

## Cloud based system for Tele-Yoga Training (v-Class)

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**Abstract**— This paper illustrates, a cloud based tele-education platform called v-Class developed by Applied Cognition Systems to that addresses these gaps in enabling institutional yoga therapy to patients as well as teaching certification courses to students through formal study and exams. The system is built using WebRTC. Using vClass, Maitri Yoga foundation has conducted successful pilots with delivery of yoga training services and therapy services to patients/students in several remote locations simultaneously, in collaboration with local facilitators.

**Keywords** : WebRTC, vClass, Tele-Yoga

### INTRODUCTION

One of the big challenges for the web is to provide human communication through voice and video: Real Time Communication (RTC). Historically, RTC has been complex, expensive audio and video technologies are to be licensed. Integrating RTC technology with existing content, data and services has been difficult and time consuming especially on the web. Now, real time communications are not used just for watching videos or chatting. One such novel application is Tele-Yoga. Yoga is an age old practice in India not only as a physical exercise, but as a therapy and as a lifestyle for wellness, but training institutions face challenges in scaling their programs due to many reasons – lack of experienced teachers; lack of willingness of teachers to travel to remote areas; travel, accommodation overheads and inconvenience for remote patients and students to use urban training facilities; lack of electronic means to aggregate and train patients with similar problems, or students with similar interest in a cost effective manner. Efforts in developed countries to adopt tele-yoga in the aging communities has shown positive results. However, a number of mobile apps such as skype and whatsapp, are being used typically for on-on-one [1]sessions. This does not aggregate demand, and utilize teacher's time to reach hundreds of people in multiple locations simultaneously, with integrated scheduling, commerce, content ownership, assimilation and sharing as needed in institutional setting. In this initiative [2], Maitri foundation, an institution having Yoga training and therapy experts at Bangalore, has used vClass to announce and deliver its Yoga training programs, including reading materials, online theory classes, practical training, self-assessment tests and follow up consultations integrated with ecommerce. the applicable criteria that follow.

### TECHNOLOGY

WebRTC is a draft web standard for real time communications built into web browsers. Installation of software and plug-ins are not required. It is achieved through JavaScript API. It is efficient than existing technologies. WebRTC is used in apps like WhatsApp, Facebook Messenger etc. The actual

communication between peers is actuated by an exchange of metadata, known as "signaling"[5]. In WebRTC architecture there are three layers: API for web developers (contains all the APIs needed by web developer), API for browser makers and overridable by browser makers. It also contains transport components that allows establishing connections across different types of networks. It supports dynamic jitter buffer, image enhancement and removing the generated video noise from the webcam generated image. Voice engine (audio engine) and video engines are responsible for sending audio and video streams from a sound card and camera to the network. Voice engine supports audio codecs and video engine supports video codecs. But the codecs generated should support the WebRTC compatible browsers. Session Management defines signaling process and the protocol to depict the session information, and the signaling implementation is done by application developers.

In the proposed system, the training entity enrolls expert teachers at different locations into a virtual team and organize remote training programs for different topics under one banner. It also enrolls facilitator entities which collect trainees into classrooms at distant locations into a network of classrooms. The training entity, the facilitator entity and empaneled teachers all share revenue generated from training at pre-agreed tariff rates. Facilitators can enroll students for specific classes by collecting charges from students and remitting relevant charges through vClass's electronic payment gateway interface. System sends automatic reminders of the schedule to and students on their mobile phones. When teachers start a session the system automatically calls participant classrooms to join video conference. The students participate in remote classrooms can observe, listen and interact with the teacher virtually as an extended class room while teacher conducts the session.

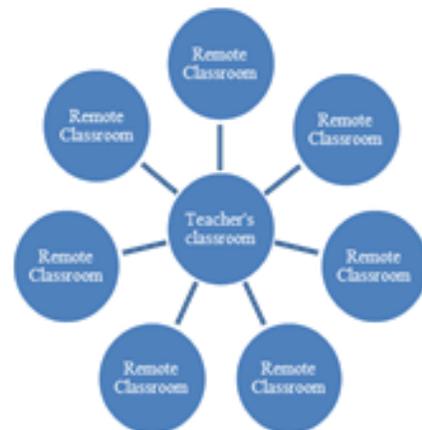


Figure 1: V-class room network

**Apparatus:** The Teaching and participant classrooms were provisioned with a Laptop with Chrome Browser linked to a HDMI TV/projector with 2MBPS dedicated Internet bandwidth. vClass accounts for each participant institution and staff were created to enabled them in organizing tariff-shared training from teacher's campus to students at facilitator campus through respective users' functional roles assigned in the system as follows:

1. Trainers: They can publish details such as topic, schedule, teacher's profile, pre-reading materials to all students and facilitators on vClass website and conduct virtual classes. They can set exam papers and evaluate the answer sheets. They can also setup automatic evaluation patterns for objective question papers and get evaluation reports with their digital signature.
2. Demonstrators: During a training a session, the teacher and demonstrator could be different people at different locations, the system displays video of both trainer and demonstrator in separate quadrants.
3. Administrators: They register teachers and facilitators, set tariff sharing patterns, announce class sessions and course packages consisting of several sessions and topics and fees on the website. They also generate MIS reports (e.g., lecture volume by teacher, topic, center, day; performance rating from students of facilities, teachers and topics; revenue performance by topic, teacher and facilitator, etc.). They track and generate revenue and business intelligence reports and follow up with facilitators for payment collection.
4. Facilitators: They enroll interested students/patients by collecting fees and remitting the same into the vClass Cloud e-commerce application. They also have access to join various sessions booked for their students. The system automatically tracks and initiates e-payment of facilitation charges from the collected fee remittance after a class session is over.
5. Students / Patients: They can check courses / classes available and book by making direct e-payment through vClass system or cash payment to the coordinator. They can check class status and access pre-reading materials, attend classes and take up online tests and review results,
6. send feedback about topic, lecture, etc. from their local training facilitator premises.

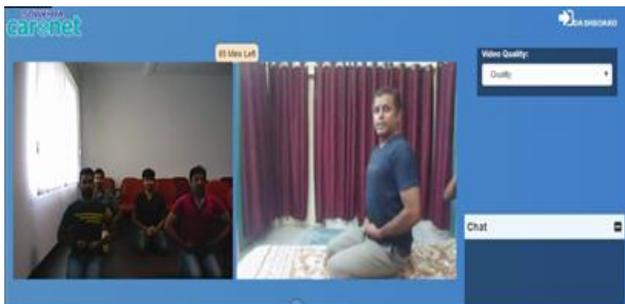


Figure2: yoga v-class

## OBSERVATION AND CONCLUSION

The system was used by Maitri foundation to simultaneously teach several students in remote classrooms. The students in such class room can join the teaching session through video conferencing as shown in figure 2. A chat window enables students in any classroom to send queries and comments during a class session from the computer in their classroom which reflects in chat window of all connected classroom PCs. The teacher can either view and answer to queries in the chat window itself or select the corresponding classroom to show in the video conference, so that all class rooms can watch and listen to the discussion of that classroom with the teacher. The teacher can also publish assessment question papers that students can fill with answers electronically from their mobile phones. The system can automatically verify objective answers against pre-defined answers and assign marks, and route subjective answers to examiners for evaluation and assignment of marks. The system was also used to train multiple patients with similar problems from Maitri classroom, while patients were located at their own homes using their laptops. Successful results have encouraged Maitri to begin empaneling expert yoga teachers from distant locations and offer several therapy yoga practice courses on a routine basis. The system has not only saved cost, inconvenience and accessibility of good teachers to students and patients, but has paved the way for collaborative gain among thousands of yoga specialists who lack facilities to train hundreds patients/students in the same time as they would spend to teach a single candidate. Trials showed the system performed with HD clarity in a training session with up to 16 live classrooms with about 4MBps bandwidth at teacher end and 2MBPS bandwidth at the classroom end. The successful trials has also led to ongoing pilot runs with Red Cross Society of India, to train disaster management and first aid on a mass scale through its district-level facilitators across the state of Karnataka.

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