

Describe a modern application of data science based on machine learning, generative AI or data analytics. Discuss its context in terms of topic, domain, and societal implications.

“It takes a few minutes to make a big impact on someone else’s life. This is a combination of technology and human generosity.” - Alexander Hauerslev Jensen, Be My Eyes COO¹

Entertainment is often yielded as the universal language, transcending barriers and inspiring minds as the summit of imagination and reality. Amidst the vast network of this universal language, however, a group of individuals are left unspoken, a muffled but critical injustice persisting in a rapidly progressing reality. The current lack of assistive technology and inclusion within media stands as a constant barrier for individuals with disabilities specifically, the traditional landscape of entertainment tarred with barriers yet to be broken. In this oppressive realm of exclusive data-driven innovations and artificial intelligence, South Korea emerges as a unique crucible where technology, culture, and inclusivity seamlessly converge.²

Media and entertainment are utilized by many as an outlet of relief, as well as an important mode of self-expression. Interning this summer at a company providing accessibility features in film, I came across the importance of audio descriptions (AD). While working, I was provided the valuable opportunity to talk to my co-worker, Kyu-min, about the emotional detachment he felt in society because of his visual impairment. I soon realized it wasn’t a matter of simply being entertained, and that entertainment brings belonging through representation.

Image recognition algorithms can easily be spotted in the bustling streets of Seoul, where technology is closely intertwined with daily life. For example, AD is commonly installed on the street lights to notify the visually impaired of the change in signs through sound.³ As technology and algorithms for image recognition evolve, AD has the potential to grow more immersive for everyone,

¹ Katrina Maisie, Cabral. “This App for the Visually Impaired Is like IRL Noongil from ‘Start-Up.’” *Scout Magazine*, 13 Jan. 2021, www.scoutmag.ph/66875/be-my-eyes-noongil-start-up-bn/.

² Da-hyun, Lee. “Taking a Step toward a Barrier-Free Society for Everyone.” *Chonnam Tribune*, 16 Sept. 2022, tribune.cnumedia.jnu.ac.kr/news/articleView.html?idxno=20036.

³ Fobwannabe. “Common Mistakes Tourists Make When Visiting Korea (Part 1 Of 2).” *Korean Tour Guide*, www.koreantourguide.com/blog/mistakes-tourists-make-when-visiting-korea-part-1-of-2/. Accessed 31 Dec. 2023.

reflecting a cultural acknowledgment of diverse needs within the community through the simplest routines throughout the day. Natural Language Processing (NLP) algorithms are utilized in the creation of AD to enable detailed relevance in language for a richer experience.

As Korean entertainment, e-sports, and virals sweep global markets, their portrayal of social issues hold a critical grip on perspectives, acting as a leader for innovation.⁴ In a country where music is deeply engraved in the culture, AD is commonly utilized to provide accessibility to visual performances, which have begun to arise more in the modern day. AD contributes to a holistic experience that showcases the cultural shift towards the acknowledgment of varied needs among all musical enthusiasts.⁵ By providing context and detail, AD enhances the understanding of cultural representation, reflecting technological innovation through a commitment to inclusivity.

South Korea's commitment to inclusive entertainment is also visible through initiatives leveraging accessibility in films, TV shows, and other forms of online content. Streaming services and theaters all over the nation can be seen leveraging data analytics to recommend content aligned to one's personal preferences and provide AD alongside the conventional voiceovers for further understanding of the films' content.⁶ By tailoring recommendations complemented by automated adjustments for those hard of seeing, the entertainment becomes a universally engaging experience, acting as a standpoint to not only broaden the reach of Korean entertainment but also set a global example for prioritizing inclusivity in the delivery of content. The modern application of data sciences extends beyond the mere recommendation of content, however, to an increasingly narrow level of personalization. Machine learning algorithms, powered by datasets collected globally, can analyze the preferences of viewers in the use of AD as well as subtitling, adapting in real time to such preferences. This enables platforms to refine the recommendations given continuously, better understanding the

⁴ "The Importance of Representation in Media." *Race to a Cure*, 12 June 2021, www.racetoacure.org/post/the-importance-of-representation-in-media.

⁵ Yu-ri, Kim. *National Contemporary Dance Company's "Rudolph" with Audio Commentary*. Performance by Ro-ah Lee, *YouTube*, 26 Nov. 2021, <https://youtu.be/TofnrAPbvjl?feature=shared>. Accessed 31 Dec. 2023.

⁶ "Melon Music: The Sweet Sound Sweeping Korea's Charts." *MusConv*, 25 May 2023, musconv.com/melon-music-the-sweet-sound-sweeping-koreas-charts/.

individual needs and preferences of their clients, not only increasing accessibility but even a deeper connection to the content users consume.

Some great examples in recent Korean media demonstrate the cultural impact of current media. In the Korean drama show “Start-Up,” the characters’ commitment to creating a groundbreaking algorithm mirrors real-world trends while showcasing the transformative power of data-driven solutions in advertising. The show mentions image recognition as a crucial step in business marketing and includes the creation of one (Noon-gil) inspired by a relative with a visual impairment.⁷ The show garnered the attention of a large audience, shining light on the importance of such technologies in equity and innovation. It was applauded for realistically demonstrating the industry and spreading awareness of the demanding but conscious efforts of technology companies. Encouraging thought towards the use of technology and data in improving entertainment experiences and even daily life for others, it caught the immediate eye of the public.

As another example, I believe it would be beneficial to mention another Korean drama, ‘Extraordinary Attorney Woo’. The show was lauded for its subtitling of the autistic main character’s dialogue and set the record for the highest ratings in Channel ENA history.⁸ In the show, the main character Woo Young-woo makes an entertaining use of palindromes: words read the same forwards and backwards. As the show was originally broadcast in Korean, the literal translations of palindromes in foreign AD voiceovers would not have had the same effect on viewers, potentially even confusing them. Keeping in mind this point, the English voiceovers for the show made use of English palindromes instead, such as kayak, deed, and others. This strategic titling, especially the thoughtful adaptation aimed at international audiences, exemplified the show’s strong commitment to accessible content, regardless of ability and language. It ensured that the visually disabled were able to feel the same mental engagement as those without the impairment and recognized the limitations of

⁷ Cedric, Lee. “Disability Representation in K-Drama ‘Start-Up.’” *Medium*, 29 Jan. 2021, cedric-lee.medium.com/disability-representation-in-k-drama-start-up-3db1846b825d.

⁸ Eunice. “Netflix’s Process of Working on the English Subtitles & Dubs of ‘Extraordinary Attorney Woo.’” *Kpopmap*, 8 May 2023, www.kpopmap.com/netflix-process-of-working-on-the-english-subtitles-dubs-of-extraordinary-attorney-woo/.

a direct translation. This approach overlaps with the theme of accessible entertainment as it proves how considerations for nuances can enhance the viewing experience for not only the ‘average’ Korean population.

Despite such advancements, data-driven technologies often continue to challenge societal norms regarding disability. Holding not merely technological but simultaneously cultural aspects, fostering empathy, and exhibiting understanding within the society is critical. The widespread adoption of AD signifies such societal acknowledgment of diverse communicative needs by representing a conscious effort to ensure everyone the right to the appreciation of the intricacies of entertainment.

After its emergence in the 80s, AD has expanded immensely and can now be found in more than 100 languages on the largest platforms worldwide. Although this is a remarkable achievement, as technology advances, South Korea’s innovative approaches in the entertainment industry may extend far beyond traditional mediums. Through representation and advancements, technology as well as applicable artificial intelligence could extend to global and even virtual realms, offering new dimensions of inclusivity for audiences with all interests, all over the world. From adaptive virtual tours to interactive art exhibits, a new dimension of inclusivity may be unlocked. Incorporating AD into virtual experiences would ensure that individuals with diverse abilities can engage with culture with greater ease.

When envisioning future horizons and possibilities, generative artificial intelligence in the field of AD must be utilized responsibly. For example, the Korean legal emphasis on privacy demands a delicate balance in utilizing user data. Without compromising personal information, entertainment must find the delicate balance between safety and innovation, ensuring technological benefits through the implementation of data analytics and assistive technology.⁹ The ethical deployment of data-driven technologies also ensures that AD does not, in fact, marginalize such groups even more but merely

⁹ “South Korean Data Privacy Law: A Comprehensive Guide.” *Cookie Script*, 14 Sept. 2023, [cookie-script.com/privacy-laws/south-korean-data-privacy-law#:~:text=Act%20\(PIPA\)%3F-,The%20Personal%20Information%20Protection%20Act%20\(PIPA\)%20is%20a%20data%20privacy,businesses%20to%20protect%20that%20data.](https://cookie-script.com/privacy-laws/south-korean-data-privacy-law#:~:text=Act%20(PIPA)%3F-,The%20Personal%20Information%20Protection%20Act%20(PIPA)%20is%20a%20data%20privacy,businesses%20to%20protect%20that%20data.)

acts as a mode of upholding the rights and equity of the population it serves. Proactive measures are taken to assess and mitigate biases, ensuring AD remains accurate translations of the linguistic and cultural nuances portrayed, without spoiling the content or distracting the enjoyment. By doing so, South Korea, as a leader in entertainment, sets a standard for responsible and inclusive technological development.

Neuro-inclusivity, recognition of diversity that encompasses our world, is also essential in advancing AD. Rather than devaluing and pitying those with conditions, a neuro-inclusive setting celebrates its value and applicability to the world.¹⁰ The integration of neuro-inclusive designs within entertainment offers a glimpse into a future where technology seamlessly integrates into the lives of individuals with differences. While AD was originally designed to accommodate neurodiverse individuals, they are now utilized by many more identities, such as drivers, photosensitive individuals, and other preoccupied individuals.¹¹ Thus, the initial effort in supporting disabilities has unintentionally developed a positive impact on many others' lives.

In the world of data-driven innovations, AD emerged as unique conductors, orchestrating and displaying the transformative power of a collaboration between the technological and cultural aspects of entertainment. The dynamic coexistence of existing and anticipated media forms and their adjustments through artificial intelligence and adaptive data analytics showcase how the creation of such algorithms advances cultural production projects. As South Korea continues to investigate the borderline between the equilibrium of different values within entertainment, it not only addresses critical challenges for the disabled but also motivates the societal shift to inclusivity as a whole. Ethical considerations underline the critical value of privacy, bias, and the focus on 'all', a valued entertainment in its natural essence should uphold. Entertainment should not simply be about technological advancements and illuminating imaginations, but also about crafting a narrative where diversity, informed by cultural recognition, defines the very essence of entertainment.

¹⁰ "Neuro-Inclusive Practice." *TINT Education*, www.tinteducation.ie/about-3-2#:~:text=What%20does%20it%20mean%20to,how%20valuable%20it%20can%20be. Accessed 31 Dec. 2023.

¹¹ Fred, Brack. "The Advantages of Audio Description for People Who Are Not Blind!" *The Audio Description Project*, adp.acb.org/articles/adforsighted.html. Accessed 31 Dec. 2023.

Works Cited

- Brack, Fred. "The Advantages of Audio Description for People Who Are Not Blind!" *The Audio Description Project*, adp.acb.org/articles/adforsighted.html. Accessed 31 Dec. 2023.
- Cabral, Katrina Maisie. "This App for the Visually Impaired Is like IRL Noongil from 'Start-Up.'" *Scout Magazine*, 13 Jan. 2021, www.scoutmag.ph/66875/be-my-eyes-noongil-start-up-bn/.
- Eunice. "Netflix's Process of Working on the English Subtitles & Dubs of 'Extraordinary Attorney Woo.'" *Kpopmap*, 8 May 2023, www.kpopmap.com/netflix-process-of-working-on-the-english-subtitles-dubs-of-extraordinary-attorney-woo/.
- Fobwannabe. "Common Mistakes Tourists Make When Visiting Korea (Part 1 Of 2)." *Korean Tour Guide*, www.koreantourguide.com/blog/mistakes-tourists-make-when-visiting-korea-part-1-of-2/. Accessed 31 Dec. 2023.
- "The Importance of Representation in Media." *Race to a Cure*, 12 June 2021, www.racetoacure.org/post/the-importance-of-representation-in-media.
- Kim, Yu-ri. *National Contemporary Dance Company's "Rudolph" with Audio Commentary*. Performance by Ro-ah Lee, *YouTube*, 26 Nov. 2021, <https://youtu.be/TofnrAPbvjI?feature=shared>. Accessed 31 Dec. 2023.
- Lee, Cedric. "Disability Representation in K-Drama 'Start-Up.'" *Medium*, 29 Jan. 2021, cedric-lee.medium.com/disability-representation-in-k-drama-start-up-3db1846b825d.
- Lee, Da-hyun. "Taking a Step toward a Barrier-Free Society for Everyone." *Chonnam Tribune*, 16 Sept. 2022, tribune.cnumedia.jnu.ac.kr/news/articleView.html?idxno=20036.

“Melon Music: The Sweet Sound Sweeping Korea’s Charts.” *MusConv*, 25 May 2023,
musconv.com/melon-music-the-sweet-sound-sweeping-koreas-charts/.

“Neuro-Inclusive Practice.” *TINT Education*,
www.tinteducation.ie/about-3-2#:~:text=What%20does%20it%20mean%20to,how%20valuab
[le%20it%20can%20be](https://www.tinteducation.ie/about-3-2#:~:text=What%20does%20it%20mean%20to,how%20valuab). Accessed 31 Dec. 2023.

“South Korean Data Privacy Law: A Comprehensive Guide.” *Cookie Script*, 14 Sept. 2023,
[cookie-script.com/privacy-laws/south-korean-data-privacy-law#:~:text=Act%20\(PIPA\)%3F-](https://cookie-script.com/privacy-laws/south-korean-data-privacy-law#:~:text=Act%20(PIPA)%3F-,),
[The%20Personal%20Information%20Protection%20Act%20\(PIPA\)%20is%20a%20data%20](https://cookie-script.com/privacy-laws/south-korean-data-privacy-law#:~:text=Act%20(PIPA)%3F-,)
[privacy,businesses%20to%20protect%20that%20data](https://cookie-script.com/privacy-laws/south-korean-data-privacy-law#:~:text=Act%20(PIPA)%3F-,).