Meeting Report: TCCI Hosts Third AI for Brain Science Meeting Themed AI, Brain, and Music

On July 19, Tianqiao and Chrissy Chen Institute (TCCI) and NetEase Cloud Music jointly hosted the third AI for Brain Science meeting themed "Exploring the Future of Music Creations: AI, Human Brain and Therapy".

Five experts and scholars specialized in computer science, life science, psychology, and music therapy were invited to share their research results and experiences and their outlooks for the future focusing on AI-generated music, human brain-generated music, human-computer interaction system for music generation, and the application of music in the treatment of brain diseases.

During the meeting, Shuqi Dai, a PhD student in the Department of Computer Science at Carnegie Mellon University, introduced the prospect of music perceptual analysis and therapeutic applications in the context of generative artificial intelligence. She said that the structure of music based on repetition is an important feature of music and is multi-layered, technically diverse, and highly logical. Based on this, the repetitive structure of music and the projected perceptual curve can be analyzed by algorithms to customize music that users are familiar with and enjoy.

Jing Lu, Associate Professor of the School of Life Science and Technology of the University of Electronic Science and Technology, demonstrated the process and principle of creating brainwave music, and explained why do people like music from the perspective of neuroscience. He introduced that the brain's neural signals and music follow a power law of $1/f\ \alpha$, by which a scale-free mapping between EEG signals and music can be established.

Xiaoying Zhang, Associate Researcher of the Music Therapy Center of the Psychology Department of the China Rehabilitation Research Center, introduced the evidence-based foundation and clinical application of music therapy. She introduced that designing appropriate music therapy programs for patients with different functional disorders can improve their functional level, thus improving their life quality and facilitating faster return to a normal familial and societal life.

Guangyu Xia, Assistant Professor at KAUST, and Nanfeng Qin, a PhD student at NYU Shanghai, shared their thoughts on using machines to teach music via the novel form of Shuanghuang (also known as the double act or comedy duo). They introduced the multiple modalities of music and said that this multimodal approach to learn music and teach musical performance stimulates more and wider neural pathways.

The meeting was successfully closed amidst the active interactions and exchange of views between speakers and attendees.

Guanglong Sun is a TCCI Academic Volunteer at Zhejiang University. He wrote this meeting report as part of the Tianqiao and Chrissy Chen Institute Science Writers Fellowship which aims to extend the conversation beyond the meeting with the hopes of sparking new ideas and collaborations.