Ethics of Singing Voice Synthesis (SVS): Perceptions of Users and Developers

GAUDIO

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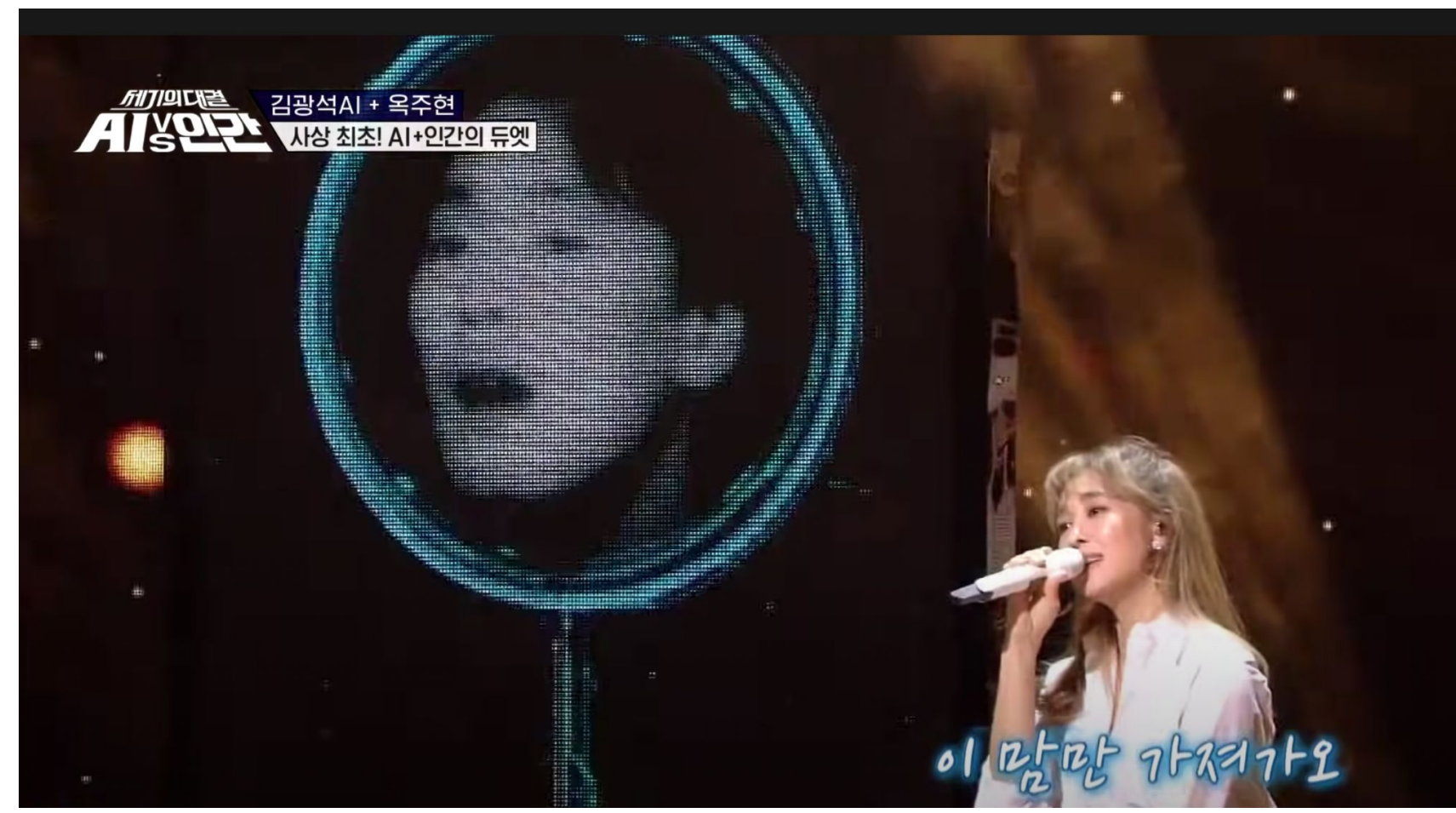**University of Washington, Seattle, USA**

Image from TV show "AI vs. Human". 2021.02.05

"I am thankful for the opportunity to listen to [the artist's] voice again."

"I don't think it's appropriate to do this."

*"Isn't this humiliating the deceased?"*

"I am a vocal student...Help me, I think my job is disappearing."

Research Questions

1. **How does the general public react to AI-generated singing voice, and what are the implications to AI developers?**
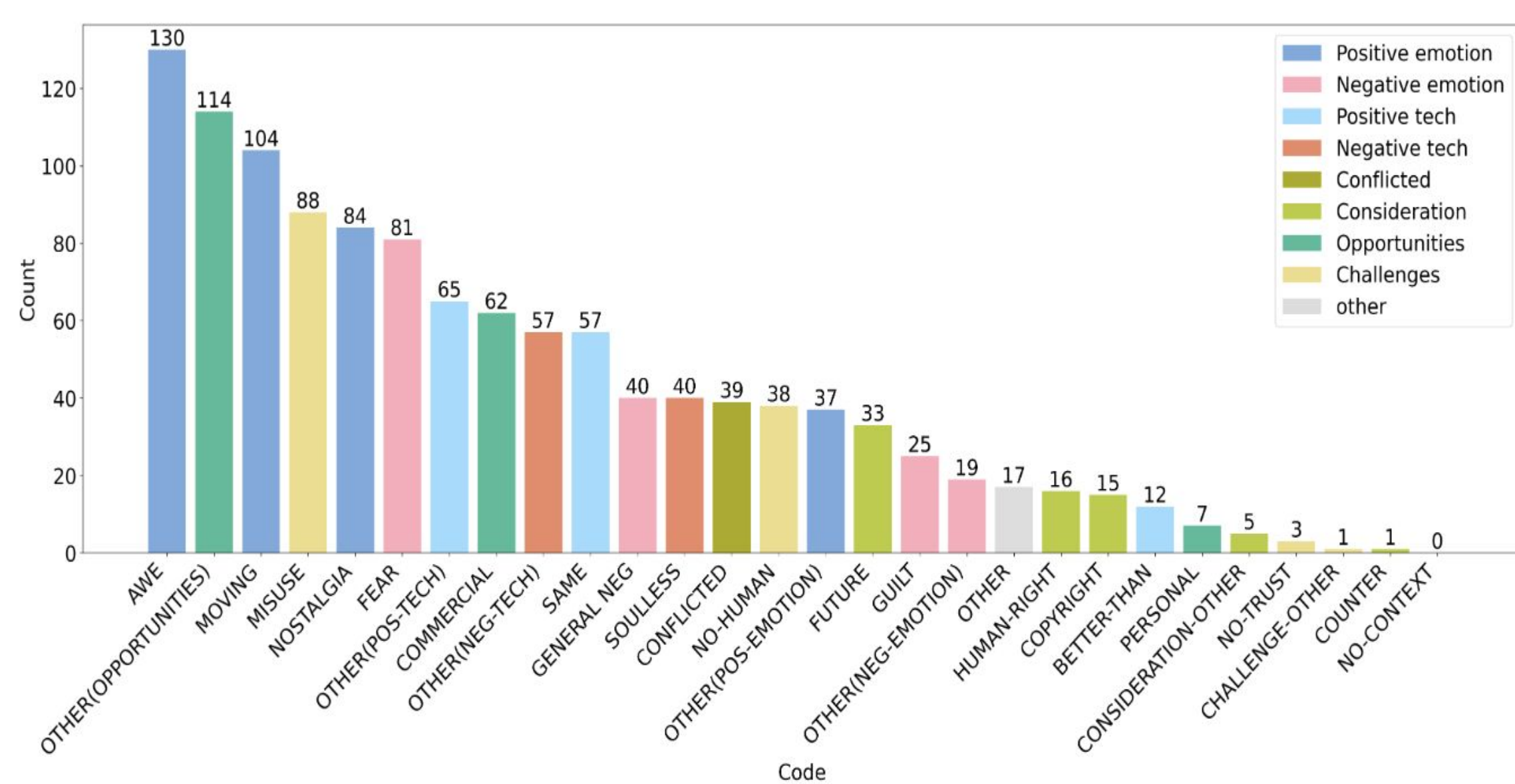2. **What kinds of ethical issues do users and AI developers consider?**

Data

- **6 Interviews** with AI SVS developers ranging from 2 to 20 years of experience
- Downloaded **3075 comments** from 8 YouTube videos showcasing SVS technology
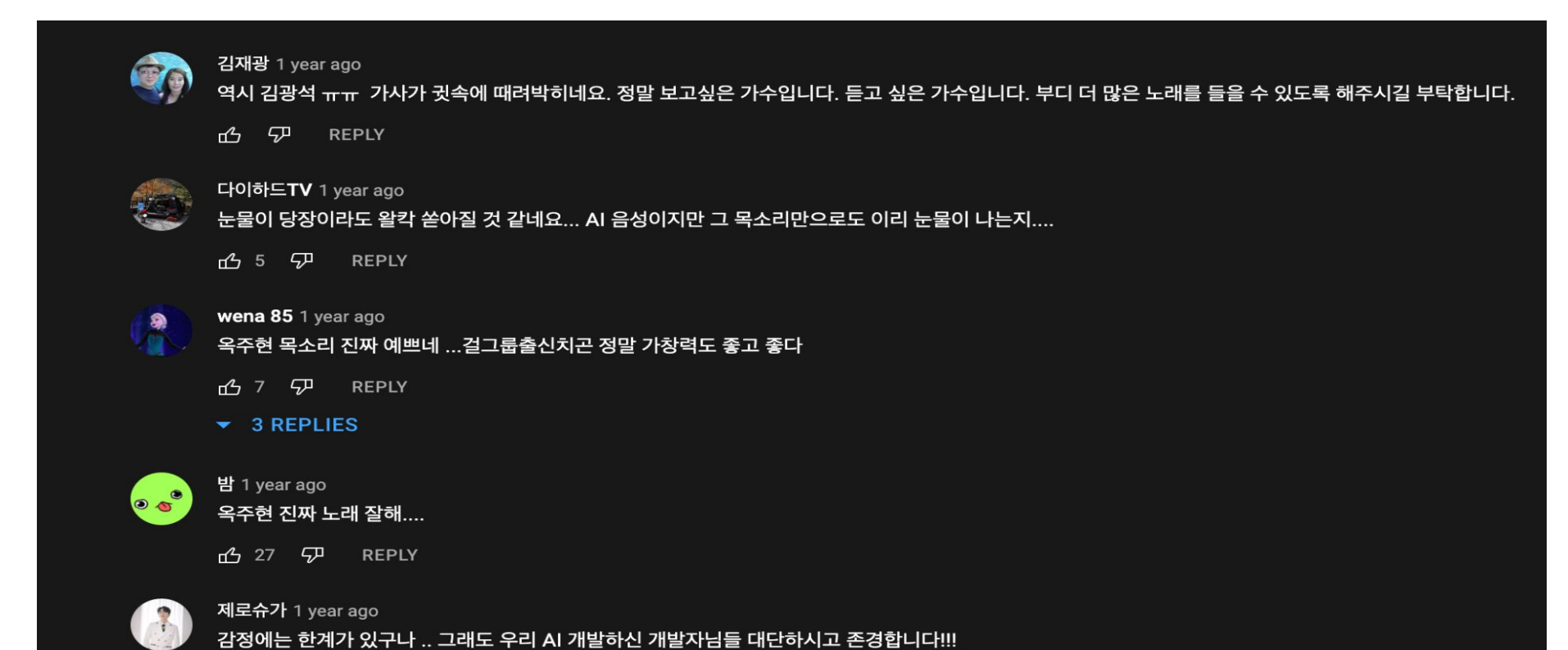
Observations

General Public

- The general public's perceptions were significantly varied in their perception of SVS, but with an overall positive trend (65% positive, 35% negative)

*"I am **thankful for the opportunity** to listen to [the artist's] voice again"*

*"I became **fearful** as I was watching this [...] I feel lucky that I was born in an era when the AI isn't fully developed."*

"I wish to hear my father's voice."

"Can they also replicate X?"

*"The voice is the same but it's **missing a soul** [...] it's just following exactly what's written in the sheet music."*

AI Developers

- The developers' perspectives were less varied and mainly focus on the potential applications for creators rather than the potential misuse.
- Developers are aware of ethical issues and their importance, but no one knows specific ways to handle them.

*"A **tool** for the creator like autotune or mixing."*

*"I didn't think we'd be able to reproduce it to this level. **We'd need technologies to counter the misuse** of this technology."*

*"AI is not able to generate something better than humans since it is **only trained on the input data**."*

*"I'm not sure if it's okay to get comfortable with the **mass production** of voice through AI."*

Findings

Perspective on Use Scenarios of SVS Technology

General Public

- Willing to pay money for personal use
  - Desire to listen to deceased artists, whose voices are regenerated with SVS
  - Imagine "*speak(ing) with the dead people*"
  - Save their voice for their future grandchildren
- Concerns about misuse

AI Developers

- Tools for creators : autotune, mixing, demo track generator, singing style transfer, vocaloids
- Suggests a controlled model, where only experts have access to the entire model and data, to prevent misuse

Attitudes Towards SVS. Should SVS Technology be Developed? If so, how?

General Public

- Mix of awe, feeling moved by technological advancement with fear, guilt and discomfort (aka. Uncanny valley)
- In general, more pessimistic than developers

AI Developers

- Desire to further advance the technology
- Accept the reality of lack of ethical considerations during tech development
- Government, corporate companies, and/or the society has to take the lead in settling legal issues

Can AI be Creative?

- Both the general public and AI developers question AI for being truly creative
  - "*AI merely outputs an 'average' performance based on input data*"
  - "*AI is not really thinking about what it is expressing*"
  - AI feels soulless
- What is "creativity"?
  - The creativity of a musician is different than that of an artist, and that of a mathematician.
  - Furthermore, the boundaries of creativity are subjective to culture and time period, thus in a constant state of flux.
- Considerations on who receives the credit for the resulting work has yet to be determined.

Human Rights, IP, and Other Legal Issues

- Who should be given the rights for the final product of SVS and take profit from it? AI developers? Artist who provided their singing voice?
  - How about the family of the deceased artists?
- Concerns over the worth of human musicians, if singing AI thrives in the future
- Developers are less worried. They believe that humans will still prefer real singing voice over AI.

Conclusion

- Not a generalized understanding of creative AI technology due to our limited user data and how user comments were predominantly from one culture
- Future research should include varied cultural perspectives & different creative AI tech beyond SVS