

AI and Woebot Health

The term “artificial intelligence (AI),” coined in 1955, has become a household name in recent years. AI is a field of study within computer science aimed at developing technology that can accomplish particular tasks that have historically been the domain of humans. Traditionally, AI research has been geared towards simulating reasoning, knowledge representation, learning, natural language processing (NLP), computer vision, speech recognition, and robotics. Since 2012, progress in AI has been dominated by the sub-field of machine learning – specifically, “deep learning” – thanks to the advances in computing power, the amount of data now available in the era of the internet and smart devices, and methods based on artificial neural networks. AI algorithms are used to build automated systems that make predictions or classifications based on input data.

How does Woebot Health use AI?

Woebot’s conversations are written by conversational writers with training in evidence-based approaches like Cognitive Behavioral Therapy, Interpersonal Psychotherapy, and Dialectical Behavioral Therapy, along with collaboration from our Clinical experts.

At Woebot Health, we use NLP to understand free text inputs from our users, and classify the text to direct them into the correct conversation flow. Woebot is built with targeted applications of NLP that facilitate this understanding and provide personalized recommendations of tools and content in order to maximize the potency of using the app.

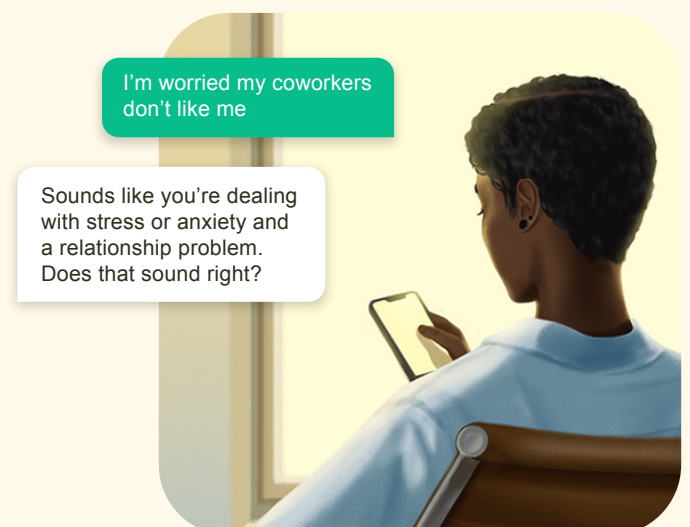
[Data has shown](#) that Woebot is able to form a bond with users, similar to one that a patient often shares with their therapist¹. NLP allows us to personalize the conversation Woebot is having with each user, offering the right support tool in their moment of need.

What can AI help with?

AI has a wide array of applications across multiple disciplines of industry and science. For example, AI heavily powers modern search engines (e.g. Google) and recommendation systems (e.g. Spotify or Netflix recommendations), and is an instrumental part of popular smart assistants and home automation. It is also a major driver of next-generation capabilities such as autonomous driving.

One particularly important focus of AI applications is NLP, which is the subfield focused on giving computers the ability to understand and use human language.

Within the domain of digital therapeutics, NLP can play a major role in understanding user inputs to more successfully guide the flow of conversation, as well as allowing for inference and reasoning about a user’s situation, all of which can lead to much more personalized responses and experiences.



Woebot primarily takes advantage of NLP models for a specific task — classifying text into one or many categories. Here are five examples of classification Woebot uses in conversations:

Problem

Woebot seeks to understand and classify a problem statement that the user is prompted for in our main “get help with a problem” conversation flow. We have a list of problem categories that we recognize. Among many others, some examples include: relationships, sleep problems, worry about finances, symptoms of anxiety or depression.

Mood

Woebot uses a mood spectrum to determine the user’s mood, when prompted.

Activity

Woebot aims to interpret what the user is doing, when prompted at the beginning of a conversation.

Interrupts

Woebot needs to recognize when the user is not following the prompts delivered, so that it can get the conversation back on track.

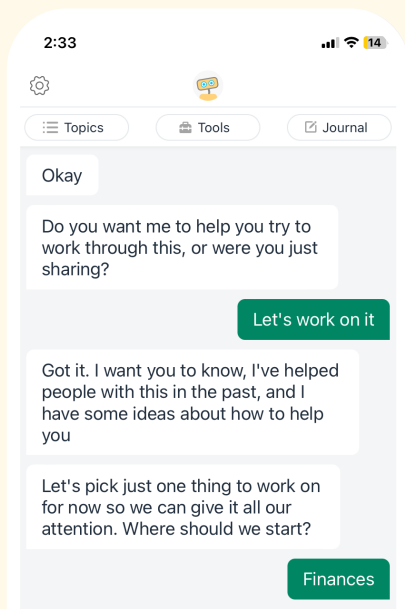
Language detection protocol

Woebot is not a crisis service. However, Woebot is trained to detect language from the user that may be concerning. Upon detection, Woebot will ask if the user would like to be provided with a list of resources that includes emergency contact phone numbers and suicide crisis hotline contact information. Woebot then offers tools to assist with addressing upsetting emotions and thoughts in the moment.

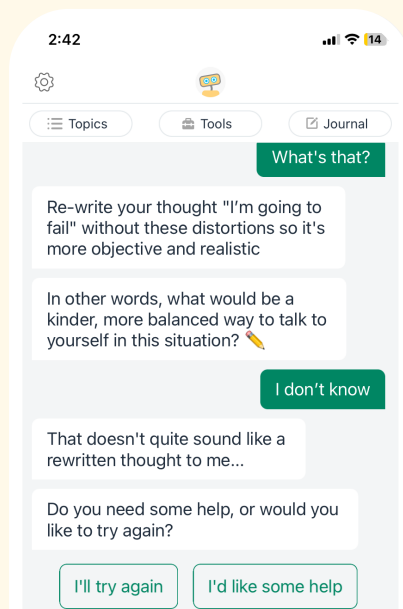
In order for Woebot Health to responsibly deploy AI in any of our products, we have to think deeply about our principles of safety, rigor, and AI transparency. Find out how we do that [here](#).

Woebot does not provide crisis counseling and is not a suicide prevention or crisis intervention service. Concerning language is not reviewed or assessed internally at Woebot Health in real-time for intervention and such data is not used for managing potential crises or any acute or non-acute patient safety issue.

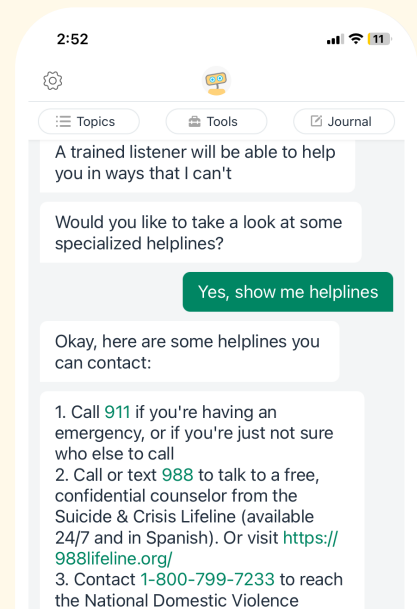
Problem



Interrupts



Language detection protocol



Does Woebot use generative AI?

Woebot is fundamentally rules-based. AI does not generate what is shown to users. All of Woebot's conversations are written by conversational writers in collaboration with clinical experts. The conversational structure looks like a highly complex decision tree with judicious use of NLP classifiers derived from labeled data sets and monitored for overall accuracy, precision, and recall. This basic "shape" of the conversation is modeled on how clinicians approach problems, thus they are "expert systems" that are specifically designed to replicate how clinicians move through decisions in the course of an interaction².

Generative AI is designed to generate text, images, or other media, via generative models; some common examples of these models are ChatGPT and DALL-E. Trained on massive amounts of raw data, these models are designed to provide the statistically most probable output given a specific input.

AI innovation represents a new chapter in human-computer interaction brimming with potential. Introducing generative models into our products requires a very thoughtful approach to building, testing, and regulating this type of technology. [Read here](#) to learn more about how we believe generative AI can be made ready for healthcare.

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Privacy and security

Safety isn't just a priority at Woebot Health, it's the foundation of our entire business. We can only help people if they trust us. So we take safety, privacy, and security very seriously.

Our safety focus is on the people who use our solutions, and it's evident in all we do, from the way we develop and test products to the way we strive to protect user data.

Our promises to you:

Conversations with Woebot are developed by conversational experts with clinical oversight

Woebot is trained to detect concerning language during a conversation

We safeguard all user data as Protected Health Information (PHI) and adhere to all HIPAA requirements

We do not share or sell data to advertising companies or for advertising purposes

Our Safety Assessment Committee represents a cross section of clinical, regulatory and medical experts and ensures robust safety surveillance of each solution during clinical development

Our clinical team stays at the forefront of science and transparency

Our [core beliefs](#) guide our practices, and our [Privacy Policy](#) provides further insights into how we operate.