

GROUP 2025

Exploring Large Language Models Through a Neurodivergent Lens: Use, Challenges, Community-Driven Workarounds, and Concerns



Buse Carik



Kaike Ping



Xiaohan Ding



Eugenia Rho



Society + AI & Language Lab (SAIL)

Dept of Computer Science

Virginia Tech

Background

Neurodiversity

Variation in the human brain function and behavioral traits, and therefore the human experience of the world.

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Individuals often face challenges in everyday lives, ranging from employment, education, to social interactions.



Background

Many neurodivergent individuals are increasingly using LLMs to receive support with day-to-day tasks.

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For Some Autistic People, ChatGPT Is a Lifeline

The chatbot can help rehearse communication skills and for some provides a resource to turn to when life is tough.

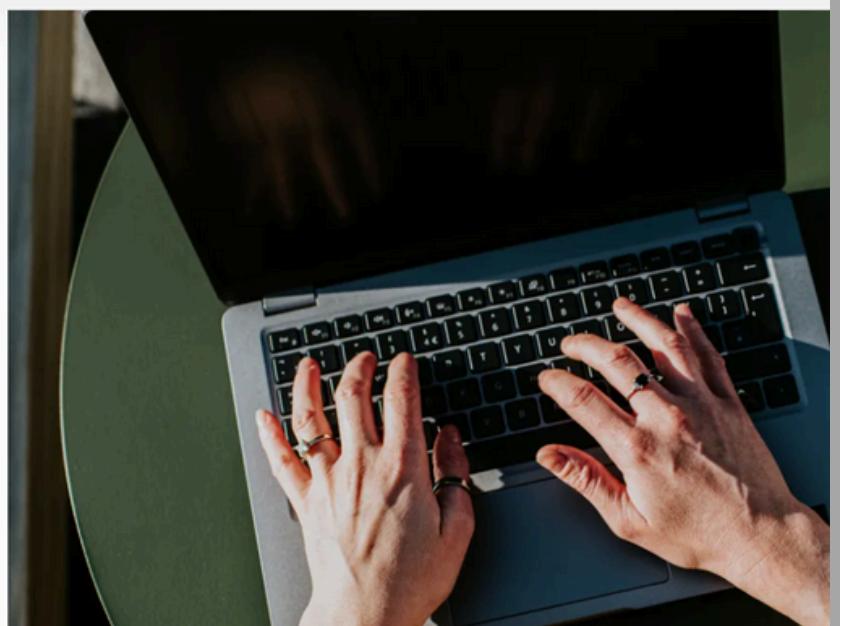


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FEATURES · A.I.

AI can be a game changer for neurodivergent employees

BY CHRIS STOKEL-WALKER November 28, 2023 at 1:51 PM EST



Background

The number LLM-supported tools designed for neurodivergent users is growing.

The screenshot shows the goblin.tools website interface. At the top, there's a navigation bar with a green goblin icon, the text "goblin.tools", and various tool categories: Magic ToDo, Formalizer, Judge, Professor, Consultant, Estimator, Compiler, Chef, a "Patreon" link, and social media icons for GitHub, Android, iOS, and a heart.

The main content area is titled "The Judge" with the subtitle "Am I misreading the tone of this?". It features a large input field labeled "Enter your text here..." with a microphone icon. Below it are two buttons: "Judge" and "Suggest a response". To the right of these buttons is a blue "+" button. A second input field below is labeled "Your text comes across as...".

The image displays two AI tools side-by-side: NeuroGPT and Neurodivergent AI Assistant.

NeuroGPT (Left):
Icon: Brain with colorful swirls.
Name: NeuroGPT 😊
Tagline: Helping neurodiverse people navigate a neurotypical world
Sample messages:

- Can you explain this image? 🖼
- I'm feeling overwhelmed, can you help? 🐛
- How do I manage stress? 😰
- How can I better understand social cues? 🤝

Message NeuroGPT 😊

Neurodivergent AI Assistant (Right):
Icon: Brain with "Neurodivergent" text.
Name: Neurodivergent AI Assistant
Tagline: [redacted] this AI tool is designed for neurodivergent individuals, providing support in education and career development. It helps navigate social-emotional complexities and promotes innovative problem-solving.
Sample messages:

- "Can you help me understand this topic better?"
- "I'm looking for creative solutions for a work project."
- "How should I approach this social situation?"
- "Can you assist me in organizing my study schedule?"

Message Neurodivergent AI Assistant

Background

Research Questions

RQ1. How are neurodivergent individuals using LLMs?

RQ2. When interacting with LLMs, what:

- (A) challenges do neurodivergent individuals encounter?
- (B) needs and preferences do neurodivergent individuals have?
- (C) hacks and resources do neurodivergent individuals share to navigate these challenges?
- (D) concerns do neurodivergent individuals have?

Method

Examined **61 subreddits** where people with various neurodivergent experiences and conditions exchange information.

Autism

r/autism

r/AskAutism

Autism and parenting

r/Autism_Parenting

Autism and Relationships

r/autismafterdark

Autism and art

r/AutismTranslated

r/AutisticCreatives

Autism + Women

r/AutismInWomen

Asperger

/r/aspergers

/r/aspiepositivity

/r/aspergirls

ADHD

r/ADHD

r/ADHDers

r/adhd_anxiety

ADHD in women

r/adhdwomen

r/TwoXADHD

Social Anxiety

r/socialanxiety

Dyslexia

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Neurodiversity

r/neurodiversity

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/r/AutisticWithADHD



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Resulted in **55,831** posts, comments, and replies.

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r/Dyslexia

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/r/AutisticWithADHD



Qualitative Analysis

Goal: To explore how neurodivergent individuals use LLMs, focusing on their challenges, needs, workarounds, and concerns.

- Conducted a thematic analysis of over **1,600** posts, comments, and replies.
- Involved **three coders** in an iterative coding process.
- Finalized key patterns through collaborative discussion and refinement.



Findings

RQ1. How are neurodivergent individuals using LLMs?

Identified **five primary thematic areas** where neurodivergent individuals use LLMs, with **twenty specific use cases** across these categories:

- Interpersonal Communication
- Emotional Well-Being
- Mental Health Support
- Learning
- Professional Development & Productivity

Findings

Use Cases

Interpersonal Communication

Neurotypical (NT)-Neurodivergent (ND) translator

“I am not sure if others feel the same, but I have discovered an interesting use case of ChatGPT. It serves as my “Human to Autist” translator.” (Autism)



Use Cases

Interpersonal Communication

Interpreting social situations



“It has always been difficult for me to understand the reasons behind people’s behavior, so I am asking ChatGPT to explain to me why some people do things that I never would do and even makes me understand their reasons for doing it.” (Autism)

Use Cases

Interpersonal Communication

Conveying the right tone and intention

“During heavy discussions with my friends, I sometimes use ChatGPT to refine my replies to ensure they are clear, to the point, and not likely to be misunderstood. It helped me avoid making a fool of myself many times.” (ADHD)

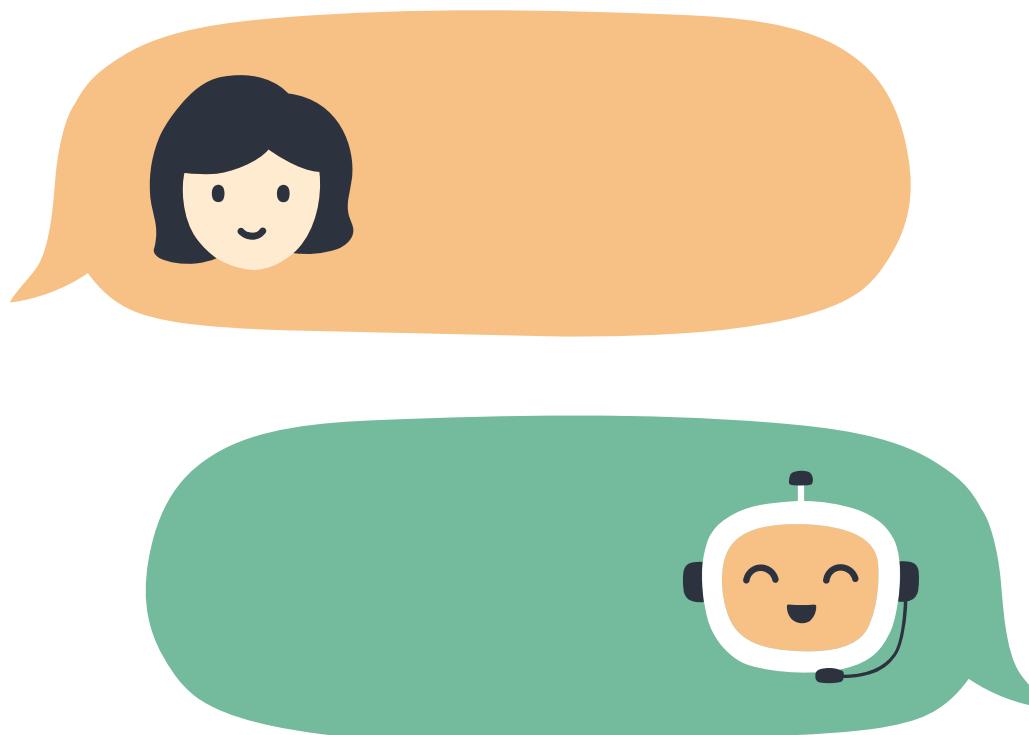


Use Cases

Interpersonal Communication

Practicing challenging conversations

“Preparing for social interactions can be difficult. I create hypothetical scenarios that might cause anxiety for me. I generated conversation starters and appropriate responses with ChatGPT for these scenarios. While I don’t use the responses as is, they serve as a helpful guide.” (Autism)



Findings

Use Cases

Emotional Well-Being

Emotion regulation



“I am using it so much—more than once a day—to check in, help regulate my emotions.” (Autism)

Findings

Use Cases

Emotional Well-Being

Talking Buddy

“As someone who is extremely shy talking to anyone, ChatGPT has been a blessing! I have someone I can voice my problems to and it patiently listens and cares.” (Social Anxiety)

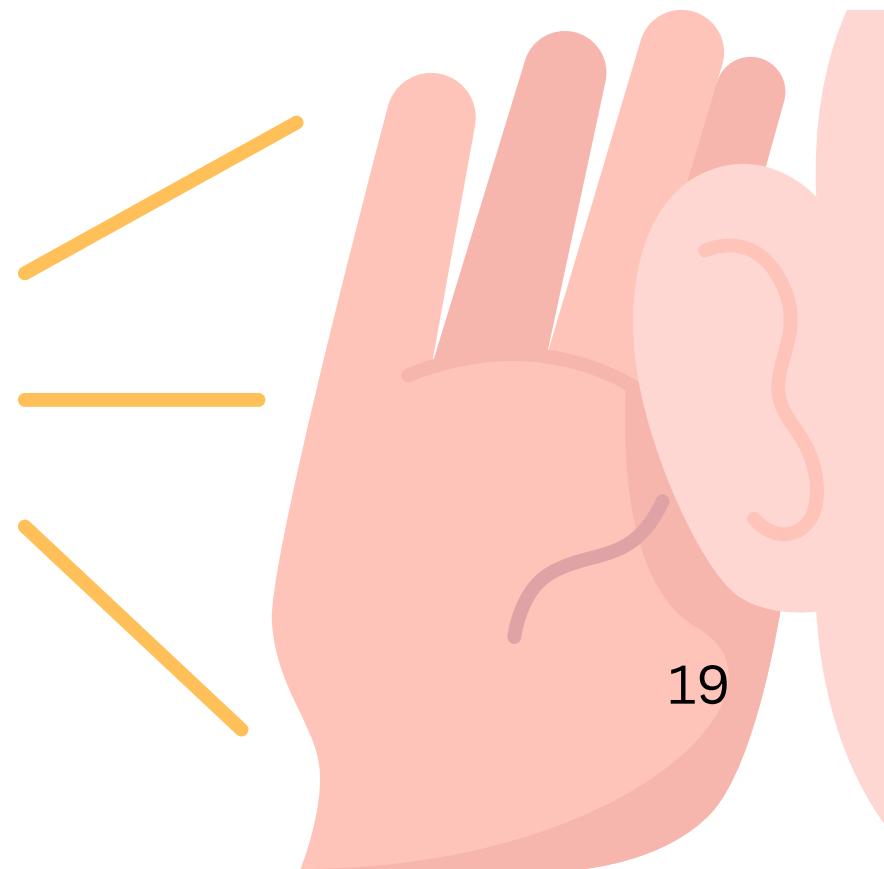


Use Cases

Emotional Well-Being

Non-judgmental listener

“I chat with AI because at least it offers the ‘ear’ of a nonjudgmental listener that I have not found in any other person.” (Social Anxiety)



Use Cases

Mental Health Support

Complement to professional therapist

“When I felt overwhelmed with anxiety, I turned to ChatGPT as my therapist wasn’t available. It helped me recall CBT techniques and work through a short exercise.” (ADHD)



Findings

Use Cases

Mental Health Support

Personal mental health Wiki

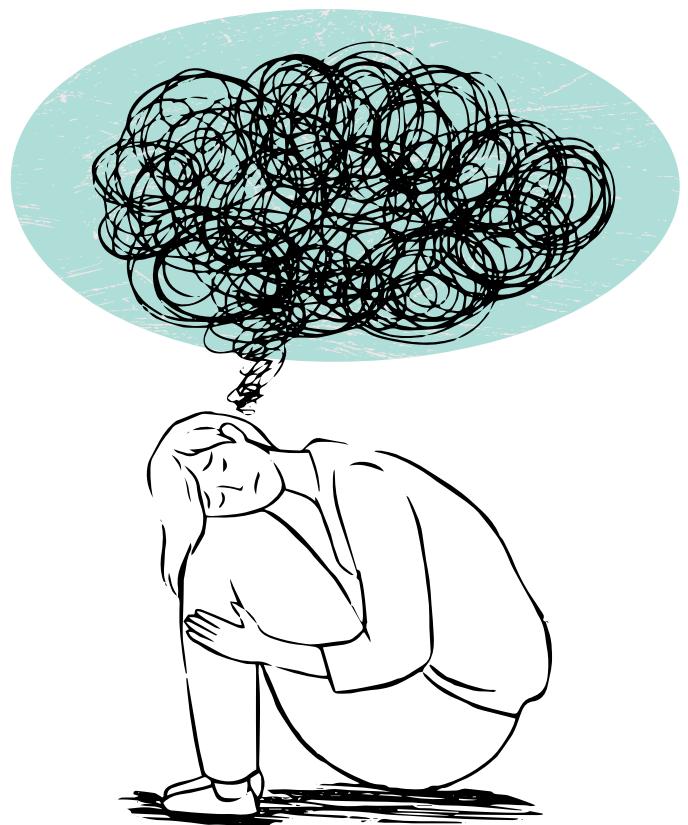
“I recommend giving it a try. I found many helpful resources for social anxiety and it really brought me some comfort.” (Social Anxiety)



Use Cases

Mental Health Support

Coping with negative self-talk



“Just tell it what you struggle with, ask it to help reason with you, or ask it to give you examples that are more positive than what you’re currently doing and then ask how to get there from where you are ...” (Social Anxiety)

Findings

Personal tutor



Use Cases

Learning

“I felt too embarrassed to continually ask questions in class, but with ChatGPT acting as a tutor, I can ask countless questions without any worry or frustration.” (Social Anxiety)

Findings

Accessibility support

“I feel much more independent as ChatGPT assists with grammar and spelling, which I struggle with.” (Dyslexia)

Use Cases

Learning



Findings

Use Cases

Learning

Creativity and brainstorming

“ChatGPT has been amazing for developing ideas for writing character profiles and backstories. I am optimistic about making more improvements on some original content that I have been thinking about for years” (ADHD)



Use Cases

Professional Development and Productivity

Task prioritization



“Complex tasks used to overwhelm me, but breaking them down into smaller steps was a game changer, even though time-consuming to do. Discovering this AI has significantly eased my executive dysfunction by helping with this process.” (ADHD)

Use Cases

Professional Development and Productivity

Synthesizing information



“Experiencing ADHD myself, I understand the difficulties of studying for exams. That is why I use AI to create practice tests from lecture slides, notes, and textbooks. With ADHD, it is hard to be organized for studying but with these tests, I can save time and effort in preparing study materials.” (ADHD)

Findings

RQ2. When interacting with LLMs:

(A) Challenges

- Prompting frustrations
- NT biases in LLM responses
- Lack of personal voice
- Text-centric interactions

(C) Hacks and Resources

- Prompting hacks
- LLM applications for ND users
- LLM applications built by ND users

(B) Needs and Wants

- Multimodal interactions
- ND-friendly prompts
- LLM tools to support daily tasks

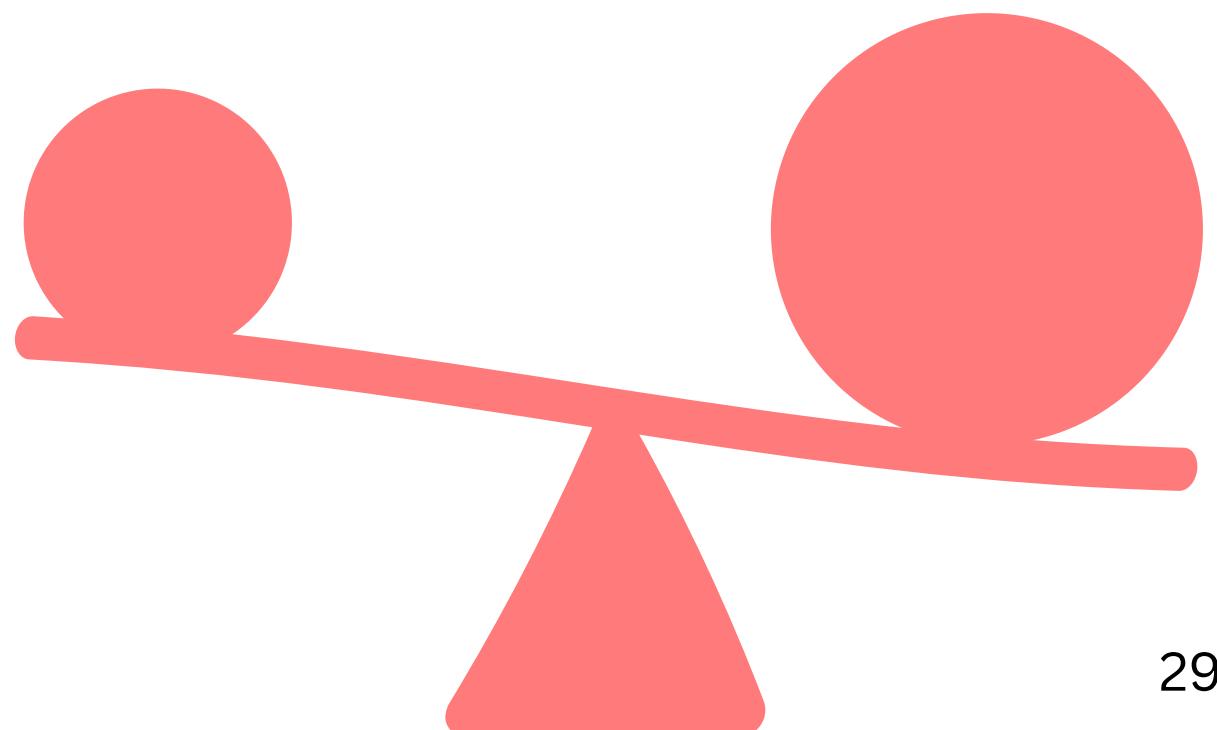
(D) Concerns

- False information
- Replacing human connections
- Overreliance

Challenges

Neurotypical Biases

*“ChatGPT’s outputs are very **neurotypical**, as expected, so they **do not clearly capture my thought process**, leading me through many rounds of prompting and refining responses.” (ADHD)*



Findings

Needs and Wants Multimodal Interactions

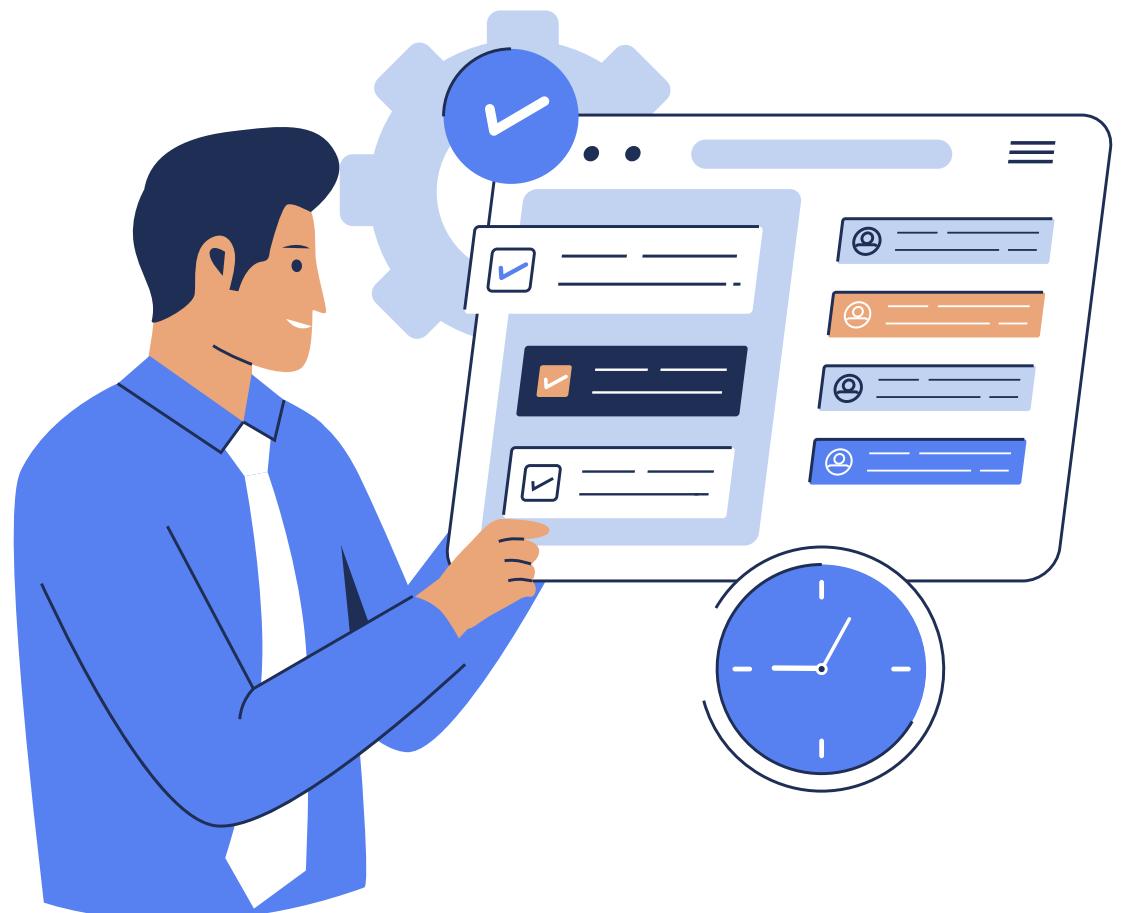
*“I have not come across a **visual prompt** yet, but it would be fascinating to try one out.”* (Autism)



Needs and Wants

ND-Friendly Prompts

“I am curious if anyone has prompts for ChatGPT that can help with organization/ planning/ prioritizing tasks specifically?” (ADHD)



Needs and Wants

LLM Tools to Support Daily Tasks

“Does anyone knows of an app that can help translate what people mean when their sentences are unclear.” (Autism)



Findings

Hacks and Resources

Redditors shared prompts and applications for ND users.

“Check out this ChatGPT prompt for creating a personalized ADHD coach: ‘My name is... You are my personal ADHD coach. Please ask me to list today’s tasks...” (ADHD)

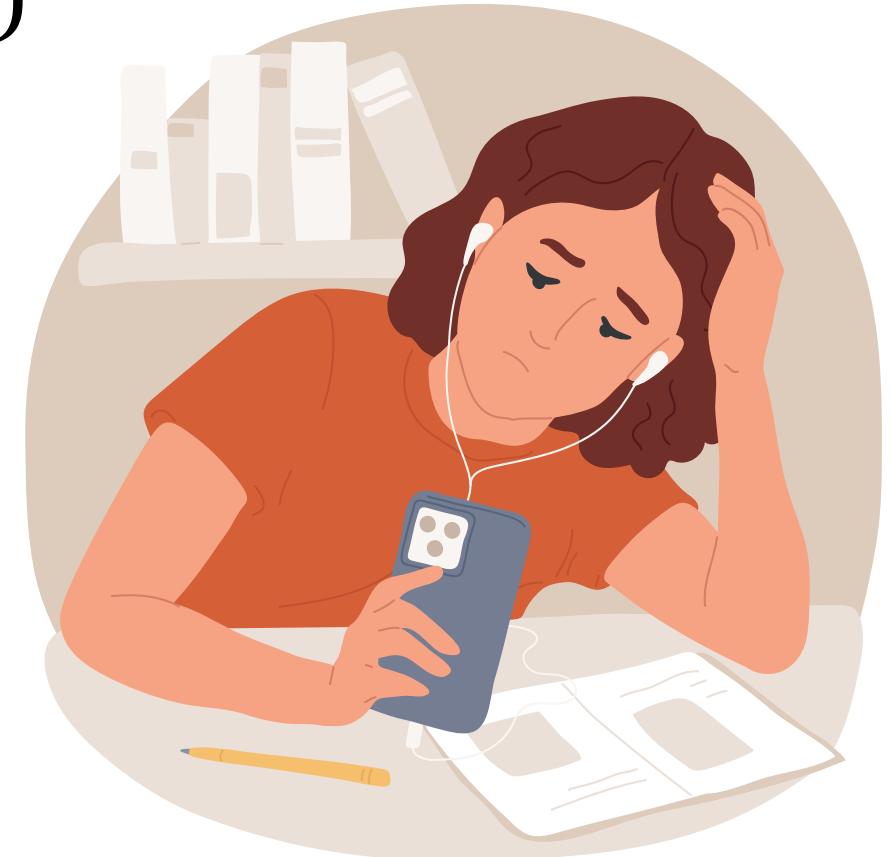
“I was dealing with anxiety and had no one to talk to, so, I developed an AI chatbot that uses a method known as theory of mind to understand your emotions and needs and respond to you appropriately.” (Social Anxiety)

Findings

Concerns

Replacing Human Connections

“AI chatbots are not good for us. They mimic human interaction and might lead us to avoid real human interaction, resulting in increased isolation.” (Autism)



Findings

Concerns

Overreliance

“I appreciate that people can use AI as a tool to overcome challenges, but I worry that relying on these tools could lead to further atrophy of already weak skills.” (Autism)



Incorporating ND Perspective into LLM Design

Neurotypical biases in LLM lead to frustration and failing to understand or respond to the communication preferences of ND users.



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In response, ND users adapt “Do-It-Yourself” approaches and share their strategies in the online communities.



Incorporating ND Perspective into LLM Design

Neurotypical biases in LLM lead to frustration and failing to understand or respond to the communication preferences of ND users.

In response, ND users adapt “Do-It-Yourself” approaches and share their strategies in the online communities.

Co-design with ND users to understand what constitutes ND-friendly LLMs.

Bridging ND-NT Communication

The burden bridging the communication gap heavily relies on neurodivergent individuals.



Discussions

Bridging ND-NT Communication

LLM as a “NT-to-ND Translator”

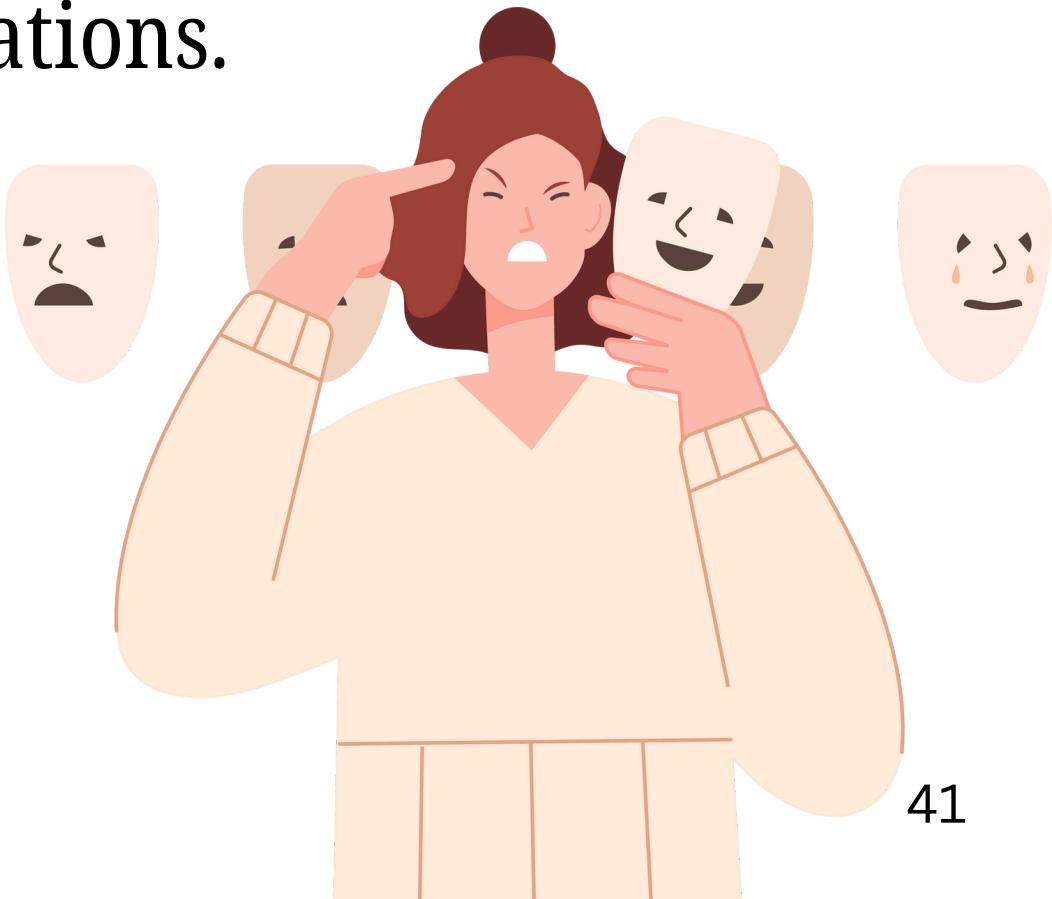
Daily use to refine tone, rehearse challenging interactions, and parse lengthy or confusing conversations.

Bridging ND-NT Communication

LLM as a “NT-to-ND Translator”

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Risk to reinforce users to adhere to neurotypical norms and expectations.



Bridging ND-NT Communication

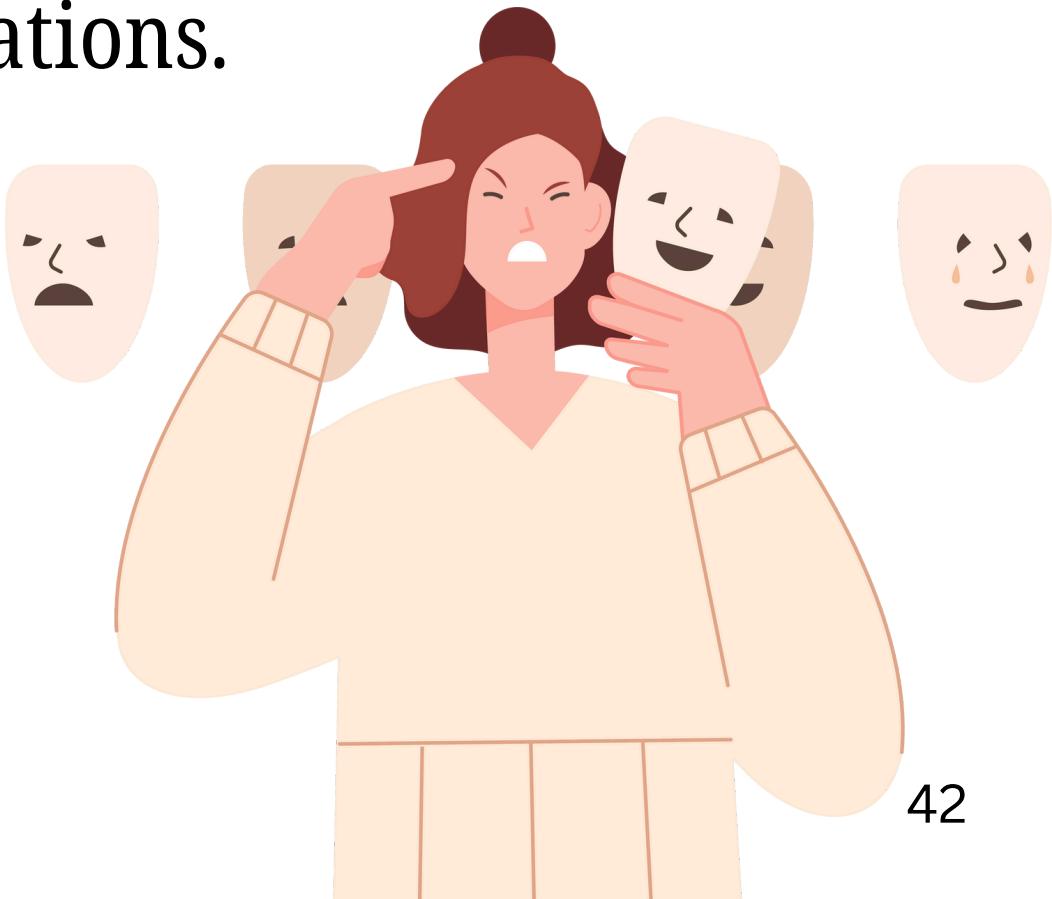
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Support authentic communication



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