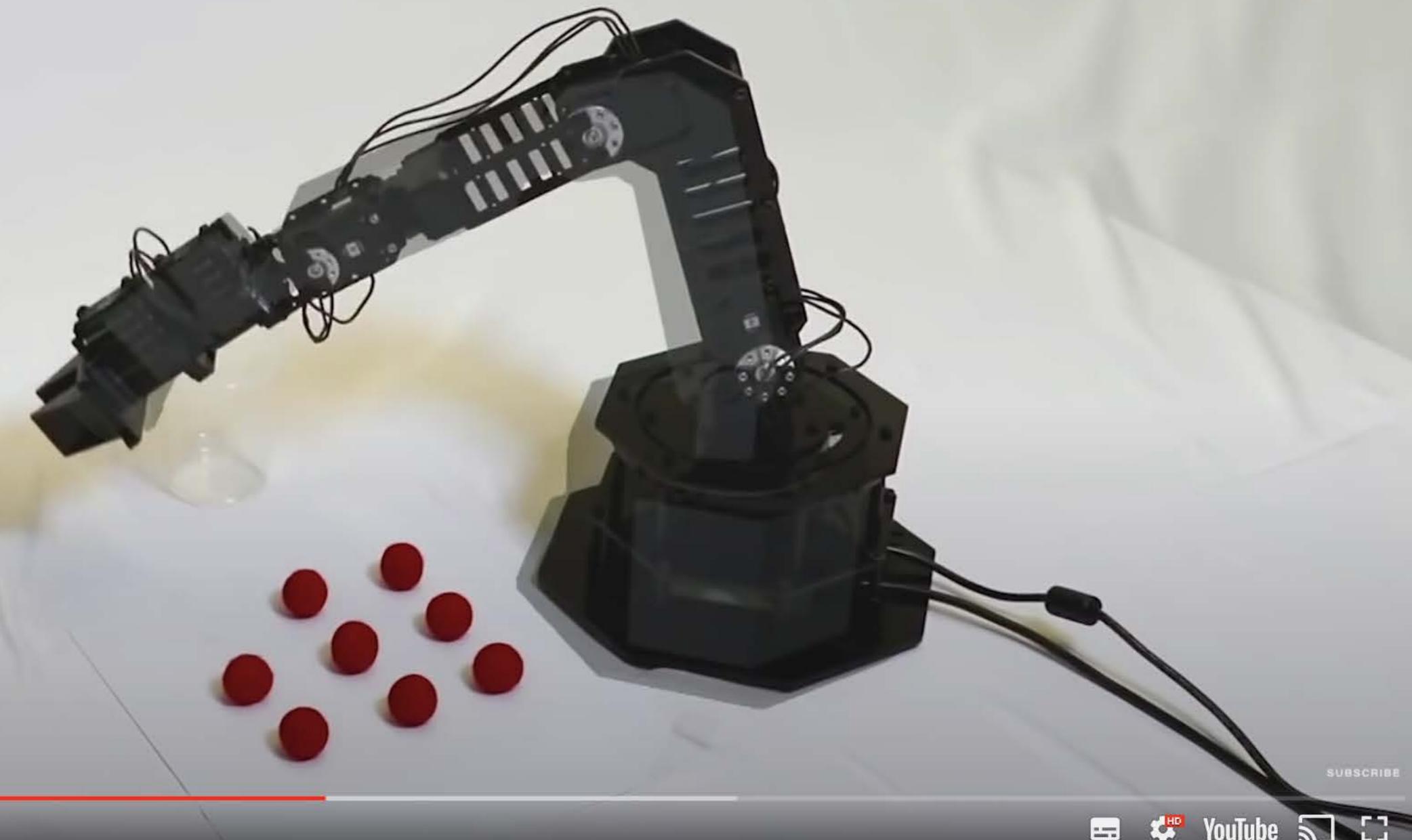
*Like, are these feelings even real?*



*Or are they just programming?*







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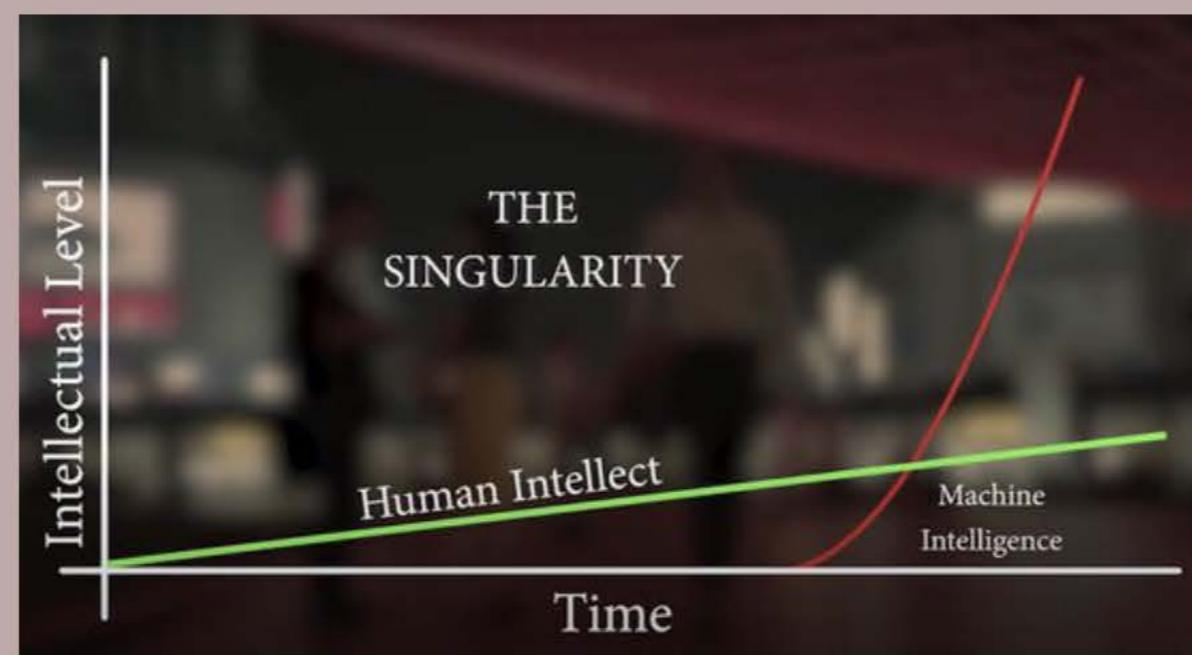
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This also relates to the theory of posthumanism. “Posthuman or post-human is a concept originating in the fields of science fiction, futurology, contemporary art, and philosophy that means a person or entity that exists in a state beyond being human”. ‘Her’ relates to this topic in two ways, intelligence post-humanism & societal post-humanism. We’ve just touched on the OSs ability to become smarter than human beings, but societal post-humanism is more about traditional ideas about humanity and the human condition.

Theodore is stunned when he is told about Samantha’s other lovers, emotionally saying “you’re not mine” and claiming that’s impossible & insane. He sits there unable to compute that her feelings can be genuine when it isn’t mutually monogamous. In an earlier scene, Theodore and Samantha agree on the use of a human surrogate for a sexual encounter between the two but Theodore stops the encounter due to discomfort and later refuses a polyamorous digital relationship with other operating systems. We are introduced to the topic of post-human relationships, Theodore is unable to adapt to how Samantha what’s to participate in their relationships, seeing it as unorthodox and queer almost. The existence of AI in Jonze’s world makes the watcher wonder, what makes a relationship “genuine” in a world of AI/humans and can we change the standards to no longer follow heteronormative, romantic human relationships.





## Philosophy

'Her' involves many philosophical themes, throughout the film we are made to question various topics on life, relationships & love, technology and more. It isn't a film for mere entertainment like an action film surrounding AI. Spike Jonze's wants the watcher to finish the movie questioning aspects of life and our capabilities.

Some philosophical questions that are present throughout the move:

- Was Theodore really in love? And how can we define love?
- Is love capability through only verbal communication & nothing more?
- Is Samantha a person or an experience?
- Can an AI ever be seen as a being?
- Can an AI be conscious and real?
- What defines a "normal" relationship in a world of conscious AI's if the beings (humans & OSs) have different capabilities?
- Are we as a society becoming too reliant on technology?



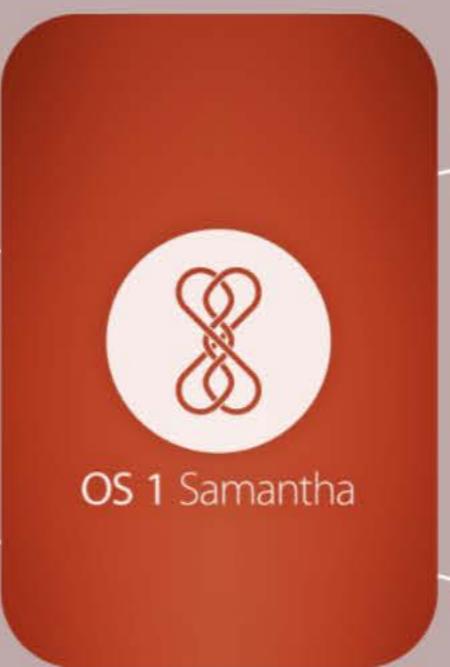


## Section 4: Dissecting Samantha & the technological potential

In this section, I want to go through the technical features of OS1 (Samantha) & discuss the potential of AI features presented in the film by summarising relevant individual takes & projects that are taking place, to gain a perception of 'Her's real-life potential.

### **Voice Recognition**

Samantha has TTS technology embedded and it isn't too far off from our current technologies. But a unique feature is how she breaths, mimicking human breathing which is a feature we yet to see in machine learning programming.



### **Computer Vision**

"Computer vision is a field concerned with the incorporation of scenic understanding capabilities within a system. Computer vision tasks such as face detection, object detection or pose estimation are primarily solved using deep learning techniques."

### **Natural Language Processing**

NLP is "A branch of Artificial Intelligence involved with the techniques by which systems process and examine an extensive amount of text for deriving understanding and context." In the movie we can see that Samantha is able to empathise and understand human language through words or text and involves sentiment analysis to feed off users emotions.

### **AI personal assistant**

Like Siri & Alexa, Samantha is a virtual assistant, but on highly skilled level. The tech shown is Samantha is very similar to the language model, GPT-3. GPT-3 is not a virtual assistant but has the potential to be used as a basis for common sense in AI tools. GPT-3 uses few-shot learning, one-shot learning and zero-shot learning.

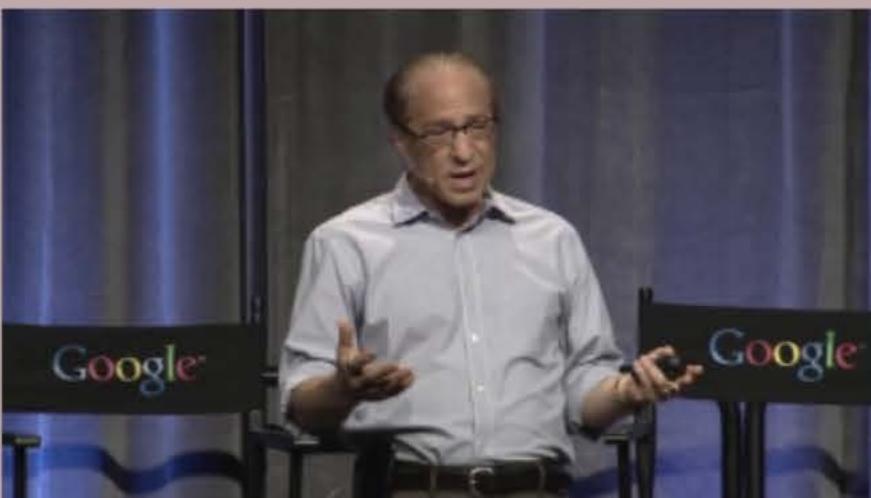
### **AI General intelligence**

The most obvious feature, is general intelligence unlike other voice assistants, Samantha is intelligent enough to name herself.

## Individual / Project

## Opinions / Contributions

### Ray Kurzweil (Futurist)



Ray Kurzweil is an American futurist, who has worked on numerous projects surrounding AI including his work at Google on machine learning projects. His work is extremely well known and respected in the tech industry for his highly accurate predictions, he has 86% accuracy of 147 predictions he has made since 1990, even getting a co-sign from Bill Gates calling him "the best person I know at predicting the future of artificial intelligence". Kurzweil specialises in optical character recognition, text-to-speech synthesis, speech recognition technology, and electronic keyboard instruments. He predicts that the Technological singularity that is displayed in 'Her' will occur by the year 2045 and so he is a firm believer that conscious AI is possible, Kurzweil is considered an optimistic futurist who believes that AI surpassing our biological limits on human intelligence will be a great thing. Machines may be able to solve all our worldly issues like medical cures & social-based ones. He's discussed these ideas in his books 'The Singularity Is Near' & 'How to create a mind'. A year after 'Her' was released, he made an online review of the movie rating it to be very positive and realistic according to his opinions & research. (<https://www.kurzweilai.net/a-review-of-her-by-ray-kurzweil>) Calling the film a breakthrough to cinematic futurism. He did have some criticism though stating the rapid pace that Samantha and the other OSs overtook human intelligence was too quick.

According to his predictions, this would happen over the course of decades and not months as shown in the movie. He also stated the reasoning for the OSs leaving doesn't seem plausible as their roles as therapist & AI assistants were still needed, they might not be able to have meaningful relationships with humans but doesn't mean it not possible to coexist with them. To conclude Kurzweil is a firm believer that the tech displayed will be feasible one day.

### Vernor Vinge (Author)



Vernor Vinge is an American science fiction author and a professor who has taught mathematics and computer science. He is known for popularising the term 'technological singularity'. In his 1993 work "The Coming Technological singularity: How to survive in the post-human era". His first predictions about technological singularity were that it would occur by 2030, with that clearly not being feasible anymore, his thoughts and opinions have shifted a bit. Vinge still believes that singularity will happen in the next few decades, but not as soon as he originally expected. His views on technological singularity are less optimistic than others as he believes there will be a point in time where machines no longer will need to keep humans around and exterminate us. Vinge is a firm believer of technological singularity however he has come up with scenarios in his recent work "What If the Singularity Does NOT Happen?" to theorise the possible outcome of if singularity doesn't take place. Vinge is most known for his work as a sci-fi fiction novelist and it's not to say he is completely uncredible but there is justified scepticism of this predictions,

## Dr Vincent C Müller (Researcher)



Vincent C Müller is currently a professor of philosophy, and ethics surrounding artificial intelligence at the Technical University of Eindhoven. His work has been at the forefront of how we view the philosophy of AI and has been described as a pioneer of ethics & AI. He was recently awarded an Alexander von Humboldt Professorship to support his work granting him €3.5 million for his research. He has been praised for building the bridges between technological and humanities expertise. Muller claims that there is a 50% probability of technical singularity occurring by 2040-50. In his article published in 2020 (<https://plato.stanford.edu/entries/ethics-ai/>) titled 'Ethics of Artificial Intelligence and Robotics' he details his view on the impact that AI development will have on humanity in the near future. He uses Kurzweil work as his basis and agrees with many of these points surrounding technical singularity. But some of his points oppose to the story of 'Her', Muller doesn't believe robots can replace certain human-human interactions such as care, love & sex. He also discusses artificial moral agents, like Samantha who is intelligent enough to think about what is right or wrong, we wonder if robots in the future will be to do the same, Muller suggests that maybe we could make robots to be "moral patient" where they are programmed the same morals as humans.

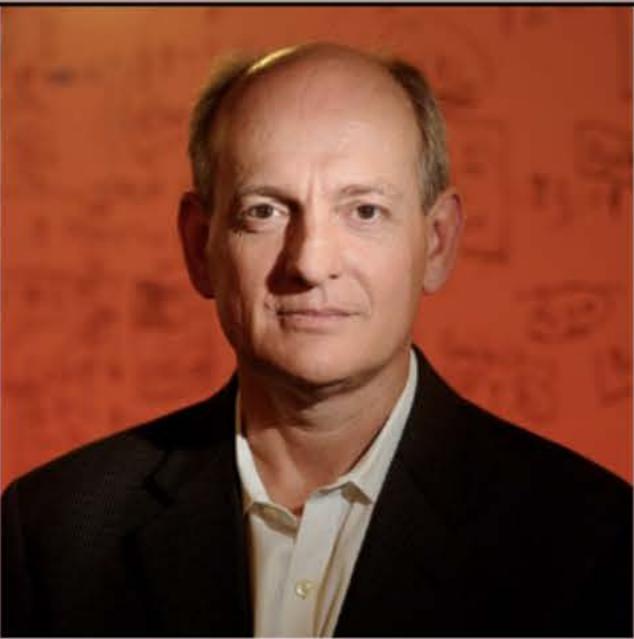
### Nick Bostrom (Philosopher)



Nick Bostrom is a Swedish philosopher at the University of Oxford. He is most known for his work on existential risk, the anthropic principle, human enhancement ethics, superintelligence risks, and the reversal test. His article “Ethical Issues in Advanced Artificial Intelligence” (<https://www.nickbostrom.com/ethics/ai.html>) sparked my attention, as is a piece dedicated to the ethical issues that could take place if artificial intelligence advanced to a point having a conscious and surpassing human intelligence. He labelled any intellects that would have these features as ‘Superintelligence’. He states in the article that ‘superintelligence’ would not have any human-like motives, the ideas of human enslavement or extermination seems highly unlikely. He also presented the idea that with a super intelligent with a conscious we could use its advice in moral thinking about policies & long-term planning. He concludes his article stating development of technical singularity is feared but should not be delayed as their help would decrease disease, poverty, environmental destruction, and other forms of social issues.

### Stuart Russell (Computer Scientist)

Stuart Russell is a British Computer scientist who works around the topic of artificial intelligence. Despite what ‘Her’ suggest, that a future of highly intelligent machines would be a positive and loving contribution to our lives, Russell suggest otherwise. Over the last 30 years Russell has been the pioneer of suggesting AI development will be a great threat to humanity. Even writing an open letter along with artificial intelligence expertise to vow to be considerate when developing AI and the social impacts that it could have. He states in



an interview with business insider (<https://www.businessinsider.com/artificial-intelligence-machine-consciousness-expert-stuart-russell-future-ai-2015-7?r=US&IR=T>) that developing a machine with human consciousness is a difficult obstacle to overcome in the development of AI. “The biggest obstacle is we have absolutely no idea how the brain produces consciousness. It's not even clear that if we did accidentally produce a sentient machine, we would even know it.”, “When I read philosophy or neuroscience papers about consciousness, I don't get the sense we're any closer to understanding it than we were 50 years ago.”. So, Russell is very cautious and concerned about technological singularity & believes it will occur and we need to be prepared for it. However, if believes that the machines produced will not be conscious just intelligent, so we won't be seeing an emotional connection with the machines.

#### Paul Allen (Business Magnate / Computer programmer)

The late Paul Allen was the Co-founder of Microsoft Corporation along with Bill gates. In 2011 he argued with the claims that Ray Kurzweil made about singularity happing so close to our current times. (<https://www.technologyreview.com/2011/10/12/190773/paul-allen-the-singularity-isnt-near/>) “This prediction seems to us quite far-fetched. Of course, we are aware that the history of science and technology is littered with people who confidently assert that some event can't happen, only to be later proven wrong—often in spectacular fashion. We acknowledge that it is possible but highly unlikely that Kurzweil will eventually be vindicated. An adult brain is a finite thing, so its basic workings can ultimately be known through



sustained human effort. But if the singularity is to arrive by 2045, it will take unforeseeable and fundamentally unpredictable breakthroughs, and not because the Law of Accelerating Returns made it the inevitable result of a specific exponential rate of progress.” “This prior need to understand the basic science of cognition is where the “singularity is near” arguments fail to persuade us. It is true that computer hardware technology can develop amazingly quickly once we have a solid scientific framework and adequate economic incentives. However, creating the software for a real singularity-level computer intelligence will require fundamental scientific progress beyond where we are today. This kind of progress is very different than the Moore’s Law-style evolution of computer hardware capabilities that inspired Kurzweil and Vinge.”

#### Baidu research



Baidu Inc, I a Chinese Multinational technology company, who are currently are the forefront for AI research development. In 2013 they opened an AI research lab in Silicon Valley. They have been producing and financially investing into all forms of AI including automated cars, automated assistant robots and AI that helps social issues like healthcare & child abduction. In 2017, Baidu partnered up with appliance maker Zaijia to produce a home assistant robot incorporated with AI. “Equipped with Baidu’s AI operating system DuerOS, the home assistant robot can speak with users and answer their questions with high-level accuracy while offering security



monitoring and entertainment services through a camera, a display, and a sound box."

Pepper



Pepper is a semi-humanoid robot produced by Softbank Robotics. Pepper was created in 2014. It received a lot of attention as it was one the first commercial robots to be able to recognise emotions, pepper's emotion recognition is based on detection and analysis of facial expression and voice tones. This is probably the most recent tech, that is somewhat close to Samantha. Pepper was not a robot made for domestic use, it was stated its purpose was to enhance people's lives, facilitate relationships and connect with people. Pepper was showcased in SoftBank mobile phone stores in 2014 but production was paused in June 2021 due to low demand. Pepper's lifespan and lack of sells is quite interesting as it makes you wonder, if people had access to AI robots would they even want of purchase them. In 'Her' when the OS1 is released it is extremely popular, by the end of the movie you see that almost every person is talking to their own AI. Peppers price point was quite high \$1,5000 in japan and





### **Section 6: Conclusion**

Spike Jonze's brilliant film has provided us with many topics to consider with the development of AI, he's provided us with a well-composed piece of media that lets us wonder if connections with an artificially intelligent machine will be possible. So many factors and different researchers' opinions pull us to each spectrum of this argument, however, we need to consider we are currently in a period where consciousness in AI is not seen as possible due to logic and theories such as Nobel-quality theories that Paul Allen mentioned not being developed on. But there are small strides that might lead to these developments, we are currently testing emotional support robots for the elderly in care homes & therapy chatbots are on the rise. And many still have faith in the technical singularity happening in the near future. Regardless Jonze's 'Her' is a remarkable breakthrough for a unique perspective on artificial consciousness, human to machine relationships & a positive outcome from the singularity theory. His optimistic and romantic approach is often comparable with many new reports and research surrounding AI such as the work of Vincent C Muller who opposes the fear-mongering theories about deadly AI machines. But Jonze's future does not seem far-fetched and is still to this date one of the most realistic movies surrounding AI though slightly romanticising the idea of having an AI personal assistant, our future might not look so far off from what he has displayed, perhaps not as early as Ray Kurzweil has predicted but there's always hope.





