



Bots for Everyone

Designing an Individualised Chatbot Avatar for Optimised Customer Engagement with an Eye on Diversity

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ABSTRACT

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Bots for Everyone

Designing an Individualised Chatbot Avatar for Optimised Customer Engagement with an Eye on Diversity

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The purpose of this thesis was to gain more insight into the state of digital chatbot avatars and whether they could be improved. The theory section discusses reasons why chatbots and chatbot avatars have been made the way they are and raises concerns for gender and design biases. Additionally, this thesis expounds upon the potential of interactive chatbot avatars with a greater diversity.

Chatbot benchmarking was done on Finnish websites and a total of 46 chatbot samples were gathered. These chatbots were evaluated based on the presence of an avatar and the name and gender of an avatar or the lack thereof. Chatbots with an avatar were categorised into humans, robots, mascots or logos/symbols. The largest category was logos/symbols, followed by robots. The gender distribution results indicate almost an equal division between neutral and male genders, with a few exceptions. These findings contradict a wider female-gendered bias present globally in artificial assistants, including chatbots. In addition to this survey, a practical project was included where the concept of a customisable chatbot avatar is explored through mock-ups.

At this time, chatbots with a customisable avatar have not been found on websites. It is possible that the idea has not been discovered yet as research on chatbot avatar customisation is still not common. Further research is needed to explore the practicality of chatbot customisation and to evaluate the user acceptance of personalised chatbot avatars with more diverse and inclusive designs. This thesis aims to provide pointers for investigating the topic further.

Keywords: chatbot, character design, UX design, inclusivity

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GLOSSARY

Avatar	A visual representation for a chatbot, not controlled by a human
BFSI	Banking, financial services and insurance
Chatbot	A piece of software designed for simulating conversations, interactable through text or voice input
E-commerce	Commercial transactions handled electronically via the internet, online shopping
GAN	Generative adversarial network
PR	Public relations
UI	User interface
UX	User experience
Virtual agent	A piece of software designed to complete a task on the user's behalf or assist the user in doing so. May be depicted with an avatar
VSA	Virtual sales/service agent, online shopping assistant

1 INTRODUCTION

This thesis on chatbot avatars was inspired by preliminary work done on them in 2021 during the author's practical training period. A presentation was given to the Yle Innovations team that detailed a brief overview into how chatbots and virtual assistants were portrayed to the users who engaged with them. A puzzling amount of gender biases and repetitive avatar designs were noted, and my findings worked as a springboard for further interest into the ways in which chatbots are portrayed. This study has been conducted to assess the situation in greater depth.

Following the footsteps of the presentation, I conducted a larger survey into chatbot avatars for benchmarking. My survey focused on domestic enterprises only, with one exception given as an example, as detailed later in chapter 4.3.1. The intention was not to make a comprehensive listing of all chatbots used in Finland, but to provide more insight. A focused sample of 46 chatbots were selected from various enterprises, with majority in BFSI and e-commerce. These chatbots were examined based on their names, avatars, and genders if these qualities were present. These results were analysed for possible gender and design biases, and reasons behind several nearly identical avatar designs is discussed. To clarify, this thesis focuses only on text-based customer service chatbots, however, voice-controlled assistants are briefly discussed.

This thesis explores chatbot design further by approaching it through user experience, graphic design and gender inclusivity angles. User-initiated chatbot avatar customisation has not been documented, yet interactivity with a website can be a positive motivator (Hanus & Fox 2015) and many customers expect more personalised services (Act-On 2016), not to mention the importance of seeing one's identity being represented accurately (e.g., Huang 2021; Breedon-Jones 2017). With these in mind, I speculate that an interactive chatbot avatar with a diverse selection of options has the potential to be both well-received by its users and a more effective tool for companies looking to engage with customers.

2 BRIEF INTRODUCTION TO CHATBOTS

2.1. Chatbots in the past and now

Alan Turing, a computer science pioneer, posed the question of whether computers can “think” and communicate in a way that is indistinguishable from humans. From this thought he created the “imitation game” (Turing 442 (11), 1950), later dubbed as the Turing test. The Turing test has received criticism and may no longer be a valid tool for measuring artificial intelligence (Oremus 2022) but having started already all the way back in 1950, human wonderment whether we could truly converse with machines has deep roots.

Turing having paved the way for “machine thinking”, ELIZA was created by Joseph Weizenbaum between 1964 and 1966. While ELIZA is considered to be the first chatbot, it was not called such at the time. The term “chatterbot” was coined in 1994 (Mauldin 1994) and although ELIZA predates even the internet, it still exhibits the main feature of a modern chatbot: simulated conversation. One of the more popular and well-known scripts that ELIZA could run was a simulated psychotherapist. Despite ELIZA’s purpose to be a shallow facsimile of human conversation, Weizenbaum was surprised that people were ready to confess very personal feelings to it (Ina 2022), as demonstrated in Picture 1. This can be thought as ELIZA passing the Turing test in some capacity; perhaps people truly were curious to find out what a machine was thinking so they kept talking to it, or perhaps it was just the effect of it being a novel invention.

```

Welcome to
          EEEEE LL    IIII  ZZZZZ  AAAAA
          EE    LL    II    ZZ    AA  AA
          EEEEE LL    II    ZZZ   AAAAAA
          EE    LL    II    ZZ    AA  AA
          EEEEE LLLLL IIII ZZZZZ  AA  AA

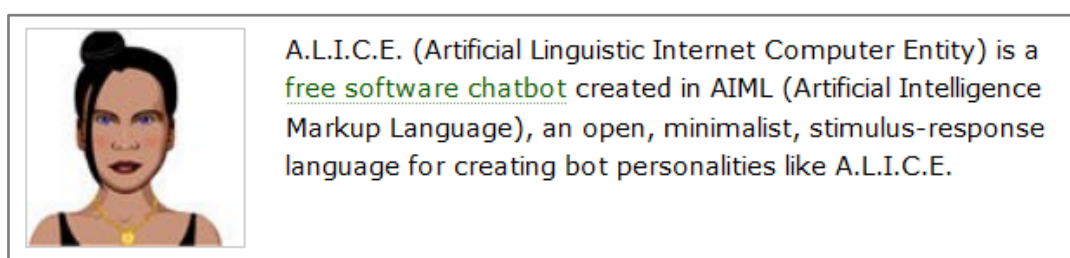
Eliza is a mock Rogerian psychotherapist.
The original program was described by Joseph Weizenbaum in 1966.
This implementation by Norbert Landsteiner 2005.

ELIZA: Is something troubling you ?
YOU:   Men are all alike.
ELIZA: What is the connection, do you suppose ?
YOU:   They're always bugging us about something or other.
ELIZA: Can you think of a specific example ?
YOU:   Well, my boyfriend made me come here.
ELIZA: Is it important to you that your boyfriend made you come here ?
YOU:   He says I'm depressed much of the time.
ELIZA: I am sorry to hear that you are depressed.
YOU:   It's true. I am unhappy.
ELIZA: Can you explain what made you unhappy ?
YOU:

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PICTURE 1. An empathetic conversation with the first chatbot, ELIZA (Wikipedia n.d.)

About 30 years after, A.L.I.C.E. was created in 1995. A.L.I.C.E. may have been the first chatbot to have an avatar but I was unable to verify this. Chatbots.org, a directory for chatbots, lists the avatar next to basic information about A.L.I.C.E. (Picture 2), therefore it certainly has been used for it, but it is unclear when exactly. However, chatbots have only just begun to emerge and already two of them have been gendered as female through names, and possibly by an avatar. Gender biases are discussed further in chapters 4 and 5.



PICTURE 2. Information about A.L.I.C.E. as it is listed on Chatbots.org (Chatbots.org n.d.)

These days chatbots have over 160 recorded aliases (Chatbots.org), but all the reinventing-the-wheel terms simply mean the same thing; a piece of computer software that one can talk with through an interface, commonly through text input, or in some cases, voice. Virtual agents and chatbots differ only in the level of their

sophistication but at a base level are the same thing. Modern chatbots are appropriately described by Stefan Kojouharov, the founder of Chatbots Life; by his words chatbots “are a way to make the information on a website conversational” (Chatbot Use Cases 2020). With the rise of technology comes new applications and demands for chatbots, and social media based chatbots are flourishing, valued for their convenience, particularly by the younger generations (NICE 2019, 12).

2.2. Why are chatbots important?

A report by Business2community found that upon contacting a brand, 82% of consumers state receiving an instant response is essential (Leonard 2019). Since chatbots are available 24/7, they meet the demands of users; a report by Ubisend specifies that 50.6% of users expect businesses to be available at any hour (Ubisend 2016, 15). Next to having support available to the user without delays, brands use them for product and service promotion, lead generation, and boosting website engagement (Zabój 2022). Simply having a chatbot increases the likelihood of doing business with that company (Simplr 2022, 5)

Text-based channels, such as chatbots and emails, are the preferred methods of contact for Millennials and Generation Z (NICE 2019, 23 – 24, 34). This is important to note, as these age groups are the “today’s up-and-coming and most influential consumers” and their loyalty is worth investing in (NICE 2019, 11). Older generations – X, Baby Boomers, Silent – are not as accepting of chatbot technology but use it on occasion (NICE 2019, 53). To accommodate especially the older generations, the chatbot avatar designs have been simplified, as discussed more in depth in chapter 4.2.1, yet to stay ahead of the curve and get more users businesses might benefit from new innovations such as chatbot avatar customisation.

3 ANTHROPOMORPHIZING CODE

3.1. How to communicate with a machine

Anthropomorphism means attributing human traits to non-human entities. To make the unfamiliar feel more familiar, we may attach human-like qualities to it, but it is considered a natural quality of our psyche. We anthropomorphise our pets, electronic appliances, vehicles, even abstract concepts such as natural phenomena. The notion of “talking” with a machine, as proposed by Alan Turing, is an act of anthropomorphising. A machine could be anthropomorphised by giving it a voice, such as Alexa or Siri, or human-like morphology, such as Pepper (Picture 4). Even giving it a name is anthropomorphising. However, a degree of anthropomorphism is necessary for us to interact with a chatbot, so we have given machines the ability to talk. Furthermore, to bridge the gap between human and machine communication, we have also given chatbots faces and names makes them more approachable (Smith 2020).



PICTURE 3. An anthropomorphised machine: the social humanoid robot, Pepper.

However, chatbots are not able to talk like humans would, their language skills are still lacking. It is up to the developers and enterprises that create and employ these bots to disclose who the user is talking with. Chatbot experts agree it is important to “onboard” the user correctly through names, avatars, and messages describing what the chatbot can do (Chatbot Design & Conversational UX... 2018; Conversational UX Design Panel... 2017). Users who do not know they are talking with a bot instead of a live agent will get frustrated easier as the bot may fail to respond to reasonable enquiries (Simplr 2022, 11 – 12; Chatbot UX & Copywriting Tips 2021; Chatbot Design & Conversational UX... 2018). Something as simple as changing the pronoun from “I” to “we” has an effect to how the bot is perceived (Chatbot UX & Copywriting Tips 2021; Conversational UX Design Panel... 2017). “I” is anthropomorphising the chatbot, emphasising its persona, whereas “we” is anthropomorphising the company or brand.

Additionally, 90% of users will only see the first message the chatbot says (Conversational UX Design Panel... 2017) which is undoubtedly important to take note of from the copywriter’s perspective. However, I argue that an avatar is one step ahead simply due to how the chatbot is implemented; when a user opens the chat, they will see an avatar even before the chatbot greets the user with a message. This is remarkable as humans can interpret an image in 13 milliseconds (Potter & Wyble & Hagmann & McCourt 2013) and therefore the users may form first impressions of the bot based on the avatar alone, to a greater degree in cases where the avatar appears on a page alongside the chat invitation itself, such as in Picture 4.



PICTURE 4. A chat invitation on a page accompanied by a chatbot avatar (OmaRealia 2022)

3.2. Why does a chatbot need an avatar?

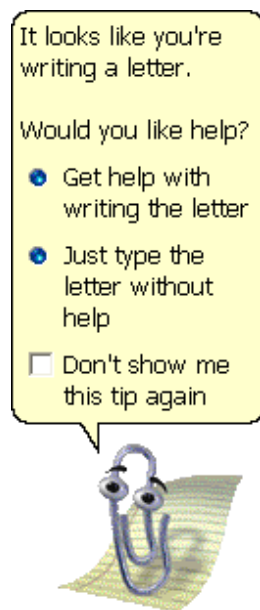
Chatbot windows typically have limited user interface real estate, particularly if the user is accessing it from a mobile device and cramping it full of messages makes for a bad user experience. A chatbot avatar can be an extension of the information that is meant to be conveyed to the user. Another way to consider the avatar as the public face of the business, its “PR”. According to chatbot developer Engati, two basic criteria exist for a chatbot avatar: it must be relevant to the brand image, and it must serve the user experience (Engati n.d.). A chatbot avatar is a “nice touch that makes it more memorable and fun to interact with” (Rajnerowicz 2022). After all, it feels less like a conversation if the other side of the conversation cannot be visualised (Chatbot Design & Conversational UX... 2018). A face gives them a human connection (Singh 2018).

As onboarding is important for new and old users alike, an avatar can help set the expectations. Brenda Laurel (1997) explains that external cues contextualise the agent. Based on the cues we can make successful predictions about how it is likely to act (Laurel 1997, 70.) For instance, how realistic or cartoony the avatar is aids in setting the expectations. We tend to expect more from a highly anthropomorphised human avatar (e.g., a photo of an actual human) than it is capable of performing, which leads to disappointment, as reported by Mimoun, Poncin and Garnier in their research (Mimoun & Poncin & Garnier 2012). Moreover, research by Kristine L. Nowak shows that a less anthropomorphic avatar was received better than a more anthropomorphic one or one without an avatar (Nowak 2004). Furthermore, a notable finding by Baylor and Rosenberg-Kima was that the presence of a visual avatar could alleviate feelings of frustration and increase enjoyment of the interaction (Baylor & Rosenberg-Kima 2006).

3.2.1 Appearances have an impact

Avatars are not only useful for building customer relations, but also solidifying the brand’s image, setting the expectations and even managing the user’s emotions. Simply put, a picture is nicer to look at than an impersonal or abstract interface. However, what kind of avatar should be chosen is dependent on where the bot

will be implemented. Kazimierz Rajnerowicz writes that if the chatbot is going to be used mostly for users who are upset, such as in troubleshooting situations, “a cute chatbot avatar won’t help”. Since a presence of an avatar can facilitate a deeper connection to the chatbot, it means being angry at it is easier as well (Rajnerowicz 2022.) And the world loved to hate Clippy the anthropomorphised paperclip (Picture 5), although the dislike towards it was more due to the low functionality than its appearances (UneeQ Digital Humans 2019).



PICTURE 5. Clippet or Clippy, a virtual assistant from Microsoft Office 97. (Wikipedia n.d.)

The avatar of choice may be used as a tool of persuasion, particularly in the case of online shops. In a study by Ardion Beldad, Sabrina Hegner and Jip Hoppen (2016), the perceived gender of the agent had a positive influence over the participants’ beliefs; if the gender of the agent matched the (albeit stereotyped) product that was presented, e.g., a male agent selling cars, the product-related advice was rated higher in credibility by the participants. They also came across as more competent, authentic, and concerned about the customer’s interests (Beldad, Hegner, Hoppen 2016, 62 (1), 68 – 70 (7 – 9).) However, a missed opportunity in this study was the use of a gender-neutral agent, particularly since the products were categorised as male-female-neutral. Furthermore, not too surprisingly, Sun Joo Ahn and Jeremy N. Bailenson (2011) have reported that users had higher approval of a brand if the avatars looked like the users themselves (Ahn & Bailenson 2011, 103 – 104 (11 – 12)).




4 BENCHMARKING CHATBOTS IN FINLAND

4.1. Approach

For my survey into Finnish chatbots, I began by visiting sites that could believably host a chatbot, from there I expanded my searches as new ideas emerged and old ones were exhausted. I focused primarily on domestic enterprises but certain global sites that have a Finnish localisation, such as IKEA, were visited as well. My intention was not to catalogue every chatbot on every site, as that would have been out of the scope for this study. Still, I am confident the selection of 46 samples is sufficient for illustrative purposes. These samples consist of banks, insurance companies, teleoperators, chatbot vendors, online shops (books, furniture, daily consumer goods), government agencies, as well as few companies in the entertainment and travel sectors.

When visiting a page, I looked for visual cues that would indicate a chat window. The cue typically resided on the bottom right of the screen, commonly in the shape of a speech bubble, or as a colourful tab on the side of the screen. However, it was not guaranteed that a chatbot lived in it. In some cases, it was unclear whether it was a chatbot or a live agent greeting me. Sometimes it was the avatar itself that appeared on the page with a chat invitation, as seen earlier (Picture 4). I took screenshots of the chat interfaces and wrote down my findings regarding names, avatars and genders in a document, a sample of it below (Table 1). Full details can be found in Appendix 1.

TABLE 1. Sample of notes.

SITE	BOT NAME	VISIBLE AVATAR?	AVATAR CAT.	COMBINATION
Boknäs	None		Logo	No name Neutral av.
Sotka	None		Human	No name Female av.
K-Rauta	Rautabotti		Robot	Neutral name Neutral av.

Darius Zabrzenski writes that there has been an increase in interest for brands to employ a chatbot ambassador with a personality (Zabrzenski 2017) and although an avatar and a name can convey personality, I will not evaluate the chatbot's personalities. Instead, we are staying on a surface level only and observing the categories and genders.

4.2. Avatar categories

Out of the 46 chatbots 40 (86.96%) had a visible avatar, although some of them were vendor defaults and not unique to the service that was using it, as we will see in a moment. The avatars were sorted into four categories, per example set by Puzzel: human, mascot, logo/symbol, and robot (Puzzel 2021). Out of the 40 avatars the biggest category was logos and symbols, taking one third of the total with 14 items. The next biggest category was robots with 11, then mascots with nine, followed by human avatars as last with six items. Within Figure 1 these quantities are visualised alongside with percentages.

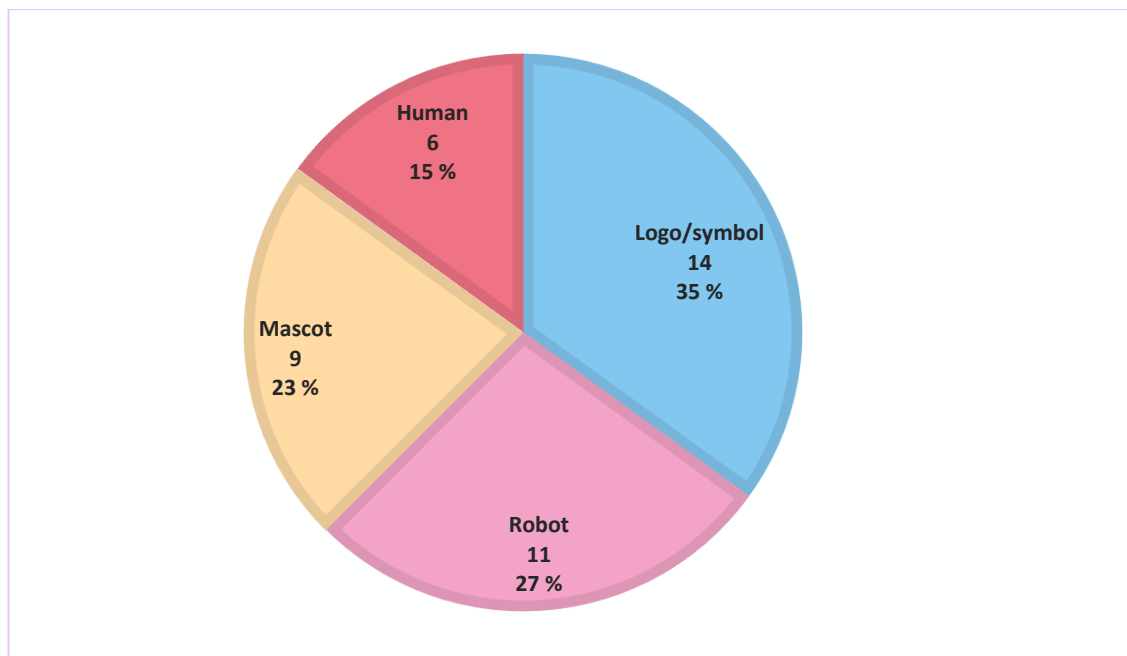
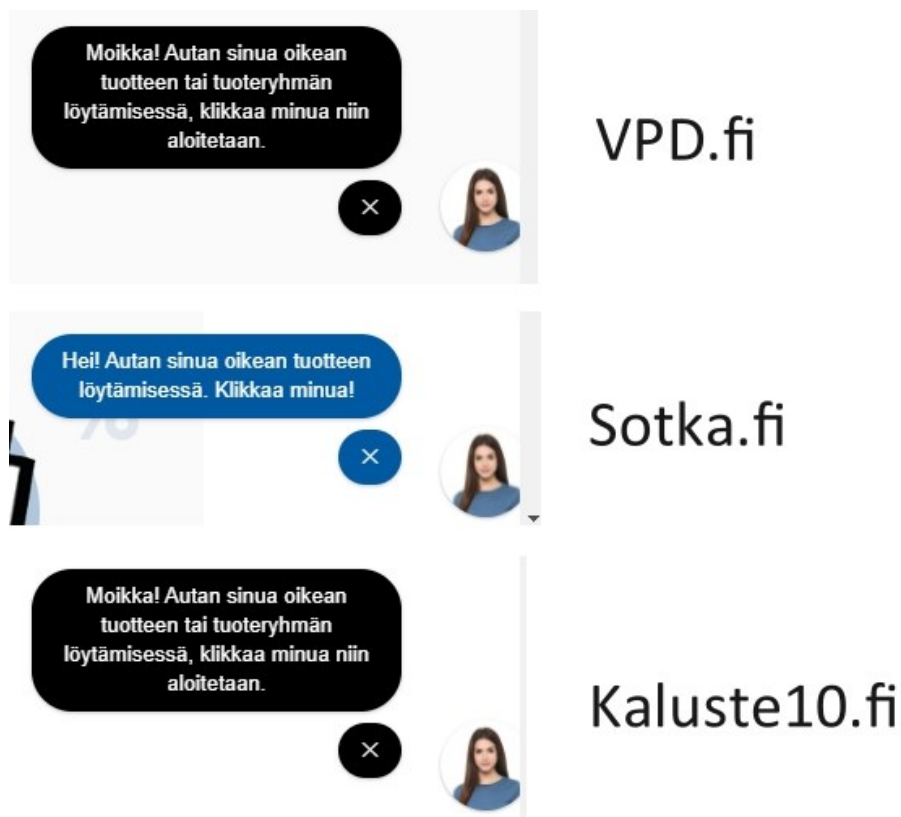


FIGURE 1. Chatbot category distribution by quantity.

It is not all too surprising that the largest category was logos and symbols. Using the company logo as an avatar is very easy and cost-effective while staying recognisable. In some cases, the avatar was simply the initial of the chatbot's name.

On the other hand, logos and symbols are very impersonal with their low anthropomorphisation and embody the company or brand talking to the user as an entity instead of a personified chatbot.

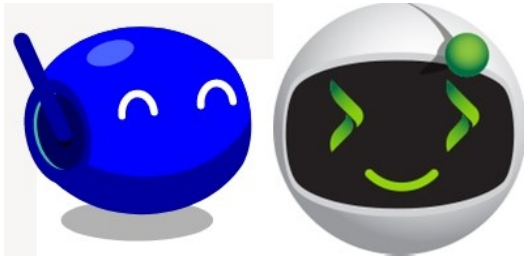
The human category comes with a few twists. First, three of the avatars were the exact same across three different sites (Picture 6), all of whom were using the Upsy chatbot vendor. I am assuming that this is the default avatar of Upsy. Second, all six were women. They can reasonably well be assumed to be women with typical female gender markers, such as long hair, being present in all. Third, between visits Masku.fi changed chatbot vendors but kept the same female avatar, as a contrast to the three that purportedly opted not change the default of their own service.



PICTURE 6. The same lady in a blue shirt on three unique sites. (VPD n.d.; Sotka n.d.; Kaluste10 n.d.)

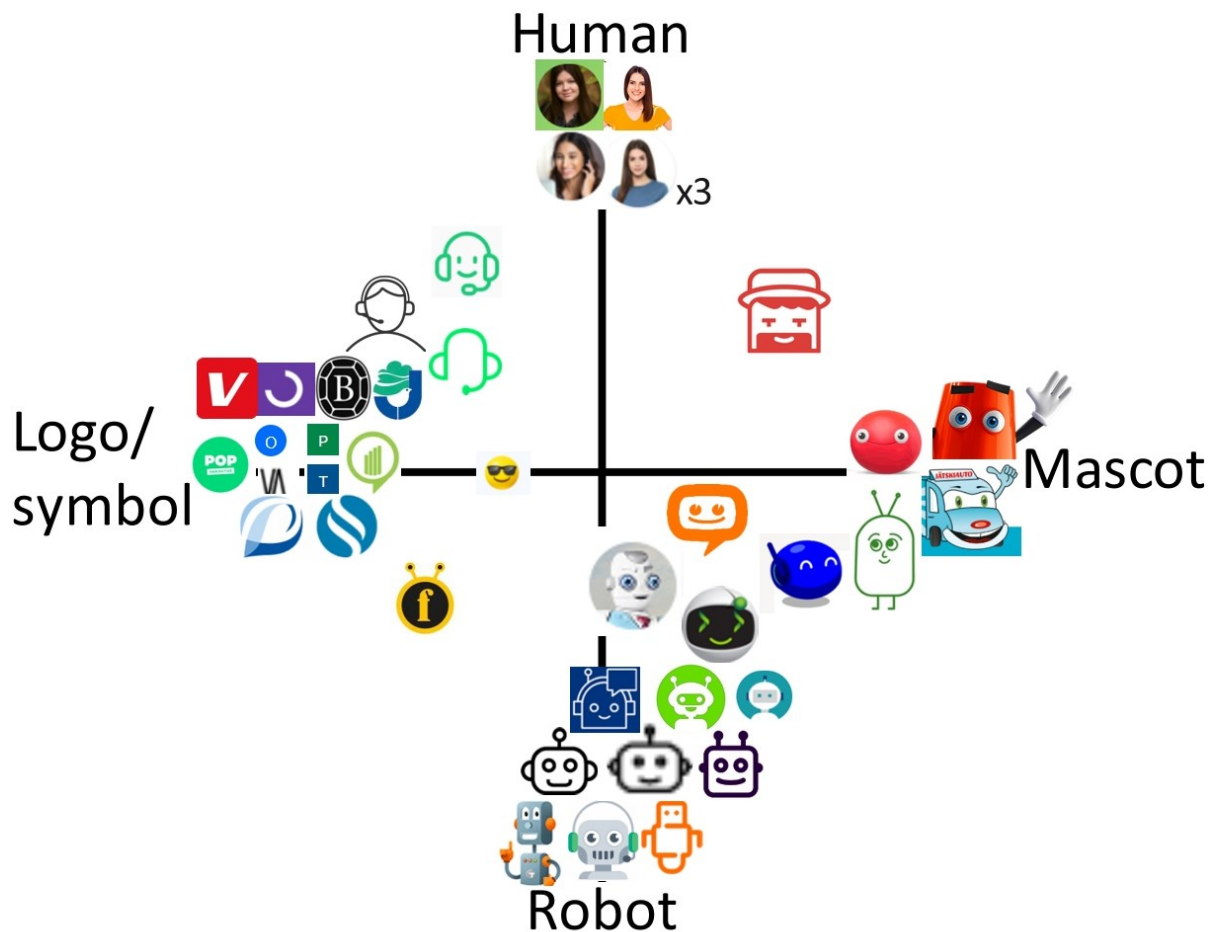
Sorting between mascots and robots was somewhat problematic due to shared qualities which blurred the lines. In truth, robots may be considered a sub-category of mascots. A mascot can be anything, such as a person, an animal or an object that is used to represent a group (Atanasova 2021). To divide them into

either robot or mascot category, I evaluated them based on how “robot-like” they were. Since robots are a kind of a machine, I was looking for features that are stereotypically assigned to them, such as angular shapes, electrical widgets like antennae, and colours, i.e., grey like metal. Although most belonging into the robot category have antennae, this quality alone was not enough to mark them as robots (Picture 7). A more detailed version of the distribution is illustrated in Picture 8.



Picture 7. Nordea’s chatbot (left) was categorised as a mascot. Gigantti’s chatbot (right) was categorised as a robot (Nordea n.d.; Gigantti n.d.)

To showcase all 38 unique avatars, and to clarify the dispersion between categories in a more fine-tuned way, an “avatar compass” was created (Picture 8). Lady in the blue shirt (Picture 6) has been included only once. Avatar locations have been approximated, not calculated. Nevertheless, this illustrates how mascots and robots blend into each other as the lower right quadrant is highly populated. Similarly, blending is seen between the logos/symbols and humans in the upper left quadrant with a couple moderately anthropomorphic yet abstracted avatars wearing headsets. However, due to limited space, the names of the companies are not included in the chart. These can be found in Appendix 1.



PICTURE 8. An avatar compass of all the Finnish chatbot avatars gathered by the author.

4.2.1 Robots: the 50's are calling

As seen from the avatars in the compass, the robot designs can quickly become copies of each other when the stage is given to functionality; the avatar needs to aid in onboarding the user. To tell them that they are talking with a computer program, colloquially simply known as a robot, and not a real person, businesses may prefer a very recognisable robot design. This direct approach is supported by research which concludes that the majority of people prefer to be informed immediately whether they are talking with a live agent or a chatbot (NICE 2019, 52; Simplr 2022, 13).

But why is a box-headed robot with an antenna or two a “recognisable robot”? A safe assumption is simply because they are iconic. To define iconic, Deyan Sudjic

says that icons are a “shorthand for a more complex set of ideas reduced to one thing which stands for all of them” (Brewer 2021). The history of robot aesthetics is long and worthy of a thesis of its own. However, the iconic metal human design started to enter the cultural consciousness early in the 20th century through ground-breaking works like Karel Capek’s 1921 play Rossum’s Universal Robots, which also introduced the word “robot” for the first time (Intagliata 2011), and the 1927 movie Metropolis with its gynoid, who would 50 years later come to influence another iconic robot character, C-3PO (Picture 9). This was confirmed by George Lucas in a 2005 documentary called Watch the Skies!: Science Fiction, the 1950s and Us.



PICTURE 9. Metropolis’ (1927) gynoid (left) and Star Wars’ (1977) C-3PO (right). (The Imperial Gunnery Forum 2013)

Robots rocketed further into popularity in the 1940’s. Isaac Asimov published his short story, Runaround in 1942, which featured the famous three Laws of Robotics, and it captured the people’s imaginations. The first ever toy robot was created

in 1944 (Planet Retro 2009), and this is where we will begin to see the origins for the box shaped culture icons emerge.



PICTURE 10. From left to right, Robert the Robot, Mechanical Walking Space Man Robot, and Marx Electric Robot. (The Old Robots Web Site n.d.; Science Museum Group n.d.; Lot-Art 2021)

Picture 10 highlights some of the early robot toy designs from the 1950's. This is what people might visualise when they hear the word "robot"; clunky metal men with facial features that resemble a human, perhaps an antenna to receive commands with. Coincidentally, the Baby Boomer generation was born between 1946 and 1964, and so they would have been very familiar with these early robot designs. The Baby Boomers are also a generation that would prefer to not deal with chatbots (NICE 2019, 53; Simplr 2022, 13). In the event they must, an iconic robot avatar should ensure everyone recognises it as a cultural shorthand for an artificial being that only receives commands and does not think on its own. To prepare these robots for public relations such as customer service, the grimacing grills for mouths have been replaced with much more approachable smiles and lightbulb eyes with innocuous little dots. A smiley face is a cultural icon in and of itself. Thus, an iconic robot avatar is born.

4.3. Gender division

I evaluated the genders of the chatbots based on their avatars (40 out of 46) and names (27 out of 46). These were sorted as neutral, male, female, and then combinations were counted. The gender division differs somewhat between avatars and names, which results in interesting dynamics. The most popular combination was a male name with a neutral avatar with a total of 12. The second most popular was a neutral name with a neutral avatar combination with 11.

Out of the 40 chatbot avatars only seven were visibly gendered, the rest were neutral. Curiously, as mentioned earlier, six of these avatars were female. The only one other avatar was a mascot avatar with a beard (male gender marker).

Sorting the names was mostly straightforward: 27 names were nearly evenly split between neutral (13) and male (12). Only two had a female name. Worth noting that two names, Tellu and Nova, may be counted as feminine as well, yet they are largely unisex names according to Finland's Digital and Population Data Services Agency (2022). As such, I have placed them into neutral category. Figure 2 further illustrates the gender division in names. Furthermore, all names are listed in Appendix 1.

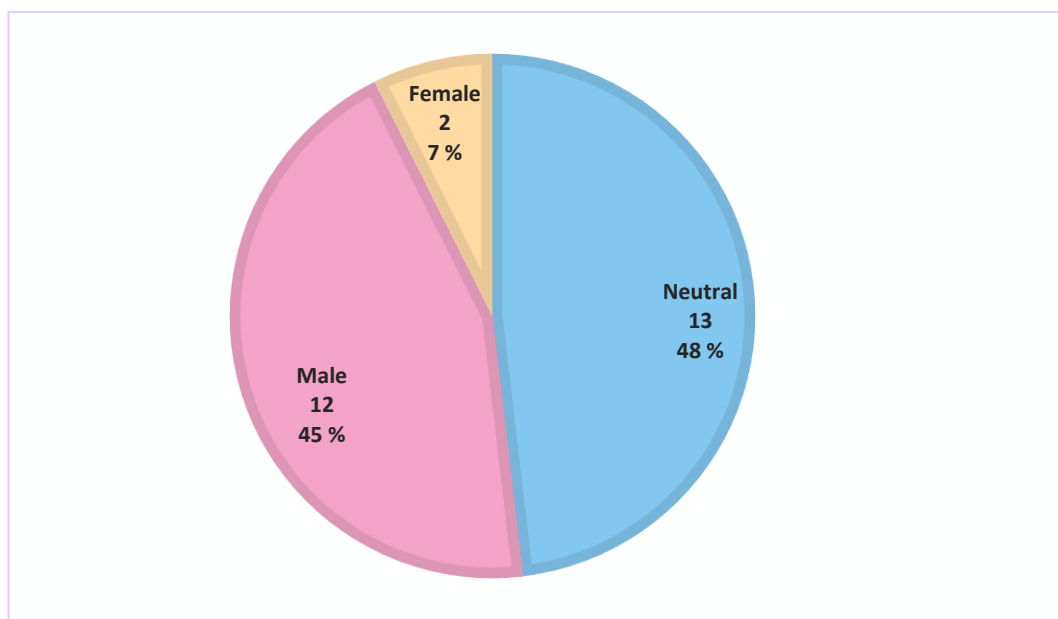
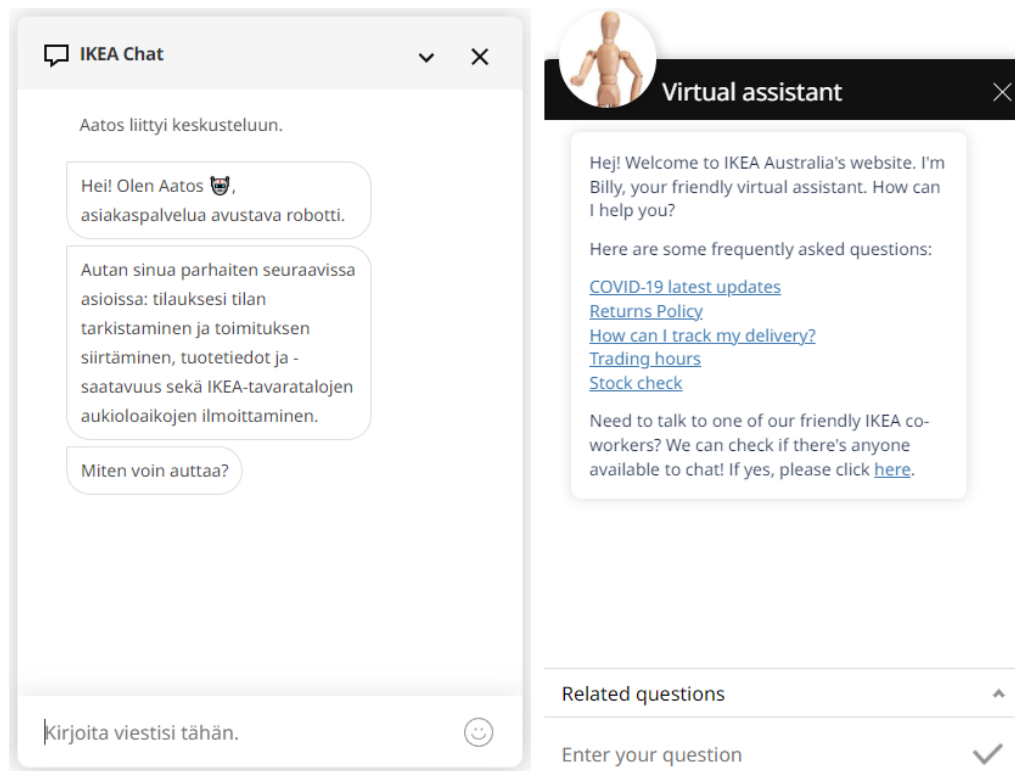


FIGURE 2. Named chatbot gender distribution based on the name.

4.3.1 IKEA

I am highlighting IKEA as an example due to an unexpected variability in the same chatbot between country localisations. I visited the local sites for Finland, Norway, United Kingdom and Australia and none were exactly alike. From this study's perspective the most interesting variation came within our own localisation. While the chatbot on Norway's, UK's and Australia's sites was called gender-neutral Billie or Billy (variant spellings of the same name), on Finland's IKEA site the chatbot is named Aatos, which is undeniably a male name. I am assuming the chatbot's name on other localisations is based on IKEA's most popular product, the Billy bookcase (Powell 2019) which, according to The New York Times, gets a sale every 10 seconds (Fortini 2016). However, I cannot speculate the reasoning behind the name Aatos as there is no item with that name in IKEA's catalogue.

Other differences between localisations were present as well, IKEA Australia being of particular interest as it was the only one that had an avatar; a gender-neutral wooden mannequin. IKEA Australia's chat window also had a different design. Lastly, the style of messages and the amount of emojis varied between all localisations. Since my initial visit in early 2022 and taking the screenshot seen in Picture 11, IKEA Australia has changed the chat's design to match the other countries and removed the avatar. IKEA Finland's chatbot remains with a unique name.



PICTURE 11. Comparison between IKEA Finland's (left) and Australia's (right) chatbot windows. (IKEA Finland n.d.; IKEA Australia n.d.)

4.4. Chapter discussion

Giving the chatbot an avatar was more popular than giving it a name. The most prominent decision was to repurpose the company logo as a chatbot avatar, followed by robot characters. Yet the robot avatar designs were highly uniform, nearly identical copies of one another. Reasons behind this was discussed and concluded it is due to iconification of vintage robot designs in favour of recognisability. The trend of using antennae can be seen featured in almost every category; humans were the only ones without them. Finnkinon's avatar shows a one of a kind solution of combining the logo/symbol and robot categories by giving their company logo antennae. This further solidifies antennae as a rather universal marker to imply a robot. Finnkinon's avatar is seen in the lower left quadrant in Picture 8.

Regarding gender, however, my findings contradict a 2020 chatbot gender bias study by Jasper Feine, Ulrich Gnewuch, Stefan Morana, and Alexander Maedche who reported a significant female gender bias in the 1 375 chatbots that they

surveyed. From these chatbots, 76.94% of the names were female-specific, 77.56% of the avatars were classified as female, and 67.40% were classified as female based on text-based descriptors, e.g., pronouns (Feine & Gnewuch & Morana & Maedche 2020, 87(9).) My sample size is distinctly smaller than theirs, yet I find the results curious. The data I gathered favoured male names on gender-neutral avatars and neutral names on gender-neutral avatars. While female names were a notable minority, 15% of all avatars were photographs of women.

The reasons behind the contradicting gender division are unknown. Particularly IKEA's case where gender-neutral chatbot on other sites was marked as male on Finnish site is strange. I hypothesise the male-name majority can be due to machines being understood as something men are stereotypically interested in or most of the developers being male themselves. Nevertheless, the gender distribution in Finnish chatbots was predominantly neutral, both in terms of avatars and names.

Overall, the landscape of chatbot avatars in Finland is very practical (company logos) and often very literal (robots). Most avatars presented low to moderate anthropomorphism with human-like facial features or body shapes. Gender bias was present but in unexpected ways.

5 A MIRROR OF OURSELVES

5.1. Human gender variance and representation

Records show human gender variant identities (meaning, other than “male” or “female”) have been present widely throughout history, the earliest evidence dating as far back as the Neolithic era (Talalay 2005, 136 (9)). More modern data is provided by the Gender Census, an independent gender identity survey. In 2021 the survey received 44 000 responses and 40 000 in 2022. The 2022 survey reported that over 60% of the respondents identified as non-binary. In fact, Figure 3 shows that nearly all of the top 24 most popular identity words are gender variant (Gender Census 2022.)

Most popular identity words

Worldwide, 2022

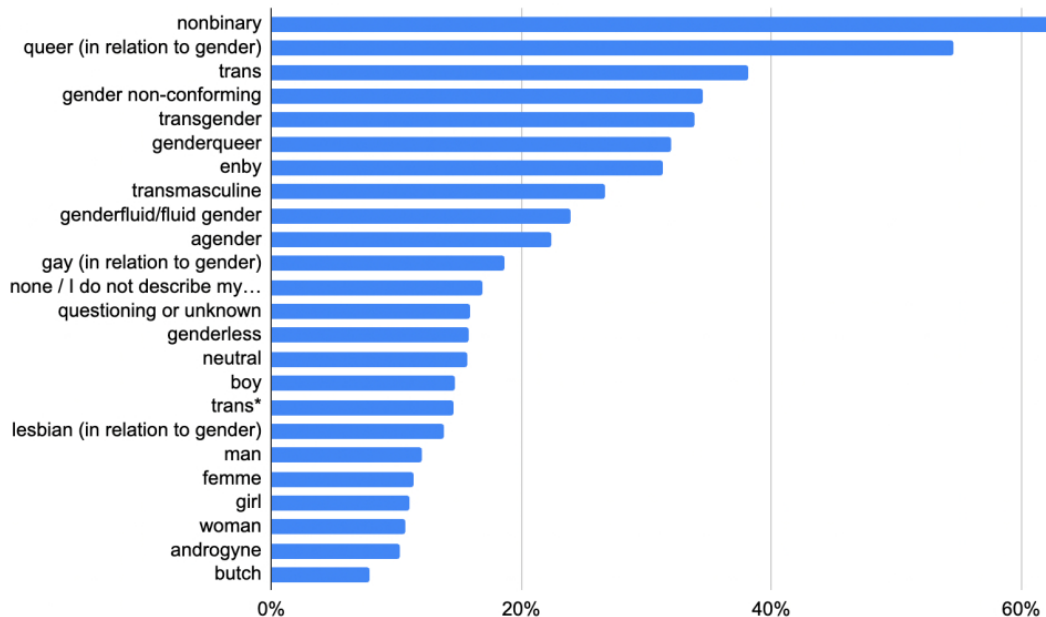
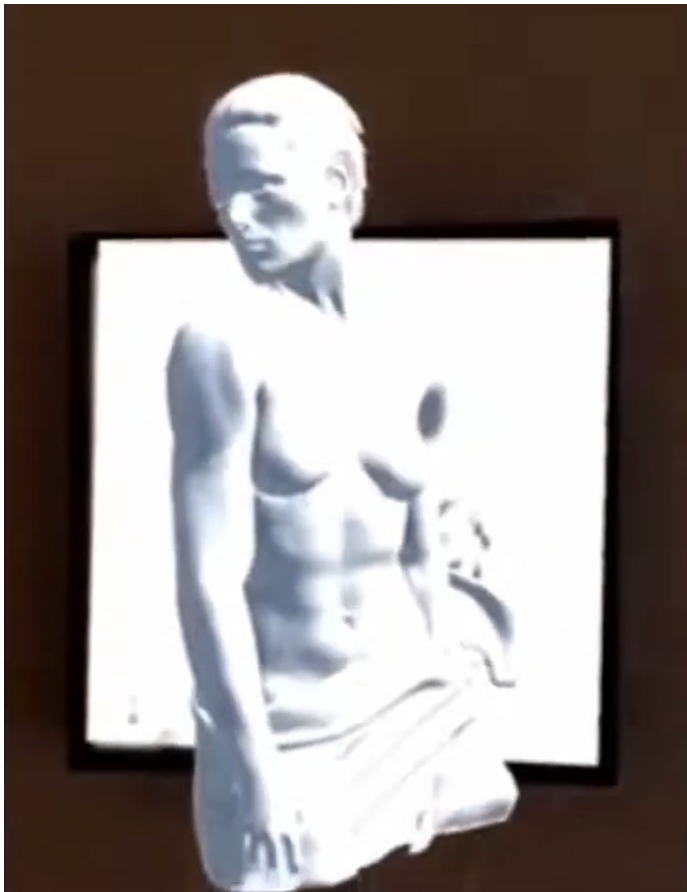


FIGURE 3. Top 24 most popular identity words in 2022 as recorded by Gender Census survey. (Gender Census 2022)

A very basic psychological need is the sense of belonging (Kelly-Ann 2021). People want to see others like themselves represented in media and elsewhere. These tens of thousands of LGBTQIA+ people want to be seen and represented,

to belong and be accepted. Jennie Rosenbaum is an artist working with generative adversarial networks (GAN) and they raise an important point for consideration: minorities are often excluded of datasets that are used to train artificial intelligences which runs the risk of bias. Rosenbaum aimed to create their own database for GAN to use in art that also includes body types between the gender binary by mixing the male and female gender markers together. This way, they were able to produce 3D models of classical statues featuring more diverse body types than they have been in the past (Picture 12) (Jochim 2020.) Gender variant identities have always been a part of human nature, yet it is something we must consciously endeavour to include in the things that we make.



PICTURE 12. 3D model of a non-binary marble statue by Jennie Rosenbaum. (Hidden Worlds, YouTube 2019)

5.2. Chatbots and inclusivity

I hypothesise that chatbot avatars are excellent candidates to exhibit more diverse and inclusive designs. AIs, robots and chatbots alike are artificial beings:

gender and other external factors are assigned to them by people that made them. They are not bound by biological, sociological or ideological limitations; they simply are what we make them to be. We can make them a female gender majority, as Feine, Gnewuch, Morana, and Maedche (2020) discovered, or we can make them mostly neutral, as I discovered, although the gender neutrality in my findings was mostly due to the avatars being logos, mascots or robots, and these cannot realistically be called representations of human gender variance.

In chapter 2.2 we established that both Millennials and Generation Z are groups that prefer to use text-based channels, such as chatbots, for contacting companies. Notably, within these younger generations gender variant identities are particularly prevalent. Gallup reports that from over 12 000 American participants, 20.8% of Generation Z and 10.5% of Millennials self-identify as LGBTQIA+ (Jones 2022). This presents a new opportunity to begin building more diverse and inclusive chatbots for the userbase that engages with them most. Currently not much is known whether chatbot avatars can be an adequate way to promote diversity. However, I suggest they can help with it. When moving onto more complex things like VSAs that, for example, can be used to try on new clothes in a virtual environment, diversifying chatbots can be the right step forward.

Additionally, anthropomorphic, gender-neutral or gender-ambiguous avatars, whether robotic or humanoid, may be the best solution to avoid issues relating to gender stereotyping. In the case of a humanoid avatar, it is also an important opportunity that can be used to promote diversity and relatability. Building more inclusive environments is a choice that we can make, otherwise we risk symbolic annihilation (Gerbner & Gross 1976, 182 (12)). Symbolic annihilation means that by excluding certain groups, e.g., in media, we trivialise them, implying that they are less socially valuable than more prominently represented groups (Klein & Shiffman 2009, 56 – 58 (2 – 4)), which influences the public's perception of those under-represented groups, and the groups' perceptions of themselves (Kurz 2021).

5.2.1 Chatbot abuse

A certain degree of care should be taken when gendering a chatbot, assistant, or agent as female as it may open channels for abuse. Although smart device assistants, such as Siri, now offer options for male voices as well, they originally launched with female voices only, normalizing the use of female voice for AI. Upon launch, both Siri and Alexa received verbal sexual harassment (Fessler 2017). A 2022 study on Alexa and a comprehensive report on gender bias in digital skills published by UNESCO (2019) both raise concerns of gendering machines; they believe that assistants with female gender cues promotes the harmful gender stereotypes of submissive and compliant women (Fortunati & Edwards, A. & Edwards, C. & Magnanelli & de Luca 2022; West & Kraut & Ei Chew 2019). In a chatbot conference held in 2018, speakers were asked what the funniest thing was a user has said to their chatbots. Obaid Ahmed stated that while they have both male and female avatars for their chatbots, the female ones got asked out “a lot” (Chatbot Design & Conversational UX... 2018.) In early 2022, a worrying trend had emerged, where men created female AIs in the Replika app, verbally abused them and posted these conversations as trophies online (Bardhan 2022).

Although, some users may always test out the limits of the chatbot regardless of if it is gendered or not. Even a simple, male-coded weather chatbot with an anthropomorphic cat for its avatar (Picture 13) has received its fair share of unsavoury comments (West & Kraut & Ei Chew 2019, 124). As such, the harassment of chatbots may not have anything to do with the gender. Users may simply be predisposed negatively towards robots, which affects the chatbots’ perceived intelligence and usefulness, as reported by Laury ten Donkelaar (2018, 2, 32). Yet it is crucial to take the gender into consideration, not just for the sake of diversity but due to the potentially harmful implications of selecting a female avatar to greet the user on a page, as seen in Picture 6, where it can reinforce gender stereotyping of female subservience (Fessler 2017).



PICTURE 13. Poncho the weather app chatbot, active 2013 – 2018. (Rao 2017)

5.3. Chatbot avatar customisation

There is some simple human psychology that supports the thought of customising a chatbot's avatar. The customisation of a sales agent's avatar has been studied by Michael D. Hanus and Jesse Fox (2015), where it was shown that customers who had the option to customise the appearance of a sales avatar were more likely to buy the product. Notably, the study also shows customisation can have a positive impact on the experience with the agent. Hanus and Fox explain this can be explained through the self-determination theory, as proposed by Edward L. Deci and Richard Ryan, which "posits that humans need to fulfil three basic psychological needs: autonomy, competence, and relatedness" (Hanus & Fox 2015, 35 (3).) These needs can successfully be fulfilled by interactive media, such as video games (Przybylski & Rigby & Ryan 2010).

Hanus and Fox discuss the potential risk of ridicule by allowing the user to take over a "carefully constructed message" yet argue based on their findings that customisable features are powerful enough to bypass this by appealing to the users' intrinsic motivation through need satisfaction, and thus increase brand enjoyment and approval. Moreover, Hanus and Fox mention that simply engaging with the avatar customisation may increase the effectiveness of the interaction due to cognitive dissonance; participation requires effort, and this may increase

feelings of commitment which in turn influences the persuasiveness of the brand's message (Hanus & Fox 2015, 38 – 39 (6 – 7).)

Avatars that appear human can increase feelings of similarity and identification in the user (Holzwarth & Janiszewski & Neumann 2006). Theo Araujo (2018) similarly agrees that human-like cues in chatbots can lead to increased levels of emotional connection with a company, in other words, chatbots “can have a positive effect on relationship building” (Araujo 2018, 188 (6)). Furthermore, as reported by Ahn and Bailenson (2011) avatars that resembled the users in appearance were more effective (Ahn & Bailenson 2011, 103 – 104 (11 – 12)). Moreover, research shows increased engagement and intrinsic motivation for users who can customize an avatar, either their own (Trepte & Reinecke 2010; Vasalou et al. 2008) or the brand's (Hanus & Fox 2015). On top of that, a conclusion by Beldad, Hegner and Hoppen in their 2015 study on VSAs that the impersonal and anonymous nature of e-commerce puts pressure on online vendors “to continuously explore ways to make such form of exchange more personal” (Beldad & Hegner & Hoppen 2015 70 (9)). Finally, it is reasonable to assume that the primary userbase of chatbots (Millennials and Generation Z) would welcome more diverse and inclusive designs, as detailed earlier in this thesis. Therefore, if the avatar is not to the user's liking, I propose that combining these two – diversity, to increase identification and representation, and avatar customisation, to fulfil needs and increase engagement – will yield positive results.

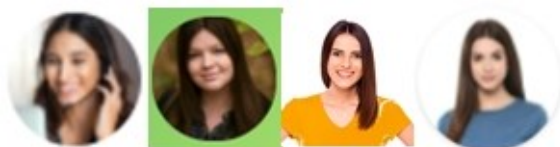
However, it is worth noting that an interactive avatar alone is not enough; the success of it is greatly impacted by the context where it is implemented in. Reza Etemad-Sajadi (2016) discusses the reasons behind this and concludes the hedonic value of the avatar is more relevant than its utilitarian value; avatars on sites for restaurants were successful than the ones on banking industry sites (Etemad-Sajadi 2016, 228 (2)). Considering this, I believe best use cases could be found within entertainment or e-commerce.

6 CUSTOM CHATBOT AVATAR PROJECT

6.1. Small changes are enough

Identifying with an online avatar holds the potential to increase user satisfaction, as much as it has the potential to decrease it in case the avatar doesn't match the user's gender roles (Trepte & Reinecke 2010), although, not surprisingly, the research by Trepte and Reinecke does not explore genders outside of male-female binary. The lack of representation in online avatars (e.g., Vasalou et al. 2008; Trepte & Reinecke 2010), the problematic female-gender bias in chatbots reported by Feine & Gnewuch & Morana & Maedche, and the mixed results of my own chatbot research led me to conceptualise a chatbot avatar customiser. This customiser offers more diverse and inclusive designs and introduces an element of interactivity to the chatbot.

The best way to create more inclusive designs is to involve people of marginalised or under-represented groups in the development process, either on the team itself or by feedback. However, I did not have the luxury of asking around for opinions due to lack of time, yet my intention always was to focus on creating gender-neutral or gender-ambiguous designs. At the same time, it is important to note that there is no reason for the changes to be extreme or the interactivity to take over; the intention is not to replicate a dress-up game in its entirety, as that would both detract from the reason the user is accessing the chat and create a lot more clutter than is necessary. Avatars and menus should still work when scaled down to mobile devices. Yet, even minor things can make a difference, such as more diverse hairstyles or more skin tones. As far as I saw, the variety in humanoid chatbot avatars in Finland extended only up to young, fair-skinned women with long hair (Picture 14). This is an easy baseline to expand upon.

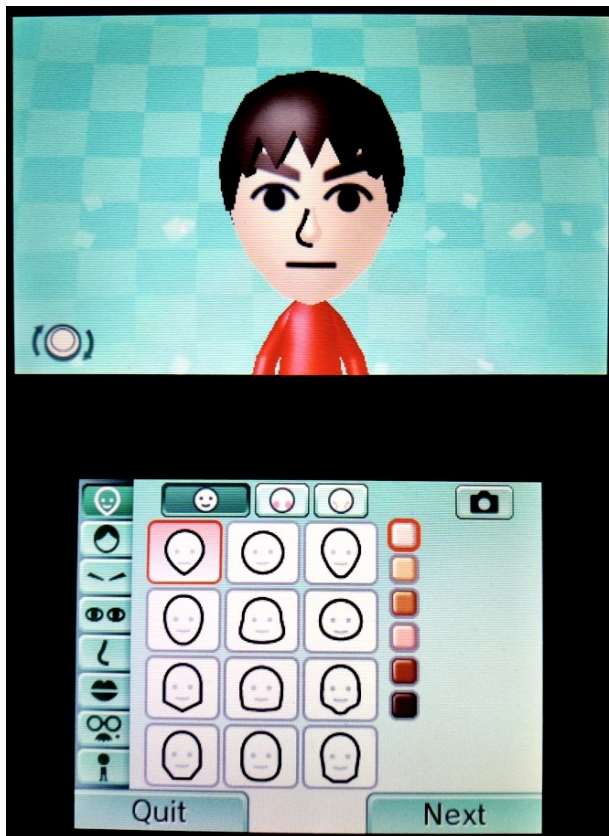


PICTURE 14. Narrow variety in human representation in Finnish chatbot avatars.

Due to time constraints this project is not as comprehensive as I planned initially; the original version included humans and both anthropomorphic robots and animals. In this version I have only included humans. However, this speaks in favour of chatbot avatar customisers, as there is a lot of untapped potential. Similarly due to time constraints I could only produce UI mock-ups, not a functional product, yet I believe that is enough to present the idea as there is a lot of room to expand on.

6.2. The idea

The idea of a chatbot avatar customiser was inspired by video game character creators such as Nintendo's Mii Maker (Picture 15) and is as follows: a diverse selection of features (e.g., face shapes, facial features, hair styles) are drawn and submitted into a pool. Once the pool of avatar features is established a new avatar can be quickly created from them, resulting in a broad range of one of a kind and inclusive designs. These avatars can either be entirely randomised or the features can be hand-picked. Having both options available to the users should be optimal so they can tailor the experience to better suit their needs. If they are in a hurry or are curious to see different variations, they could use the randomise option. If they want to attempt creating the avatar to look like themselves or indulge in a bit of creativity, they could pick the features one by one.

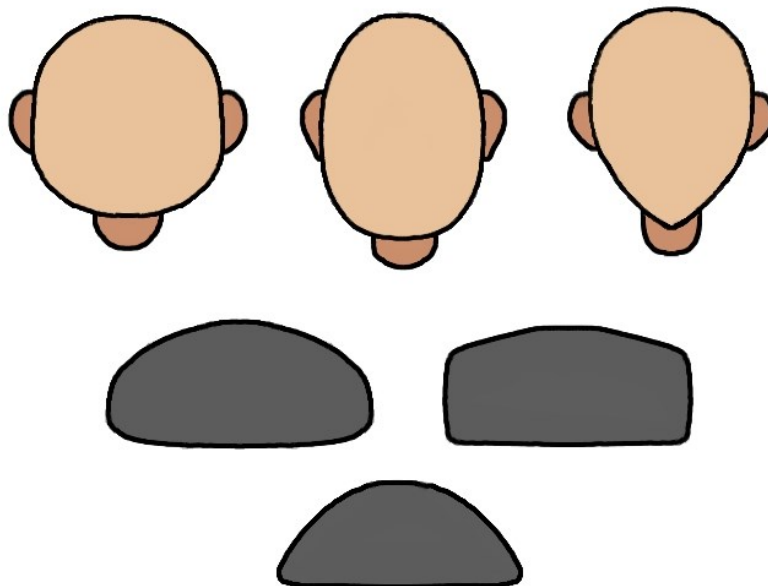


PICTURE 15. Character creation interface on Nintendo Mii Maker for Nintendo 3DS console. The character preview is on the top screen and the options are on the bottom screen.

As mentioned, only human avatars were selected for this project, and the context of choice is an online clothing store. As Reza Etemad-Sajadi (2016) wrote in his study, the hedonic value of the avatar is more relevant than its utilitarian value. Therefore, I hypothesise in this hedonistic context users may benefit the most from an individualised avatar, or an avatar that looks like themselves, in addition to the store likely being a stress-free environment. Thus, a customisation feature should not be too distracting. From an artist's perspective the art style of choice is the first consideration as art styles can have remarkably different effects on the end product. To avoid the uncanny valley effect (Mori 1970) that stems from increased realism I have kept the art style relatively simple and cartoon-like, in addition to maintaining readability better even at smaller scales. Overall, it is important to pick a style that would be a good fit for the business in question and to avoid creating designs that might trigger negative responses by being too unsettling or creepy. Finally, the creative team should ensure that all results created from the pool of avatar features are realistic and believable.

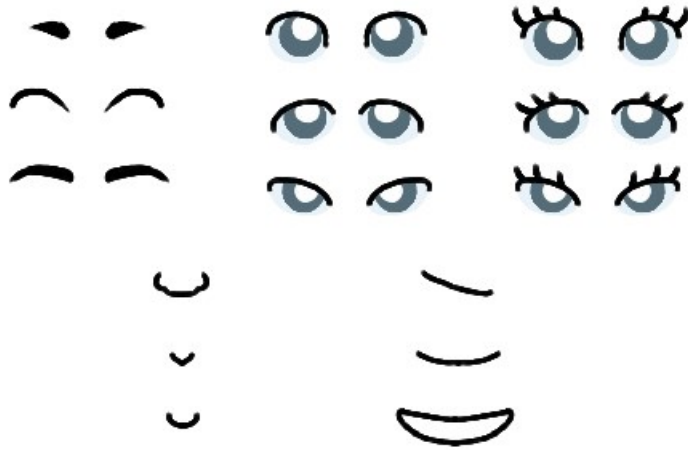
6.3. Creating the templates

It should be noted that using vector graphics will give the best results when scaling the images down, though it may not be necessary. Few of the avatars I benchmarked were photographs and not vectorised images. Nonetheless, Krita and a graphics tablet were used to draw the avatars by hand. I aimed to make a few basic templates to showcase the idea and began with heads; a round, an oval and a heart-shaped face were created. I contemplated drawing some simple clothing for the avatar, but since it is a profile picture, it is not necessary to add information outside of the face. Changing the shirt colour should be enough customisation for the torso, of which I created three versions as well. Results are in Picture 16 below.



PICTURE 16. Avatar project human bases.

Next, some facial features were created. To go with the three profiles, three different eyebrows, eyes, noses, and mouths were made. Additionally, a version of the eyes with prominent eyelashes were drawn. I decided not to go beyond this to create make-up options for the avatar, although that certainly can be done should the businesses want to go even fine-grained on their customisation, even add jewellery such as earrings. Picture 17 shows the options for facial features.



PICTURE 17. Facial features (eyebrows, eyes, noses, mouths) for the avatar.

I tried to keep the options to minimum here, as it is not practical to cover every possible shape, particularly when the details are so small on the final product. However, it is debatable if it is necessary to let the user to select each individual feature one at a time and rather create pre-made sets. Therefore, a lot more research and testing is needed if customisable chatbot avatars were to become popular. Lastly, I created a handful of different hairstyles and facial hair options (Picture 18).



PICTURE 18. Hair and facial hair options.

Finally, colour palettes were created (Picture 19). The skin and eyes have six colours each. It is the author's own observation and experience that particularly younger people use bright hair dyes for self-expression. This phenomenon is further supported by Hannah Dol's study (Dol 2016). Therefore, six additional colours were created for dyed hair, to a total of 12.



PICTURE 19. Colour palettes, from top to bottom: dyed hair, natural hair, skin, eyes.

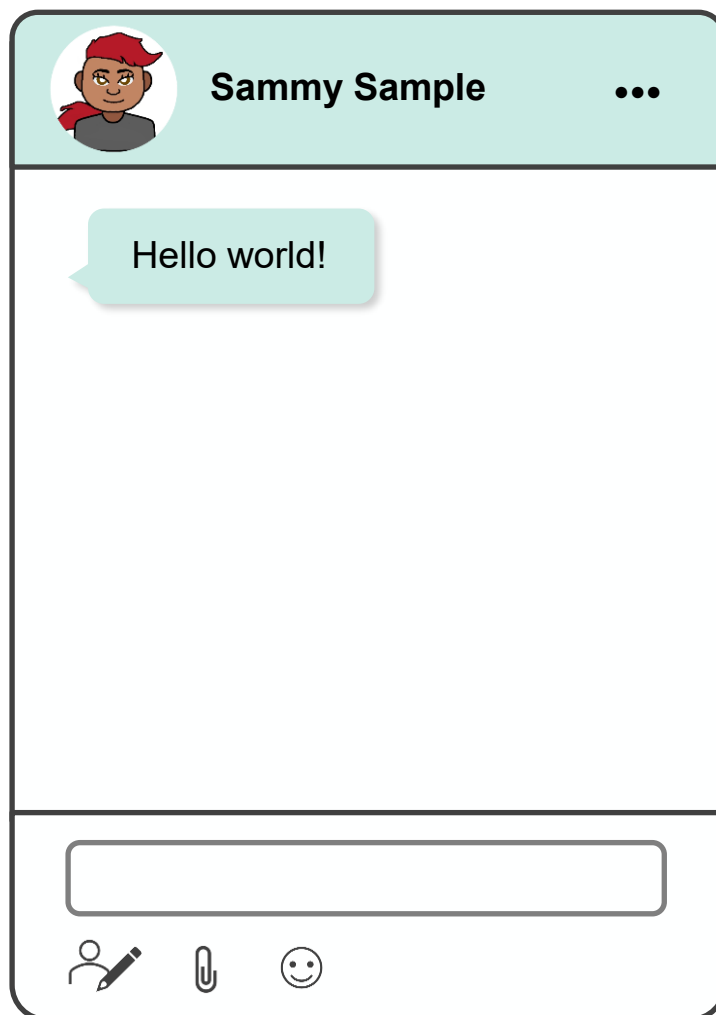
These all have been examples of features and colours that could be implemented in a chatbot customiser. The number of features can be adjusted up or down, but it is my recommendation that they are kept to a minimum. Of course, this creates the balancing act of not too many features that the original purpose of the chat is lost and offering enough features to allow the user to make an avatar in their own image. Below are some combinations that I have created using the templates (Picture 20).



PICTURE 20. Three avatars pieced together using the drawn primitives.

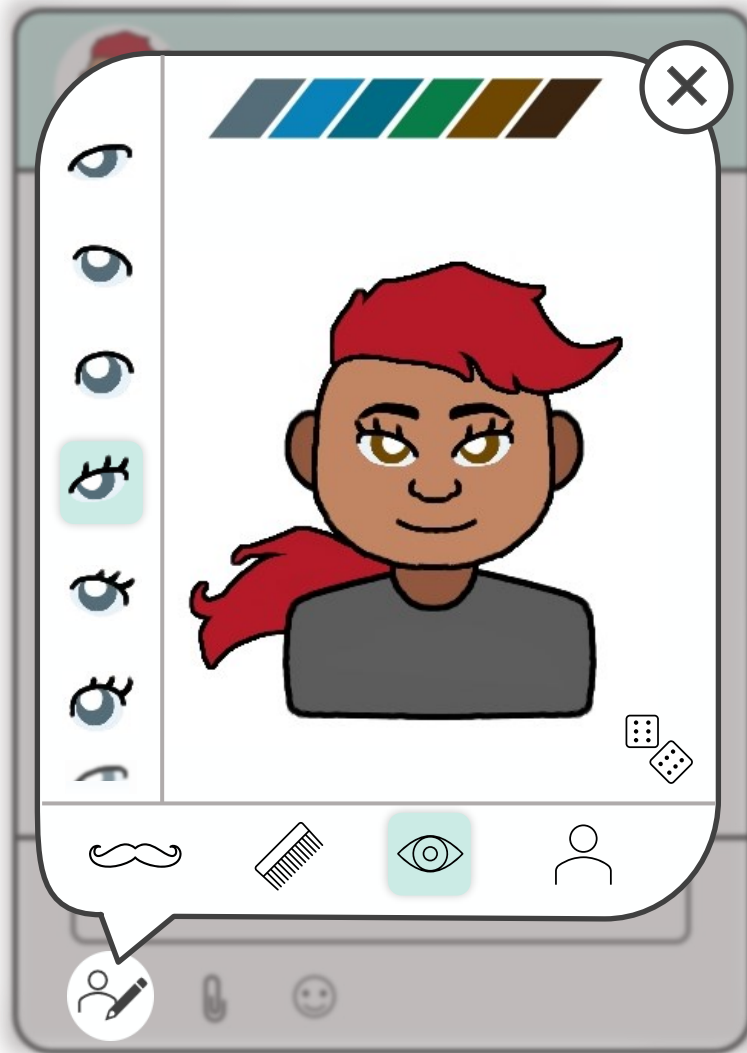
6.4. UI mock-up

For the prototype, simple chatbot user interface mock-ups were assembled using Microsoft Word. There is only one requirement for the chat interface, and it is to include an option to activate the avatar customisation and it can be done in any number of ways; it is also dependent on how prominent or inconspicuous the feature is planned to be. It could be something as simple as a chevron pointing down next to the avatar where the customiser is accessed through a drop-down menu. Here, I placed an icon for it in the form of a blank portrait and a black pencil, located in the lower left corner of the interface (Picture 21). A pencil is a straightforward marker for creativity and paired with a human shape like that of the avatar itself should be a clue as to what a user could expect when they select it.



PICTURE 21. A chatbot UI mock-up showcasing a button for activating the avatar customisation process in the lower left corner.

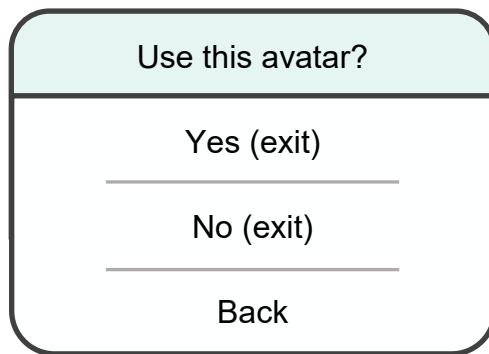
Once the option is selected an overlay is brought up on the chat window as illustrated in Picture 22. The chat is dimmed and blurred to bring focus to the customiser. An overlay is suitable for both computer and mobile screens as it does not require additional space. However, if the chat was accessed through a computer, the customiser could alternatively appear next to or above the chat itself.



PICTURE 22. The chatbot avatar customisation overlay mock-up.

In this mock-up, a bar with four categories is seen at the bottom of the pop-up; the different icons indicate facial hair, hair, eyes, and head/shoulders. The “eyes” menu has been selected and is currently active with the options on display at the left side. In case more categories or options were available these bars can be scrolled, sideways or up and down, respectively. A seventh eye option is hinted at the bottom of the column, which should prompt the user to scroll down. On the

top of the pop-up window are the colour options for the currently selected category. A “randomise” function is included in the form of a dice button; it will produce a random avatar using the available features. In top right corner is the exit button. Once selected, a dialog window pop-up will appear (Picture 23), prompting the user to either save the avatar, exit without saving or return to the customiser.



PICTURE 23. Exit dialog window.

In this chapter, I have introduced an UI prototype for a chatbot avatar customiser, showcasing all the essential features. To conclude, it is best that the customiser is kept as text free and with as few elements as possible to avoid overwhelming the user; icons should be sufficient for most of the communication. Although, an option to rename the chatbot could exist as well. Nevertheless, this has been only one possible manifestation of a chatbot avatar customiser as creating such a feature allows for a lot of creativity.

6.5. Limitations

Vittorio Banfi, co-founder and CEO of Botsociety, says altering the personality of a chatbot between users can lead to confusion (Chatbot Design & Conversational UX... 2018). A visual avatar is part of that personality. It is currently unknown how a customiser feature would be received by users whether it would be confusing or not. It is unknown if, for example, it would be better to begin with the same default avatar for every user and then customise it, or if the bot changing depending on the user profile could be the main attraction of the site, or even the extent of the customisation options. I was unable to encounter any live examples of customisers and bot avatars tailored to or by users is still not common. The virtual

agent avatar customisation study by Hanus and Fox (2015) was done in a controlled environment and the avatar in question was controlled by another human. Therefore, it is difficult to make recommendations about the best ways and places to implement a chatbot avatar customiser. However, I believe the user should always stay in control of the experience. Whether they want to change something about the avatar or continue talking with the same avatar across visits, or not engage with the feature at all, should be initiated by the user.

7 DISCUSSION

While a more female-gendered bias in digital assistants and chatbots has been reported globally, a consideration on its own, it is striking how on a domestic level the most popular gendering of the chatbot was to give a gender-neutral avatar a male name. Although neutral avatars were abundant, robots, logos/symbols and mascots cannot be attributed to be gender variant as they are not human, therefore, no diverse representations of identities were found.

Being more inclusive is a choice that chatbot developers and illustrators creating the avatars can make without compromising the brand image; in many of the chatbot examples I gathered there was nothing but a default avatar, thus, only improvements can be made. In essence, more is more. Plenty of opportunities exist to be more creative when it came to avatar designs as well. Using a very literal robot design to optimise legibility can backfire as they quickly become monotonous and forgettable, repeating the same “smiling robot with an antenna” pattern. To reuse the company logo as the chatbot avatar may be an understandable business decision, but the low anthropomorphism and abstraction can be distancing and feel impersonal. This is important to take into consideration as more and more users are looking to receive personalised services (Act-On 2016). More bespoke avatars and mascots to replace the abundance of logos/symbols may be a bold decision, yet increased anthropomorphism may be beneficial in creating more memorable and meaningful connections between the brand and the user, thus increasing brand evaluation and return intentions.

An unexplored and promising innovation for chatbot avatars is to introduce an element of interactivity. We examined how giving the users the option to customise the chatbot avatar in some capacity can be the answer to impersonal and unrelatable avatars while providing more meaningful, personalised services, satisfying intrinsic needs, increase relatability, and being more appealing to rising user groups. Additionally, the interactivity may provide entertainment meanwhile the user is waiting for a live service agent. The author hopes this study can inspire further research into the topic.

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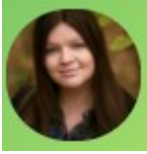






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APPENDICES

Appendix 1. Full table of chatbot benchmarking results

	SITE	BOT NAME	VISIBLE AVATAR?	AVATAR CAT.	COMBINATION
1.	Boknäs.fi	None		Logo	no name neutral av
	Sotka.fi	None		Human	no name female av
2.	Adlibris	None		Robot	no name neutral av
3.	POP Vakuutus	None		Logo	no name neutral av
4.	Turva	Teppo		Robot	male name neutral av
5.	Leadoo (SERVICE PROVIDER)	InpageBot		Logo/symbol	neutral name neutral av
6.	SalesComm (SERVICE PROVIDER)	Salescommbotti		Logo	neutral name neutral av
7.	Masku.com	None		Human	no name female av
8.	pjhoy.fi	None		Logo	no name neutral av
9.	Finsoffat	None	None		no name no av
10.	Kaluste10	None		Human	no name female av

11.	Kruunukaluste	None	None		no name no av
12.	Euronics	None	None		no name no av
13.	Giosg (SERVICE PROVIDER)	None	None		no name no av
14.	Tokmanni	None		Mascot	no name neutral av
15.	K-Rauta	Rautabotti		Robot	neutral name neutral av
16.	Finnchat (SERVICE PROVIDER)	Finnchat van Bot		Mascot	neutral name male av
17.	VPD	None		Human	no name female av
18.	Verkkokauppa.com	Verkkisbotti		Logo	neutral name neutral av
19.	Neste	Nero		Robot	male name neutral av
20.	S-Pankki	Aulis		Mascot	male name neutral av
21.	Nordea	Nova		Mascot	neutral/female name neutral av
22.	OmaSp	None		Mascot	no name neutral av
23.	Aktia	Aktiabot		Logo	neutral name neutral av
24.	POP Pankki	None		Mascot	no name neutral av

25.	Telia	Tellu		Robot	neutral/female name neutral av
26.	Elisa	esa_pekka		Robot	male name neutral av
27.	NOTE! Elisa for companies	Osku		Logo	male name neutral av
28.	Moi mobiili	Petebotti		Mascot	male name neutral av
29.	IKEA Finland	Aatos	None		male name no av
30.	OmaRealia (now re-branded as OmaRetta)	None		Robot	no name neutral av
31.	Gigantti	Gigabotti		Robot	neutral name neutral av
32.	Valotehdas	None		Human	no name female av
33.	Prisma	PrismaBotti Torsti		Logo	male name neutral av
34.	Vallila	Vallila-bot		Logo	neutral name neutral av
35.	Kodin1	None	None		-
36.	Kodinterra	TerraBotti Rauno		Logo	male name neutral av
37.	Matkahuolto	Mauno		Robot	male name neutral av
38.	GetJenny (SERVICE PROVIDER)	Jenny/JennyBot		Logo	female name neutral av
39.	Upsyshopping.com (SERVICE PROVIDER)	Saara			female name female av

40.	Posti	Botti		Robot	neutral name neutral av
41.	KELA	Kela-Kelpo		Robot	neutral name neutral av
42.	Jatski- auto.com	None		Mascot	no name neutral av
43.	Botteja.fi (SERVICE PRO- VIDER)	Boju		Mascot	male name neutral av
44.	Valvira/ Aluehallintovi- rasto	Valle		Logo	male name neutral av
45.	finnkino.fi	Fibotti		Logo	neutral name neutral av