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Artificial Intelligence - A New Voice for Laryngectomy Patients

A healthy person uses his/her voice to greet, talk, read aloud, sing, and express thoughts and feelings. Voice is also an essential part of one's personality. Various types of diseases may cause an individual to lose the ability to produce voice, leading to significant negative impact on self-stigma, well-being, and quality of life. Traditional assistive speaking technologies allow users to generate mechanically sounding and minimally intelligible speech. The produced "voice" does not carry any personal characteristics related to the patient's original voice.

At the Chinese University of Hong Kong, we develop AI-empowered technology of personalized voice creation to help laryngectomy patients regain their own voices. A tailored AI voice model is built to learn and capture the unique characteristics of a patient's speech from audio recording. The AI model can be used to generate natural speech of any content as if the patient him/herself were speaking. Since 2021, we have provided services for more than ten patients of head and neck cancers. With our technology, the patients can "talk" to their family members and friends, send "voice messages" on social media, make public speech or give lectures. In this conference presentation, we will explain and demonstrate how the technology works and performs, and share our experiences in working with challenging patient cases.

李丹

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人工智能—喉切除术患者的新嗓音

一个健康的人能够用他/她的声音问候、说话、大声朗读、唱歌、表达思想和感情。声音也是个人特质的重要组成部分。许多疾病都可能导致个体发声能力丧失，这会对个人生活质量及健康产生严重影响。传统的辅助发声技术允许使用者机械的产生声音和最低限度的智能语音。这种“声音”不带有与患者原始声音相关的任何个人特征。

在香港中文大学，我们开发了基于人工智能的个性化声音创造技术，以帮助喉切除术患者恢复自己的声音。量身定制的人工智能语音模型可以从录音中学习和捕捉患者语音的独特特征。人工智能模型可以用来生成任何内容的自然语音，就像病人自己在说话一样。自2021年以来，我们已经为十多名头颈患者患者提供了该项技术服务。通过我们的技术，患者可以与家人和朋友“交谈”，在社交媒体上发送“语音信息”，发表公开演讲或讲课。在本次会议演讲中，我们将解释和演示该技术如何工作和执行，并分享我们在处理复杂患者病例方面的经验。