Technology from Kyoto University

Real-Time Vocal Analysis and Visualization Technology for Voice Therapy

We are looking to out-license the technology for its commercialization.

Mixed Reality-Based Voice Therapy System Adaptable from Rehabilitation to Entertainment

◆Background

Voice disorder treatment, including polyps, nodules, and muscle tension dysphonia, relies on speech-language pathologists. Specialist shortages and reliance on practitioner experience cause variable outcomes and limited scientific evidence. Independent patient rehabilitation is also hard to sustain, highlighting the need for a system ensuring reproducible effects and adherence.

◆Description

The new voice therapy system not only visualizes speech but also provides real-time scoring of how closely a user's voice matches target speech characteristics. By combining an acoustic analysis method (Fig.1) that evaluates the ratio of noise and harmonic energy with MR (Mixed Reality), Kyoto University researchers created an interface that intuitively visualizes timbre and pitch, allowing training through a game-like experience (Fig.2). This technology offers quantitative, reproducible feedback for clinical voice therapy and has potential applications in developmental support, elderly care, voice training, and health management.

- **Improved Treatment Efficiency and Adherence**
  Visual feedback on vocal characteristics enhances communication with speech-language pathologists and rehabilitation efficiency.
- **Ensuring the Quality of Voice Therapy**
  Standardized treatment and objective outcome evaluation ensure consistent, reliable care regardless of practitioner experience.
- **Improved Access to Treatment**
  This technology is expected to expand treatment access even in areas with few specialists.

◆Development Status

- Established a new calculation method for voice quality metrics based on harmonic structure developed
- Developed an Android software for real-time measurement and analysis
- Confirmed effectiveness through open testing

Technology Readiness Level: 4

◆Applications

Medical devices and audio equipment for various uses, including;

- voice rehabilitation
- elderly care and support
- developmental support and therapeutic education
- entertainment

◆Offer

- Patent License
- Option for Patent License
- Collaborative Research

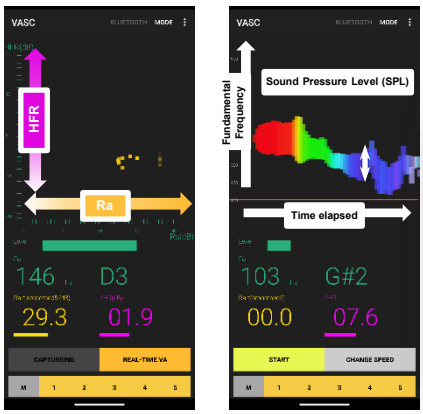

Fig.1 Open test result using VASC, a software for analyzing Harmonics-to-Noise Ratio (Ra) and Harmonics-to-Fundamental Ratio (HFR)

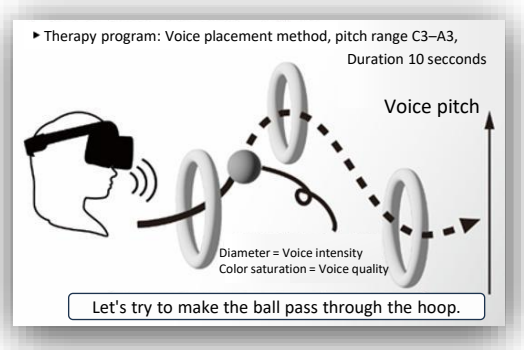

Fig.2 Illustration of the new voice therapy program using an MR device

◆Contact

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