

# Toy Jensen Rings in Holidays With AI-Powered ‘Jingle Bells’

As the holidays approach and the world is filled with joy and wonder, Toy Jensen, the entirely AI-driven avatar of NVIDIA's CEO, brings a song to lift people's spirits even higher.

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In a moment of pure serendipity, Lah Yileh Lee and Xinting Lee, a pair of talented singers who often stream their performances online, found themselves performing in a public square in Taipei when NVIDIA founder and CEO Jensen Huang happened upon them.

Huang couldn't resist joining in, cheering on their serenade as they recorded Lady Gaga's "Always Remember Us This Way."

The resulting video quickly went viral, as did a follow-up video from the pair, who sang Lady Gaga's "Hold My Hand," the song Huang originally requested.

Now, with the help of his AI-driven avatar, Toy Jensen, Huang has come up with a playful holiday-themed response.

NVIDIA's creative team quickly developed a holiday performance by TJ, a tech demo showcasing core technologies that are part of the NVIDIA Omniverse Avatar Cloud Engine , or ACE, platform.

Omniverse ACE is a collection of cloud-native AI microservices and workflows for developers to easily build, customize and deploy engaging and interactive avatars.

Unlike current avatar development, which requires expertise, specialized equipment, and manually intensive workflows, Omniverse ACE is built on top of the Omniverse platform and NVIDIA's Unified Compute Framework , or UCF, which makes it possible to quickly create and configure AI pipelines with minimal coding.

"It's a really amazing technology, and the fact that we can do this is phenomenal," said Cyrus Hogg, an NVIDIA technical program manager.

To make it happen, NVIDIA's team used a recently developed voice conversion model to extract the voice of a professional singer from a sample provided by them and turn it into TJ's voice – originally developed by training on hours of real world recordings. They used the musical notes from that sample and applied them to the digital voice of TJ to make the avatar sing the same notes and with the same rhythm as the original singer.

Then the team used NVIDIA Omniverse ACE along with Omniverse Audio2Face and Audio2Gesture technologies to generate realistic facial expressions and body movements for the animated performance based on TJ's audio alone.

While the team behind Omniverse ACE technologies spent years developing and fine-tuning the technology showcased in the performance, turning the music track they created into a polished video took just hours.

That gave them plenty of time to ensure an amazing performance.

They even collaborated with Jochem van der Saag , a composer and producer who has worked with Michael Bublé and David Foster, to create the perfect backing track for TJ to sing along to.

"We have van der Saag composing the song, and he's gonna also orchestrate it for us," said Hogg. "So that's a really great addition to the team. And we're really excited to have him on board."

The result is the perfect showcase for NVIDIA Omniverse ACE and the applications it could have in various industries — for virtual events, online education and customer service, as well as in creating personalized avatars for video games, social media and virtual reality experiences. NVIDIA Omniverse ACE will be available soon to early-access partners.

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