Также эту функцию начали внедрять в искусство. Так в музее, расположенном в Сучжоу на выставке каллиграфических и живописных работ, рядом с картинами размещены таблички с QR-кодами.

Посетители выставки после сканирования кода получили электронную версию работы в высоком разрешении и полное описание изображения [7].

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REALIZING REAL-TIME VIDEO CONFERENCING SYSTEM BASED ON WEBRTC AND P2P ALGORITHM

He Runhai, Cheng Yindong, Zhang Zhenxing, Zhou Quanhua
Belarusian State University
e-mail: herunhai.by@gmail.com

Summary. *This paper presents a solution for realizing a real-time video conferencing system, which utilizes WebRTC technology and P2P algorithm to establish a distributed topology that reduces the burden on servers and allows direct communication between nodes. The ABR algorithm is used to adjust the video bit rate to adapt to different network conditions. In addition, optimization strategies such as bandwidth adaption, data caching and packet loss retransmission are applied to improve video transmission quality.*

Real-time video conferencing is a form of remote collaboration and communication that utilizes computer network technology to allow participants to engage in real-time voice and video communications across geographic locations. The origins of real-time video conferencing can be traced back to the 1980s, when videoconferencing technology mainly used Integrated Services Digital Network for transmission [1].

This paper studies the development of a real-time video conferencing system based on WebRTC technology and P2P algorithms, and combines ABR algorithms, bandwidth adaptation, data caching and packet loss retransmission and other optimization strategies to achieve the purpose of improving the efficiency and quality of remote collaboration and communication, and realizing a more stable and real-time video conferencing system.

Regarding the general development of real-time video conferencing system, the mobile client of this system is developed using Android technology, using html, js, css to develop the pages, and the back-end is developed using Java SpringBoot and WebRTC frameworks, combined with P2P technology to realize the transmission of audio and video, so as to realize video conferencing and voice calls. WebRTC (Web Real Time Communications) is a standard that enables real-time peer-to-peer communication and media data exchange in browsers, eliminating the need to download and install extra applications or add-ons [2]. A peer-to-peer (P2P) network is a type of network in which each participant (or "peer") can act as both a client and a server, allowing them to share resources and information directly with one another without the need for a central server [3]. The advantages of using WebRTC technology and P2P algorithm are:

1. P2P architecture reduces the burden on the server: WebRTC technology and P2P algorithm use a peer-to-peer (P2P) architecture, which avoids the problem of a single point of failure of the centralized server architecture in the traditional C/S model. At the same time, since the video streaming data is transmitted directly from point to point, the burden on the server can be reduced.

2. WebRTC technology and P2P algorithm-based solutions use real-time communication protocols, the video streaming transmission speed is faster, and can provide higher real-time and lower latency.

3. Better network adaptability: WebRTC technology and P2P algorithm use algorithms such as ABR and BBR, which can be adapted to the current network bandwidth and latency. WebRTC technology and P2P algorithms adopt algorithms such as ABR and BBR, which can automatically adjust the bit rate and frame rate of the video according to the current network bandwidth and latency to ensure smooth to ensure smooth video playback and good user experience.

During the development of the system, the critical parts include the creation of P2P connections and the processing of audio and video. The SDP protocol is crucial in creating P2P connections. The whole process includes obtaining local media streams, creating RTCPeerConnection object, adding media streams, sending signaling, processing remote user's signaling, accepting Answer SDP and setting remote description, thus completing the establishment of P2P connection.

The audio and video capture phase use the Camera API and MediaRecorder API of the Android system to capture the data from the camera and microphone, and then uses the MediaCodec API to encode this data in formats such as H264 and VP8. These encoded audio and video data are transmitted over the WebRTC data channel and real-time video transmission is performed using the RTP/RTCP protocol. The audio and video playback use the MediaPlayer API of the Android

system, which allows the decoded audio and video data to be output to the screen or speakers. For video playback, the system uses a UDP-based Adaptive Bitrate algorithm, which dynamically adjusts the bitrate of the video according to the network conditions to ensure smooth and high-quality playback. The control of audio and video is coordinated by a signaling server that coordinates the audio and video transmission among the clients. For example, in a multi-participant conference, it is necessary to control the reception and transmission of each participant's audio and video streams to ensure the quality and stability of the conference.

The results of the research show that the solution can achieve faster, more stable and real-time video transmission and communication results under good network environment or unstable conditions. Compared with the traditional centralized video conferencing solution, this solution has better scalability and robustness, and can meet a wider range of application requirements.

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ANALYSIS OF ACCELEROMETER SIGNALS IN HUMAN PHYSICAL ACTIVITIES

Li Hao
Belarusian State University of Informatics and Radioelectronics
e-mail: lhself@163.com

Summary. *This paper examines accelerometer signals related to physical activity. It involves a meticulous analysis of acquired data during the preprocessing stage and utilizes a range of indicators to determine the most suitable data management parameters. This data analysis plays a pivotal role in preprocessing human sensor data, as selecting appropriate parameters can significantly enhance the accuracy of activity prediction.*

The algorithm for the proposed model was developed using the Sisfall public dataset, a unique resource containing 15 predefined falls and 19 activities of daily living (ADLs) performed by 38 subjects, all equipped with waist-mounted sensors. The dataset is notable for its tailored inclusion of ADL activities, such as walking, jogging, sitting, and standing, specifically designed for older adults. With a sampling frequency of 200 Hz, the dataset covers subjects aged 19 to 75 and employs accelerometers at the waist for data collection.