



eBOOK

# **Conversational AI in Healthcare:** Improving Customer Experience and Optimizing Cost of Care



# Introduction

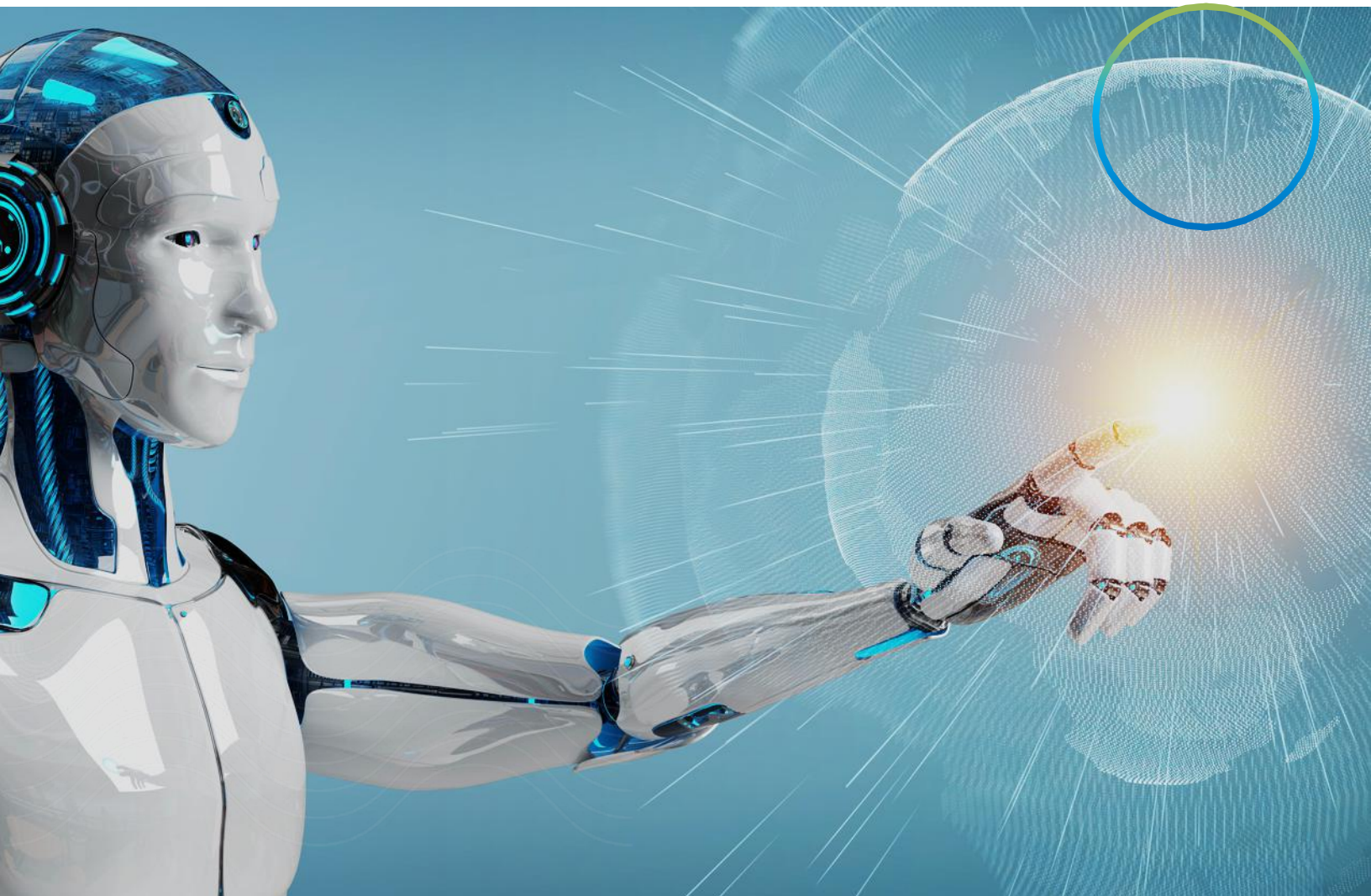
Artificial intelligence (AI) is on route to some amazing breakthroughs in healthcare — ushering a smarter age of healthcare. It's on path toward a new system that predicts disease and delivers personalised health and wellness services to entire populations. The inclusion of AI would help achieve a more accurate diagnosis at much higher efficiency.

Between 2018 and 2019, organizations that have deployed artificial intelligence (AI) grew from 4% to 14%, said Gartner last year. After the success of Amazon Alexa, Google Assistant and others,

Conversational AI remains a high point of interest in multiple industries as organizations are getting more consumer centric. The benefits and improved user experience is not a subject of debate. Modern medical practitioners are leaning more towards engaging AI on a daily basis to accomplish more in the same 24 hours.

Hospitals and healthcare facilities are identifying holistic ways of accelerating,

- Patient-oriented AI
- Clinician-oriented AI
- Administrative - operational-oriented AI



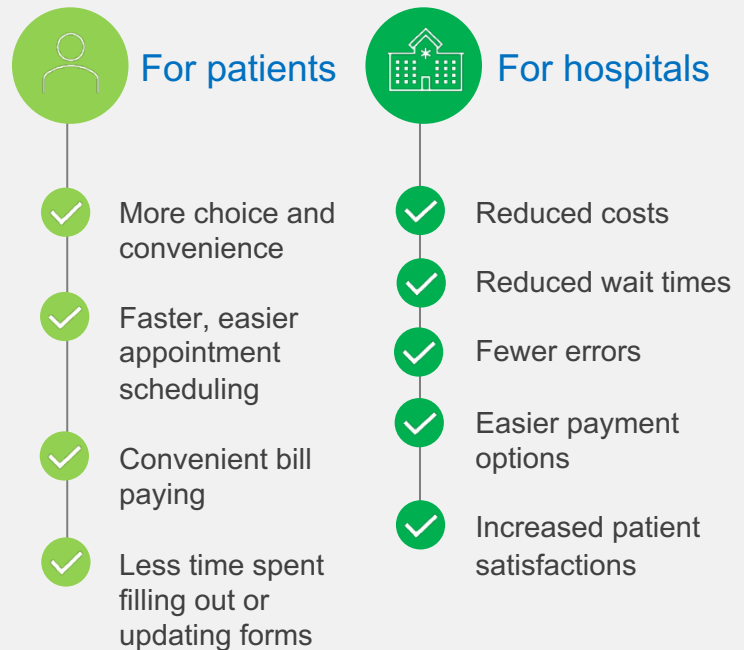


Straight off the bat, application of Conv AI saves time and effort in multiple ways,

1. Patient Self-service
2. Symptom checking and medical information dissemination
3. Escalation of emergency cases Appointment booking
4. Patient engagement chatbot
5. Patient information retrieval and follow up scheduling

And to these use cases when we add elements like a knowledge base, empathy and engagement, its easy to see how it can make both patient's and the clinician's life easy. With the right implementation you can achieve greater patient experience and at the same time huge cost savings in hospital administration.

## Patient self-service benefits



# Current Trends & Insights

- 1. Evolution of Chatbots to Conversational AI bots:** We are already seeing a definitive transformation of chatbots into Conversational AI bots. The rudimentary rule-based chatbot no longer delights customers. An AI conversant bot, unlike a chatbot, is a cognitive bot that can decipher complex scenarios and understand human sentiments. Its NLP capabilities empower it for a personalized conversation with customers, which involves understanding human sentiments and acting accordingly.
- 2. Digital Assistants for Healthcare delivery organizations (HDOs):** By 2021, Gartner predicts that 75% of healthcare delivery organizations (HDOs) will have invested in an AI capability that is explicitly improving either operational performance or clinical outcomes. The more activity there is around using AI in healthcare, the greater the need for HDOs to establish AI governance. "AI governance is necessary, especially for clinical applications of the technology," says Laura Craft, VP Analyst at Gartner. "However, because new AI techniques are largely new territory for most HDOs, there is a lack of common rules, processes and guidelines for eager entrepreneurs to follow as they design their pilots."



3. **Personalization:** For example, they can understand and remember conversation context, past dialogs, and user preferences etc., and 'wow' the users with their suaveness. They can also carry the context across multiple conversations to understand the past and future requirements. With their humanesque conversations they can understand your sentiments and moods, and respond accordingly. These bots can be widely leveraged to cross-sell and up-sell products/services to users.
4. **No UI is the new UI:** With the emergence of Conversational AI bots, you no longer have to look into multiple pages and tabs of a web/mobile app for any information or task execution. You can simply query the bot, which does all the work. Gartner predicts that by 2022 , an Enterprise customers will manage 65% of the relationship with a business without interacting with humans and hence adding an AI driven Innovative, Hands-free Hyper personalized experience is a must for business organizations.
5. **Multilingualism:** One bot to engage across geographies. Multilingual nots are able to engage users of multiple countries and languages with same level of efficiency.

## The challenges at hand

- Lack of Knowledge on implementation.
- The transformation requires C level involvements
- Patient Privacy/Security
- Integration with EMR and other systems
- High Impact of Nature of scenarios – Clinical vs administrative
- Difference in Symptom descriptions
- Limited access to training data
- Infrastructure management and what comes with it





# The impact of Conversational AI

While conversational AI has immense potential to level up Healthcare practice, it can only be as effective as its setup. In order to gain the full potential of Conversational AI its important to make sure it satisfies all needs of the healthcare enterprise.



In the wake of Covid-19 and the magnified visibility into the overall shortage of doctors, nurses and other healthcare professionals, Telemedicine has been accelerated and providers are already leading the way. Over a year ago and pre-Covid, the World Health Organization (WHO) was estimating a shortage of 4.3 million health professionals worldwide. That makes for a crippling physician shortage today and the pressure is on providers and hospitals to accelerate their adoption of conversational AI to help reduce the doctor-patient ratios.

Conversational AI is enabling providers, specifically hospitals, to care for patients in their homes before they have to visit. This is driving a higher level of comfort and safety for older patients, especially after the new optics of Covid pandemic. It's also significantly raising the bar of service quality being received by helping to address the skewed doctor-patient ratios that currently exist. Conversational AI focuses more on prevention by minimizing the chances of a patient needing to come into the hospital or doctor's office.

Conversational AI can remind patients of the medications they need to take and ensure that they follow the doctor's instructions. It can also double up as a healthcare assistant to answer queries related to drugs and diet.

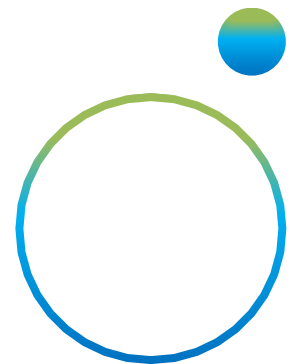


# How it impacts patient experience.



We still have a long way to go to filling all the gaps needed for patient care. Compassion, empathy, humanity and hands on care can only be done today by humans. Conversational AI bots will need to ensure they can make patients feel cared for and this will be a dynamically evolving solution depending on the age and characteristics of the patient.

AI health coach assistants can help Diabetics with their regular medication, and dosage information to maintain their insulin and other hormonal imbalances in check and their weight loss management can be comparable to in-person lifestyle interventions. It can also encourage behaviour changes and have high user acceptability.



Studies have concluded research into AI and its application in telemedicine should be further pursued, with clinical trials investigating effects on weight, health behaviors, and user engagement and acceptability.

Medication adherence is another aspect that is of utmost importance for many chronic conditions, regardless of the disease type. Engaging patients in self-tracking their medication is a big challenge that AI chatbots can easily take up using reminders to promote wellness throughout all stages of life and improve adherence. Chatbots have proven effectiveness in triggering users to engage in certain activity, such as medication adherence.



# Reducing Physicians' Burdens

Conversational AI in healthcare works wonders for clinicians and doctors too, especially when working with patients in remote locations. When a patient's health is critical, personalized assessment is urgently needed. In such a case, conversational AI can help. Telemedicine chatbots, which can be used by healthcare providers to enquire symptoms, suggest treatments, and provide clinical services remotely. These chatbots can effectively convey the instructions and procedures to follow by patient's relatives until help arrives.

NLP-enabled healthcare chatbots can help doctors to retrieve critical information quickly without having to meddle with complex CRM solutions. It helps increase the doctors' effectiveness in administering the medications. Another important aspect of AI chatbots is that they can save every patient's medical history in the database. This information can help doctors prescribe the right treatment at the right time and foresee problems before they occur.

Some people are allergic to certain types of drugs, which when administered lead to far serious repercussions than the disease itself. But that won't happen now. The conversational AI chatbots can follow up and track how the patients feel after they are discharged from the hospitals. They can eliminate the need for physical check-ups after patients have fully recovered, thus freeing doctors' time for more patients and more research.

Of all the things, conversational AI can assist the healthcare industry in reducing human-induced errors as it affects the trust people have on the industry.





# Reduce Overall costs and cost of care

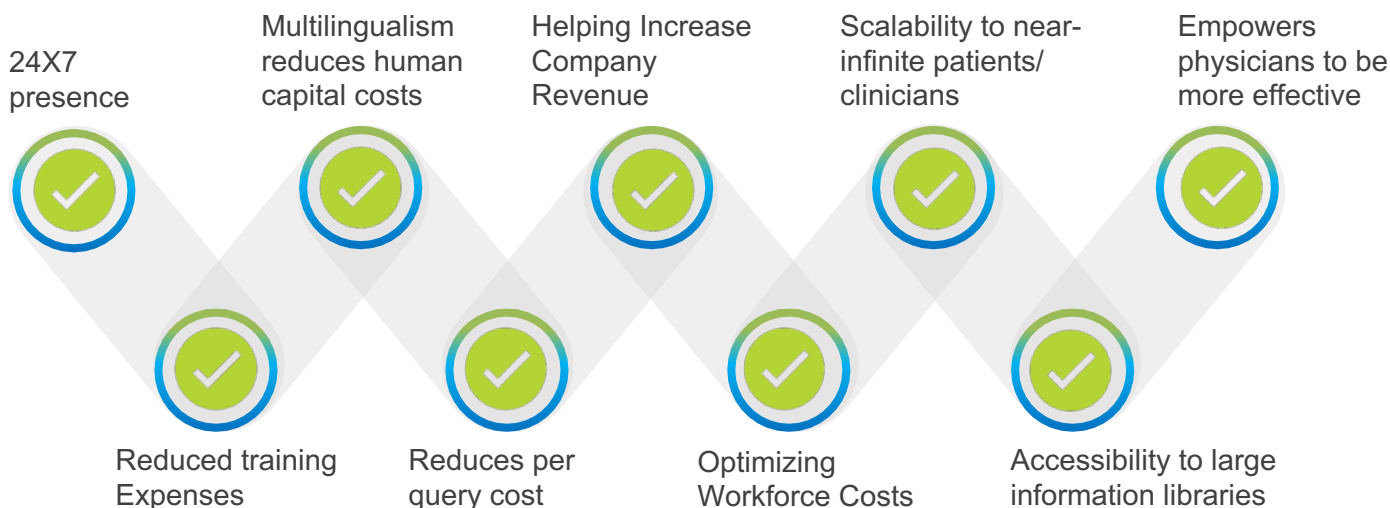
Studies suggest businesses can reduce customer service costs by up to 30% by implementing conversational solutions like virtual agents and chatbots.

Freeing up human agents at contact centers to address complex inquiries allows representatives to take their time and provide better service. It also reduces the number of agents required on the call center floor as well as employee attrition due to the repetitive nature of routine calls. All of these lead to significant cost savings.

Your staffing can be left to handle more complex problems while support can still be effective 24X7X365.

“According to the Human Resource Institute, it costs companies \$10-\$15k to replace one frontline employee.”

## Cost Savings:





# How to consider implementation

There's no dearth for information out there about chatbots and artificial intelligence. However, without a clear implementation strategy, the solution can end up being less than satisfactory and even become underutilized creating considerable ambiguity about the success and time to scale.

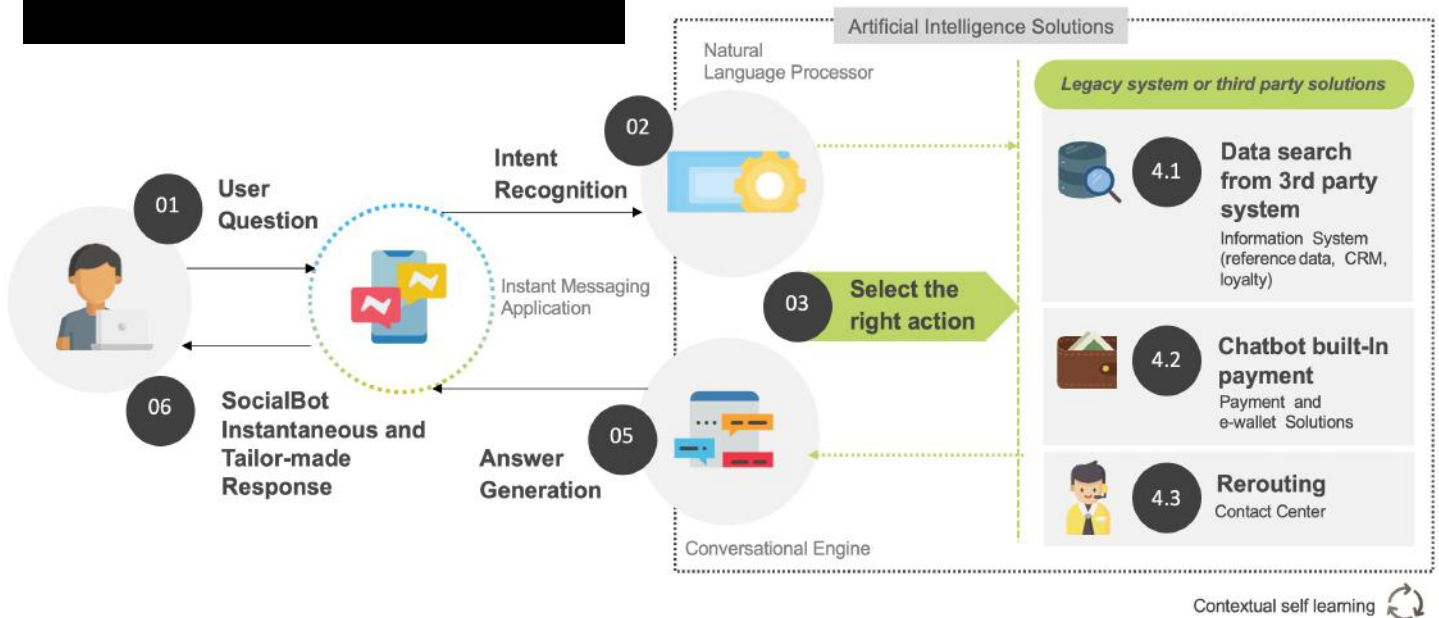
- **Discovery** - Collect information about your current volume. The monthly support volume, what percentage is repetitive, expected spikes and dips in enquiries, how much cost does it save, etc.
- Establish the value to customer and the organization.
- Understanding current tech stack of the organization and what technology or platform should you look for in the chatbot.
- **Implementation and Integration** - Secure C level involvement, funding and monitoring resources for ongoing maintenance. Chatbots require ongoing operational assets that can periodically evaluate the performance of the model and add domain-specific expertise.
- Devote resources to model management on an ongoing basis and ensure you have access to all of the required data management skills. Or you could find partners that you can outsource it to and engage stress-free.
- **Build or Buy Solutions** - Reduce the risk of failure by sourcing chatbots from external providers. You should only attempt to create your own chatbots if you have the right data science and machine learning assets. If not, look to third-party providers that specialize in data preparation or providers that build and host chatbots.
- Understand the infra structure requirements and tech stack
- Create clear use cases and the interaction model.
- **Refinement** - EQ is as important as IQ. Choose chatbots carefully that can be trained for empathy and compassion. Knowledgeable, Engaging and Empathetic
- Screen vendors carefully, avoid providers that cater to single use cases and ensure Enterprise-grade Chatbot solutions are delivered with well defined chatbot guidelines



# Conversational AI general workflow

Implementation of AI chatbots can be on premise or on cloud. Almost all new setups are happening on cloud for easy scaling. With Speech recognition, NLP, Sentiment Analysis and few more abilities under the sleeve, AI chatbots can both learn and provide tailored responses instantly.

*KANINI's Conversational AI Platform can be deployed On-Premise or over Cloud (AWS or Azure).*





# Data Privacy and Security

Data Security and Privacy is one of the most important factors to be considered in any technology adoption, irrespective of the Industry. In healthcare this is even more critical with the Personal Health Identifiable (PHI) information can have high impact. While implementing conversational AI we should first focus on meeting all the regulatory compliances like HIPPA and GDPR to ensure PHI is protected.

User-Chatbots communication is protected by not storing any User data in the Conversational AI platform, all the information should reside on the transactional systems of the customers whether it is hosted on premise, on Cloud or in a Hybrid Model.



Its important to develop or procure bots with built-in security features. The bot platform must provide a secure environment for incoming data, storage, and outgoing data, with considerations to the following security measures:

Multi-layered authentication

Compliant with security regulations

Enterprise grade encryption and redaction of content

Audit logging

Secure connectivity (cloud or on-prem)

Archiving & Exporting

# Conversational AI for Mental healthcare

Clinicians engage in conversations with patients to establish a patient-therapist, make diagnoses, and provide treatment. Conversational AI appears unlikely to achieve enough technical sophistication to replace human therapists anytime soon. However, it does not need to pass the Turing Test to have a significant impact on mental health care

We have already seen great strides here in children’s care with the physical robot teddy bears and toys that are specifically trained in emotional care and compassion rather than the traditional focus of repetitive automation.

According to [US national library of medicine](#), having a clear care delivery approach is key. AI and chatbot implementations, are already enhancing the quality and clinician patient relationship. As Telemedicine take stronger roots, we’ll also have more data on Patient self-disclosure & sharing patterns.



CARE DELIVERY APPROACH	DIMENSIONS OF IMPACT			
	Access to care	Quality	Clinician-patient relationship	Patient self-disclosure and sharing
<b>Humans only</b>	Unchanged	Established	No disruption	Unchanged
<b>Human delivered, AI informed</b>	Unchanged	Potentially improved	Potentially disrupted	Unknown

<sup>a</sup>By “disrupt” we do not mean to signal that the result will be necessarily good or bad.

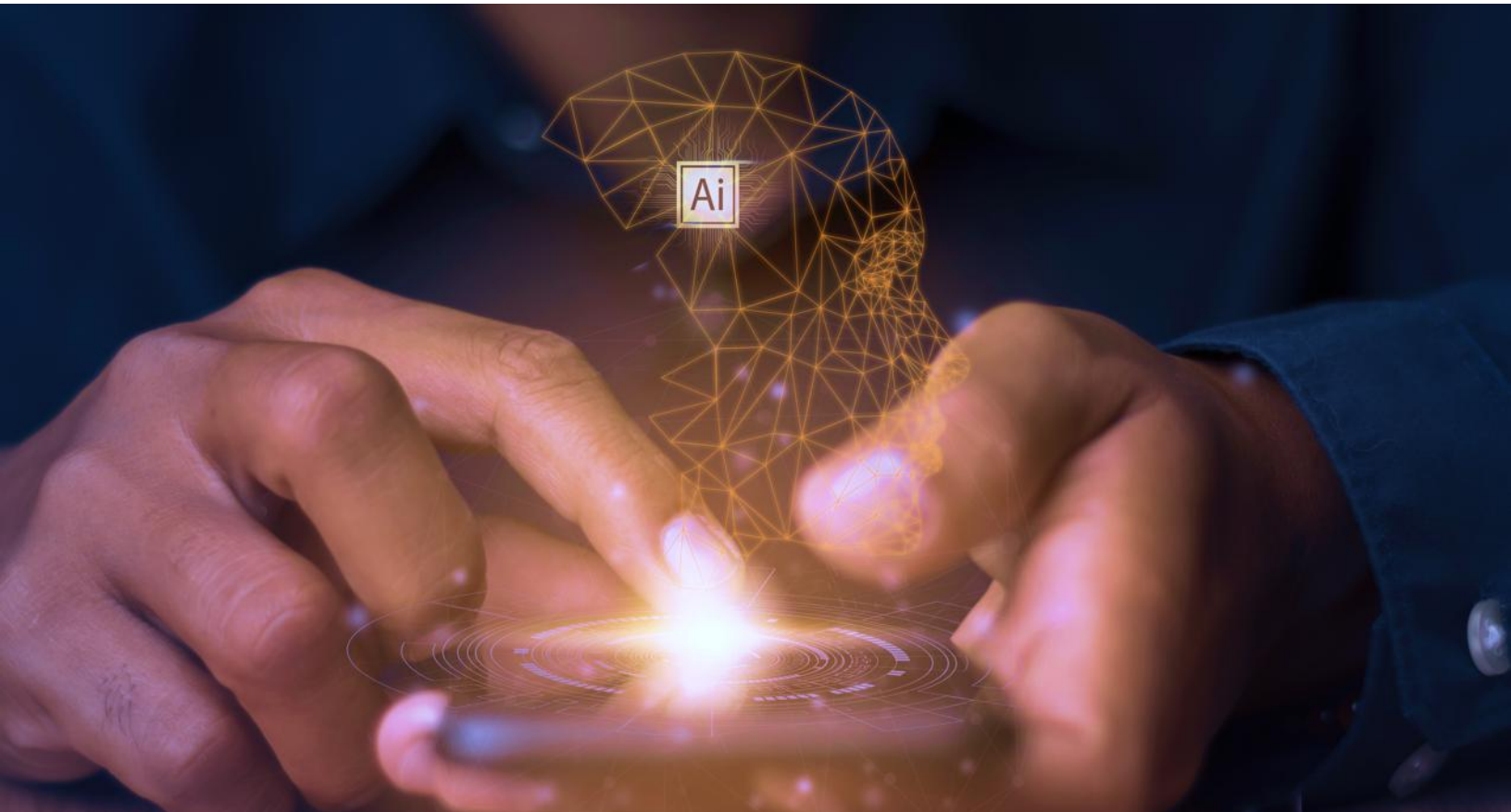


# Conclusion

Conversational AI is currently in a rapidly evolving market. The need for it is only rising with more virtual care in the post COVID world, Ai enabled counselling, Patient support and much more use cases at its heel.

Amid the crippling crisis of physician's shortage today in healthcare, conversational AI has emerged as a new avenue for sustainable change. From delivering timely care to easing the workload for medical professionals, AI is proving highly impactful to transform the industry.

AI chatbots are much more powerful with HIPAA compliance and so many other administrative areas before we take advantage of its clinical applications. Its well poised to digitize the healthcare industry for humans and other animals alike.





# Contributions



**Soumay Seth**  
CEO – Humonics Global



**Carmen Lux**  
Founder and Principal  
Clux Performance Coaching



**Sudha**  
Vice President  
Strategic Initiatives - KANINI



# Let's Connect!

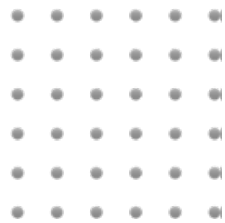
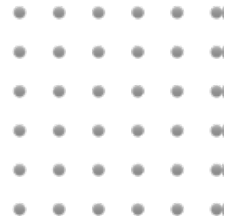
**Contact for questions:**

[transformations@kanini.com](mailto:transformations@kanini.com)

25 Century Blvd., Ste. 602

Nashville, TN, 37214

+1 (615) 258 8581



[WWW.KANINI.COM](http://WWW.KANINI.COM)