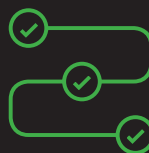# How conversational AI tools succeed and fail.

Understand natural language

Deploy quickly with nimble tech

Manage seamless end-to-end workflow

Constantly refine and improve

An AI pioneer shares tips for banking development pros.

Lingjia Tang, CTO and co-founder of Clinc, has been working with conversational AI development for more than a decade—an eternity in the world of artificial intelligence. While standard voice recognition continues to evolve slowly for general consumers and retail apps, Tang was there at the dawn of deep-learning powered conversational AI, helping shape the fast-moving and ever-changing technology.

Clinc serves the banking and finance industry with voice-first conversational AI that allows for consumer confusion, mindset changes, multiple agenda items and dramatic cultural and dialectic language differences. To be sure, the large number of patents filed by Clinc is testament to the groundbreaking level to which Clinc's fintech AI meets the world of critical consumer and business banking transactions.

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Tang says the marketplace needs to beware of all kinds of so-called AI solutions that still use the typical "decision-making tree" and bottom-up speech-tagging approach to language and logic. Many AI products, she says, are still in the business of manually building complexity in an ultimately futile attempt to advance eloquent voice AI.

"In the case of conversational AI, you need to understand messiness and also dialog at the same time, and accommodate thinking out loud," says Tang. "You need to enable the user to make mistakes and make changes on the fly with much more flexible conversation flow. This only works with robust real-time data and machine learning."

Populating large amounts of language data is essential to continuously improve recognition of how different kinds of people and cultures naturally talk. That's a big part of what gets true conversational AI to the "Promised Land." Machine learning fueled by massive amounts of data allows for tens of thousands of language nuances, essentially accommodating front-of-mind thinking—even confusion—through the mouth of the consumer.

"There is a wide, wide substrate for how people respond to any question," says Tang. "For example, I asked my niece to ask any question about her account balance. Her question was something I could not predict. She said, 'Am I broke?' The point is that one person or team cannot intuitively approximate what the range of responses can be. That's why machine learning that drives many, many data points is so important in the conversational AI world."

Ask the big questions.

To ensure success, Tang has several important considerations for developers that intend to work with conversational AI tools through large and mid-sized organizations:

Can the tool stand the test of time and change?
Banking and finance goals and markets continually change—and so does the way people talk and think. If the tool can't adapt to those kind of changes, you don't want it.

Can the tool only get to a certain recognition level and no further?
If the data sampling capacity of the tool is limited or has an outer boundary to it, not only will it restrict conversational understanding, but also it will never be able to truly translate complex front-of-mind speech commands and queries.

Is it keyword driven rather than behaviorally based?
Language reflects thinking and thinking reflects behavior, even if it's idiosyncratic. Any decision tree approach to language understanding using keywords will be basically a manual, not algorithmic approach, and will be crushed under demands of any organization with a truly large customer base. "For example, when you're teaching your kid how to talk, you don't talk about the language. You don't structure a sentence. You just talk to them. And they listen to you. It's the same with great AI," says Tang.

Can your development team roll out the tool relatively quickly?
Development teams from large organizations want to move fast, but often they can't employ a larger team to make it happen because the tool and its underlying support won't accommodate it. Without strong end-to-end underlying QA workflow tools and support, the product might actually promote team chaos and a weak rollout.

How high is the recognition failure rate and can it continuously improve?
If the tool cannot laser-point new data to solve translational problems that may occur from time to time, the tool will become obsolete. And if there is a high failure rate from the start, then the tool will become useless even faster.

Is data sampling high and managed properly?
Low data volume predicts low long-term quality. If data is not properly and consistently labeled, even with high data sampling, there will be quality problems. Inability to laser focus data sampling to solve emerging translational problems is also a problem. If data is not curated to differentiate between high and low quality data, chaos will ensue.

Does the tool manage "end-to-end workflow" to avoid confusion?
If it doesn't, you're going to potentially have a colossal mess on your hands. "Everybody knows how to write code together, resolve conflict and complete the job. But in AI, most of the industry has not figured out how to make that happen, largely because of the dynamic complexity that is at work through AI algorithms," says Tang. "If you're the buyer you should say, 'No robust end-to-end workflow tools? No deal.'" Unfortunately, many conversational AI products basically cut the buyer's development enterprise adrift after sale, without providing end-to-end workflow tools and active-tense support to be fully functional.

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Ensuring seamless end-to-end workflow management.

- For example, if you will have 100 million users interfacing with the tool, end-to-end workflow is essential to support speed to market and multiple developers working at the same time to bring it to market without lapsing into chaos.

- End-to-end workflow is essential in a large bank or financial institution that may have 10 or 20 developers working as a team, while different customer data is flowing in for different team members at roughly the same time.

- An end-to-end workflow "tool chest" needs to show when there are work conflicts between developers and lead the institution's development team toward providing solutions. This includes version control, merging of work and conflict control.

Put yourself in position to succeed.

Before you acquire a conversational AI tool, ask the big questions. If you get the right answers, then when you release conversational AI "in the wild" at launch, you will have the power to immediately refine and perfect it in a way that is unique to your organization and your customers. That's because you're naturally harvesting new data through the active use of the tool. It becomes a feedback loop into your AI, which forces continuous excellence.

Start the conversation.

Clinc's revolutionary conversational AI has been proven successful at the biggest banks worldwide. The best-in-class platform utilizes natural language processing that understands how people really talk, powering exceptional customer experiences that build loyalty and generate ROI. When you're ready to start unlocking the possibilities for your bank, Clinc is here to help.

More at clinc.com.

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