Agora Real-Time Engagement Hackathon Challenges

HealthTech Domain

- **Telemedicine Consultation Platform:** Develop a telehealth application that connects patients with doctors via live video calls and messaging for remote consultations. Ensure high-quality video and low latency so that even rural patients can receive care in real time. Features might include session recording for medical records and optional interactive tools (e.g. image annotation for X-rays). *(Intermediate)*

- **Virtual Mental Health Therapy:** Create a secure platform for virtual counseling and therapy sessions. Patients and therapists meet over Agora's video or voice calls with an option to use avatars or blurred backgrounds for privacy. This enables access to mental health services from home, as seen with Talkspace utilizing Agora's real-time voice/video to revolutionize online therapy. Include text chat for sharing resources and ensure data security for sensitive conversations. *(Intermediate)*

- **Live Fitness Coaching App:** Build an app for live workout classes and personal training sessions via real-time video. Coaches can demonstrate exercises and give feedback on form, effectively allowing users to "work out with a personal trainer" remotely. Integrate Agora's low-latency streaming and AI noise suppression (so instructors are heard clearly over music or noise). Optional features: heart-rate IoT device integration or an interactive whiteboard for workout plans. *(Beginner)*

- **Remote Patient Monitoring & Alert System:** Design an IoT-integrated health monitoring platform that triggers instant support via Agora when needed. For example, if a patient's wearable or smart device detects an emergency (abnormal heart rate, fall detected, etc.), the app automatically starts a video call between the patient and a doctor or caregiver. Include real-time alerts, two-way video/audio, and messaging for immediate guidance. This 24/7 monitoring system can accelerate response times in critical situations. *(Advanced)*

- **AR-Assisted Emergency Response:** Create an augmented reality telemedicine solution for emergency or field situations. First responders or rural medics stream live video to a remote specialist who can draw AR annotations (using an interactive whiteboard overlay) on the video feed to guide procedures. For instance, a doctor could mark where to make an incision or how to position an injured limb in real-time on the paramedic's device. Such a system leverages Agora's ultra-low latency video and could save lives by bringing expert guidance to remote emergencies. *(Advanced)*

Education (EdTech) Domain

- **Virtual Classroom with Whiteboard:** Develop a full-featured virtual classroom platform for remote learning. The solution should incorporate real-time video conferencing, voice, interactive chat, and an interactive whiteboard for teachers and students. This allows teachers to deliver lectures, share slides or draw diagrams, and engage students with questions. High-quality low-latency video ensures a "live" classroom feel, and the whiteboard SDK lets multiple users draw or annotate simultaneously (e.g. solving math problems together). *(Intermediate)*

- **Language Exchange Chat App:** Build a language learning exchange platform that connects users with native speakers for live practice. Users can engage in one-on-one video or voice calls to practice speaking (for example, an English speaker learning Japanese can call a native Japanese speaker). Include text messaging for sharing phrases or corrections. Agora's global network would support low-latency calls even across continents, making real-time cultural exchange feasible. *(Beginner)*

- **AI-Powered Language Tutor:** Create an advanced language tutoring application that not only connects students and tutors via video but also provides live transcription and translation. For example, leverage Agora's Real-Time Transcription and Translation extensions so that when a tutor speaks, the student sees real-time subtitles in their native language. Tutors could be virtual AI agents or humans augmented by AI – the app might analyze pronunciation or grammar in real time. This platform could also include an interactive whiteboard for writing characters or sentences. *(Advanced)*

- **Virtual Science Lab and Demo Portal:** Develop a platform for teachers to conduct live science experiments or lab demonstrations remotely. The instructor can stream a close-up video of a science experiment, while students watch and interact via a synchronized chat or voice Q&A. Agora's low-latency streaming ensures students see experiments in real time, and the teacher can use a whiteboard or screen-share to explain concepts or note data. This gives students a lab-like experience from home. *(Intermediate)*

- **Augmented/Virtual Field Trip Experience:** Create an app that takes students on virtual field trips using AR/VR and real-time video. For example, a teacher or tour guide at a historical site or museum can live-stream a 360° video or AR experience to the class. Students could ask questions via voice or chat and direct the guide to explore certain areas. Such a solution could be built on Agora's live streaming and spatial audio to make remote exploration immersive. (One real-world parallel is the "virtual tour" experiences where travelers can walk the streets of distant cities with a local guide over live video.) *(Advanced)*

Gaming Domain

- **In-Game Voice Chat for Team Play:** Integrate Agora's voice SDK into a multiplayer game to enable real-time team communication. The task is to build a game (or mod an existing one) where players can talk to each other during gameplay with minimal latency. For example, a squad in a battle royale or a team in a MMORPG can strategize via voice just as if they were in the same room. Adding voice and video to games creates engaging social experiences that keep players coming back. Focus on easy push-to-talk functionality, 3D spatial audio (for realism of direction), and low impact on game performance. *(Beginner)*

- **Online Pictionary/Charades Game:** Develop a casual multiplayer game that uses Agora's real-time whiteboard and video. One player can draw on a shared whiteboard or act something out on video, while the others watch the drawing or video in real time and guess the word via a chat or voice input. This task combines interactive broadcasting (one to many) with real-time messaging for guesses. It demonstrates how Agora can enable fun party games remotely, maintaining low latency so guesses can come in live as the drawing unfolds. *(Intermediate)*

- **Virtual Tabletop RPG Platform:** Create a platform for playing tabletop role-playing games (like Dungeons & Dragons) online with rich real-time interaction. The solution should support a video chat for all players (so they can see and talk to each other), a shared whiteboard or map where the game master can draw scenarios or move tokens, and possibly text chat for dice rolls or private messages. This would allow friends to enjoy RPG sessions with the same social interaction as in-person. Agora's SDK can handle the group video/voice, and an interactive whiteboard can serve as the game board. *(Intermediate)*

- **VR Co-op Game with Spatial Audio:** Design a simple cooperative VR game or experience where players must communicate and work together to achieve goals. Use Agora's 3D spatial audio to make voice communication positional – in a VR environment, if avatars move apart, their voices get softer, adding realism. For instance, a VR escape room: players see a virtual environment (built in Unity/Unreal with Agora's Unity SDK) and talk to each other to solve puzzles. Spatial voice chat can simulate distance and direction of teammates. The focus is on integrating Agora voice in a 3D engine and handling the networking for VR. *(Advanced)*

- **Interactive Game Streaming Platform:** Build a "Twitch-like" live game streaming application with added real-time interactivity. A streamer can broadcast their gameplay via Agora's low-latency video streaming to a broad audience. Unlike traditional streams, viewers in this platform can interact with the streamer in real time – e.g., sending live audio comments/questions or joining the streamer's session briefly via video. The challenge is to allow some audience members to become participants. This could involve an host/audience mode where the host streams gameplay and can invite a viewer "on stage" via Agora's video for a quick

interaction (ask a question, play a quick round, etc.). This showcases Agora's capability to enable ultra-low-latency streaming to many while also managing live interactions. *(Advanced)*

Social Good & Civic Tech Domain

- **Disaster Relief Coordination App:** Create a real-time coordination platform for disaster response efforts. The application would allow volunteers and responders to communicate instantly via group video/voice rooms and share information via messaging. For example, during a natural disaster, affected individuals could join a video call to report their situation to relief coordinators, or volunteers on the ground could livestream what they see to a command center for quick assessment. A live map could show the locations of reports/streams. Agora's reliable, low-latency network would ensure communications get through even with network strain. The solution could be critical for coordinating aid in real time. *(Advanced)*

- **Sign Language Interpreter On-Demand:** Build a system that connects hearing-impaired individuals with qualified sign language interpreters through live video calls. In this scenario, a deaf user can press a button to initiate a video call with an interpreter who appears on their screen via Agora's video SDK. The interpreter can listen to an external conversation (e.g., a doctor's appointment or a public event via the user's device microphone) and sign it back to the deaf user over video, and voice the deaf user's sign language responses to hearing participants. This service could run on multiple platforms (mobile, web) to provide communication accessibility anywhere. *(Intermediate)*

- **Virtual Mentorship/Tutoring for Underserved Communities:** Develop a platform that connects volunteers or experts with students/individuals in underprivileged or remote areas for free tutoring and mentorship via real-time video. For example, a skilled professional can volunteer an hour a week to teach coding or English conversation to a student in a rural area through a live video call with screen sharing and chat for Q&A. Agora's cross-platform SDKs would allow this to work on low-end devices and networks as well, ensuring inclusivity. The app could include scheduling and maybe a whiteboard for teaching. *(Intermediate)*

- **Peer Support Group (Audio/Video Chat):** Create an application for anonymous peer support meetups (for mental health, addiction recovery, etc.) using Agora's real-time voice and video. Users can join a group voice chat room to share their experiences or just listen, simulating a support circle. Privacy can be maintained by allowing audio-only participation or using avatars instead of real video. Moderators (volunteers or counselors) can be present to guide the conversation. The platform should be simple (perhaps audio-first) to lower barriers to join, similar to a group phone call but with the option of text chat for sharing resources. *(Beginner)*

- **Civic Engagement Townhall Platform:** Develop a solution for local governments or community leaders to host virtual townhall meetings with citizens. The platform would support a live video broadcast of the official/panel and a mechanism for citizens to join via video or voice to ask questions. For example, the mayor can present via live stream, and attendees can "raise hand" to be brought on video to voice their question or feedback. Real-time chat can be used to queue questions as well. Agora's interactive streaming and signaling can manage bringing participants on stage and ensuring the stream scales to potentially hundreds of viewers. This fosters transparent, two-way communication between officials and the public, even when physically apart. *(Intermediate)*

Social & Communications Domain

- **Video Speed Dating App:** Build a platform for speed dating or networking that pairs people for one-on-one video chats. Users would enter a lobby and the app matches them for a short video call (e.g., 3 minutes each) using Agora's video SDK. After time is up, the app rotates to the next match. This repeats for several rounds. The core challenge is managing real-time video connections for rapidly changing pairs and perhaps an algorithm for matching based on preferences. This idea has been explicitly identified as a great use case for Agora's video SDK. Additional features could include text chat during or after calls (if both parties "match") and virtual background options to make users comfortable. *(Beginner)*

- **Random Video Chat with Interest Filters:** Create an Omegle/Chatroulette-style application where users can be randomly matched to video chat with strangers around the world, optionally filtered by shared interests or language. Using Agora, the app can instantly connect two users in a video call when they hit "Start." To keep things safe and fun, you might implement a system to skip to next, report users, or a text chat alongside video. The key technical challenge is dynamically handling many concurrent one-to-one connections and quickly cycling them. This showcases Agora's ability to handle rapid setup/teardown of channels at scale. *(Intermediate)*

- **Watch Party & Co-Viewing Platform:** Develop an app that lets friends watch videos or live streams together while video chatting. One user could stream a movie or share their screen playing a video, and the others' videos appear in small windows so everyone sees each other's reactions. All viewers should stay in sync with the content. Integrate Agora's real-time messaging or signaling to synchronize playback (for example, when the host hits play or pause, it syncs for everyone). Meanwhile, use Agora's video/voice SDK for the group chat. This creates a virtual living room experience for friends who are apart. *(Intermediate)*

- **AR-Enhanced Group Hangouts:** Build a fun social app for group video calls that includes augmented reality effects and avatars. Using Agora's video SDK in combination with an AR SDK (like Banuba or Snap filters), allow users in a group

chat to apply face filters, virtual backgrounds, or even appear as animated avatars in real time. The goal is a playful video chat experience – e.g. a group of friends could all wear goofy AR masks or transform into virtual characters while talking. With Agora's low latency and Banuba's AR effects (which include beautification, avatars, and game filters) integrated, developers can deliver these engaging experiences smoothly. *(Intermediate)*

- **Drop-in Audio Chat for Communities:** Create a social audio app (inspired by Clubhouse or Twitter Spaces) focused on a particular community or interest. Users can start or join audio-only rooms to discuss topics – for example, a "Tech Talk" room or a "Music Lovers" room – where one or a few people speak and others can listen or be invited to speak. Utilize Agora's real-time voice API to ensure high-quality, low-latency audio streaming even with large audiences. Include features like raising hand to speak, text chat for backchannel conversation, and perhaps recording of sessions. This app highlights Agora's strength in live audio streaming and scalability for interactive broadcasts. *(Beginner)*

Media & Entertainment Domain

- **Interactive Live Concert Platform:** Build a virtual concert experience where artists can perform live to an online audience and fans can actively participate. The platform would live stream a performance using Agora's Interactive Live Streaming, and incorporate features for fan engagement – for instance, a limited number of fans can join via video to "come on stage" virtually with the artist for a Q&A or duet. Others could send real-time text messages or audio shoutouts. Agora's technology has been used for high-profile virtual events with large audiences, providing the quality and scalability needed. This task would involve managing two modes: a broadcast mode for the performance and an interactive mode for select fan interactions, switching seamlessly between them. *(Advanced)*

- **Online Talent Show Competition:** Create a platform to host a virtual talent show or hackathon demo day where participants present one by one on a live video stream. The app would queue performers (singers, demo presenters, etc.) to broadcast via Agora when it's their turn, while judges and audience watch in real time. Judges could be on a panel via group video call (visible to the audience), using Agora's multi-host streaming, and they can provide live feedback after each performance. The audience can vote or send reactions through real-time messaging. Essentially, this is like a TV talent show done interactively online. It demonstrates multi-host video, audience engagement, and dynamic switching of live feeds. *(Intermediate)*

- **Live Podcast with Audience Q&A:** Develop a platform for live podcast or talk-show style sessions with integrated audience interaction. Hosts can stream their discussion (audio or video) live, and listeners can join in by voice to ask questions or give comments (like call-ins). Agora's real-time audio streaming ensures listeners hear the conversation with minimal delay, and the host can invite a listener "on

stage" to speak by unmuting their Agora voice channel. Features might include a text chat for submitting questions, and moderation controls for hosts. This creates a more interactive version of a podcast or radio show – more like a live audio stage. (Agora's platform supports livecast and the ability for hosts to pass the mic to the audience.) *(Intermediate)*

- **Remote Music Jam Session App:** Build an application that enables musicians in different locations to jam together in real time. This is challenging because it demands ultra-low latency audio for music synchronization. By using Agora's low-latency voice channels (possibly in stereo high-fidelity mode) and perhaps spatial audio, the app can connect, say, a guitarist, drummer, and singer so they can practice or improvise music together. Include features like an audio mixer (so each user can adjust volumes) and maybe a shared metronome or visual cue to help stay in sync. This showcases the platform's ability to handle real-time audio with minimal lag. *(Advanced)*

- **Sports Fan Audio Zone:** Create a social platform for sports fans to engage during live games. Users can join team-based audio chat rooms or "fan zones" while watching a sports match on TV. In each room (e.g., "Team A Fans"), Agora's voice SDK lets them cheer, comment and react together in real time, almost like being in a virtual stadium section. You could incorporate spatial audio to mimic crowd noise (so one loud fan doesn't drown others entirely). Another feature could be a live score ticker or the ability for a host (perhaps a sports influencer) to pop in and do live commentary. This gives fans a sense of community and interactive audio commentary while watching the game from home. *(Beginner)*

Retail & E-Commerce Domain

- **Live Shopping Showcase:** Develop a live commerce platform where sellers or influencers can demo products in real time to viewers. Essentially, this is like a home shopping channel but interactive on mobile/web. The host uses Agora's live video streaming to showcase products (clothing try-on, gadgets, etc.), and viewers can ask questions or request to see different angles via a real-time chat. The goal is to increase engagement and trust, as live shopping can make e-commerce more relatable and exciting. Features might include a product catalog sidebar, real-time like/react buttons, and an option for viewers to join via audio/video briefly if the host invites them (for example, to show how a product would look on a viewer). *(Intermediate)*

- **Virtual Try-On with AR Assistant:** Create an application that allows customers to virtually try on products (like apparel, glasses, or makeup) with guidance from a remote expert via video. For example, a user looking to buy glasses uses their camera; the app applies AR filters to show different frames on their face, while a store assistant is on a live Agora video call giving advice. Banuba's AR SDK (or similar) could handle the virtual try-on filters, and Agora handles the live video/voice

and background AR effects integration. This provides a personal shopping experience online, where the real-time video and AR make it feel interactive and personalized. *(Advanced)*

- **Remote Real Estate Tours:** Build a platform for real estate agents to give live virtual home tours to remote buyers. An agent at the property can stream high-definition video as they walk through the house, using Agora's low-latency video to allow potential buyers to feel as if they are there. Buyers can ask the agent to zoom in on details or answer questions via voice or chat in real time. Additional features could include a shared interactive floor plan or the ability for the agent to quickly pull up photos for when network might not show detail. This saves travel time and is more engaging than static 3D tours because the buyer can direct the tour. *(Beginner)*

- **Live Auction Platform:** Develop an online auction system where an auctioneer can livestream an auction and bidders participate in real time. The auctioneer broadcasts video and audio (using Agora) of themselves and the item on sale, creating the atmosphere of a live auction. Participants can place bids through a real-time messaging interface; bids should be displayed to everyone instantly. Optionally, the highest bidder or random participants could be invited on video briefly (e.g., to show the excitement). This use case was suggested as an exciting application of real-time video SDKs. Ensuring minimal latency is crucial so that bids come in without lag before "going once, going twice, sold!" *(Intermediate)*

- **Farmers' Market Live Hub:** Create a social commerce platform that connects local producers (farmers, artisans) with consumers via live stream. Sellers can start a video stream from their farm or market stall showing available produce or goods, essentially creating a virtual farmers' market. Consumers browsing the app can drop into a live stream, see the products, and interact via chat or voice to ask questions like "How fresh is that spinach?" or "Can you show that item closer?" This real-time interaction builds trust and community. Leverage Agora's scalability so multiple vendor streams can happen simultaneously, and viewers can seamlessly switch between stalls. Purchasing could be integrated by linking to an order form when a viewer likes what they see. *(Intermediate)*

Workplace & Productivity Domain

- **Virtual Office for Remote Teams:** Build a "virtual office" platform that enables distributed teams to collaborate in real time throughout the work day. Features could include always-on Agora video chat rooms (e.g., one per team or project) that colleagues can enter/exit freely, simulating an office environment. There might be a virtual "floor plan" UI to show who is in a meeting room or who is available at their desk (camera on). The platform should integrate screen sharing and an interactive whiteboard for spontaneous brainstorming sessions. Essentially, it provides the immediacy of in-person communication in a remote setting. (For instance, Loop

Team created a virtual office tool using Agora for multi-party video collaboration.) *(Advanced)*

- **Remote Interview and Coding Test Platform:** Develop an application for conducting job interviews remotely, especially technical interviews. The app would combine a video call (interviewer and candidate on Agora video) with a collaborative coding environment or whiteboard. The interviewer can pose coding questions, and the candidate can write code in a shared editor while explaining via voice. Both parties should see edits in real time and run test cases if needed. For non-technical roles, the shared workspace could be used for case studies or mind maps. Additional features: recording the interview, and an option for the interviewer to take private notes. This solution streamlines remote hiring by incorporating all necessary tools into one platform. *(Intermediate)*

- **AR Remote Customer Support:** Create a tool for customer support or field service that uses AR and live video to help solve problems with hardware or equipment. In this scenario, a customer or field technician initiates a support session via Agora video call with a support agent. The customer can point their phone camera at the broken device, and the support agent can see the live feed and use augmented reality drawing to highlight parts or guide the fix (e.g., "turn this knob" with an arrow overlay on the video). This concept is similar to how utility or tech companies use AR for remote assistance, but here it can be applied to consumer products (appliances, routers, etc.). This task involves combining Agora's real-time video with an AR annotation capability. *(Advanced)*

- **Always-On Team Lounge (Virtual Watercooler):** Build a lightweight web or mobile app that serves as a persistent audio/video lounge for a team or community. The idea is to recreate the informal interactions that happen by the office watercooler or break room. The lounge is essentially an ongoing Agora channel that team members can join whenever they want to socialize or co-work quietly together. One could implement voice drop-in as default (to mimic background office chatter) and video on demand. Additional features: "rooms" with topics (like #random for casual chat, #focus for silent co-working where mics are muted but presence is felt via video), and fun AR filters or reactions to emulate a casual vibe. *(Beginner)*

- **Internal Training & Webinar Platform:** Create a private live streaming platform for companies to conduct internal training sessions, workshops, or all-hands meetings. The solution would allow a presenter (or multiple presenters) to broadcast video and slides to employees, with interactive elements like live Q&A chat, polls, or the ability for an attendee to hit a button to ask a question via audio/video briefly. Essentially, this is a company-only version of a webinar tool, built on Agora for low latency and interactivity. One could include features like screen sharing (for slide presentations), session recording for those who missed it, and user authentication to restrict access. This could help enterprises easily share knowledge and updates with employees anywhere in real time. *(Intermediate)*

IoT & Smart Environments Domain

- **Smart Home Monitor (Camera & Intercom):** Build a home security and baby-monitoring app using Agora's real-time communication. For instance, set up a network camera (or a phone acting as a camera) that streams live video to the homeowner's app. The homeowner can view the video feed remotely and speak through the app – the voice is played on a speaker at home via Agora's voice channel, acting as an intercom. This could enable a user to check on a baby from another room or talk to someone at their doorstep. The app should support instant connection to the video stream with minimal lag, and perhaps motion detection alerts (integrated with IoT sensors) to trigger the video/voice session. *(Beginner)*

- **Telepresence Robot System:** Develop a system to control a telepresence robot or roving device with real-time video feedback. The user would be able to drive a robot (which has a camera and screen) in a remote location. Using Agora's SDK, stream the robot's camera view to the user's controller app with ultra-low latency, and send the user's voice/video to the robot's screen/speaker. This would allow, for example, a remote worker to roam an office or a participant to attend a conference remotely by driving a robot around. The challenge includes integrating IoT control signals (to move the robot) alongside Agora's real-time audio/video feed. *(Advanced)*

- **Drone Surveillance/Inspection App:** Create an application for controlling a drone with a live video feed for remote inspection tasks. The app would connect to a drone's camera and stream video to an operator in real time via Agora (assuming the drone can output to an RTMP/RTC channel or a mobile device attached). The operator can give commands or steer the drone (possibly via a gamepad or on-screen controls) while watching the low-latency video feed for immediate feedback. Use cases could be inspecting infrastructure (like cell towers, pipelines) or search-and-rescue operations where remote experts guide the drone. The emphasis is on integrating real-time video with IoT control for a remote vehicle. *(Advanced)*

- **Industrial AR Maintenance Support:** Develop an application for field technicians that facilitates remote expert support during equipment maintenance, using AR and live video. A technician on-site could wear smart glasses or use a mobile device to stream what they are seeing to a remote expert via Agora. The expert can then draw annotations (AR overlays) on the live video or send schematics in real time to guide the repair. This concept is already being applied in utility maintenance – e.g., Agora powers AR solutions where field workers share what they see with office staff, including AR visuals. Your solution would demonstrate how a combination of live video, audio, and AR annotation can reduce downtime in industrial settings by bringing expert help instantly. *(Advanced)*

- **IoT Alert with Instant Video Call:** Create a smart IoT alert system where sensors or devices can trigger real-time communication. For example, imagine a factory safety

system: if a sensor detects a machine anomaly or a person falls, it automatically initiates an Agora video call to a supervisor along with a live camera feed of the area. Similarly, a smart home security system could start a video call to the homeowner when an alarm triggers. The project involves integrating Agora's SDK with IoT event logic – when an MQTT/HTTP alert comes in, the app opens a channel. Agora's reliability and low latency ensure that support can be summoned instantly when an issue is detected. *(Intermediate)*

Metaverse & XR Domain

- **VR Virtual Office/Meeting Space:** Build a virtual reality meeting application for remote teams, where each user is represented by a 3D avatar in a VR environment (like a virtual conference room). Using Agora for real-time voice (with spatial audio) and possibly video streaming on avatar surfaces, team members can have natural conversations – when someone "sits" to your left in VR, you hear them from your left, etc. The app could be built with a game engine and integrate Agora's SDK for voice comms and maybe the **3D Spatial Audio** extension for positioning sound. This creates an immersive collaboration experience that bridges physical distance. Additional features might include a shared screen in the virtual room (stream an Agora video of a screen share) or interactive 3D models that everyone can see. *(Advanced)*

- **Virtual Conference/Expo World:** Create a platform for hosting large-scale virtual events or trade shows in a metaverse-like 3D space. Attendees join as avatars (on VR headsets or desktop/mobile) and can navigate an expo hall, walk up to booths, and talk to booth representatives via voice chat. Agora's SDK would handle voice zones – e.g., when your avatar is near a booth or group, you can hear and talk to them, but not others far away (spatial audio zones). There could be virtual auditoriums where keynote talks are streamed (using Agora's interactive streaming for the speaker's video to appear on a virtual screen). This challenge combines real-time streaming for presentations with many-to-many proximity voice chat for networking. It demonstrates how Agora can underpin complex metaverse events by connecting people across devices in one shared space. *(Advanced)*

- **Avatar-Based Video Calls:** Develop an application that replaces traditional video feeds with animated 3D avatars in real time. The idea is a video chat app where users see each other not as camera video boxes, but as animated characters that lip-sync and mimic facial expressions. This can be achieved by using AR face tracking on each client to drive the user's avatar, while using Agora to send the tracking data or the rendered avatar video stream. For example, one could integrate Agora video with an SDK like Banuba or ReadyPlayerMe: as a user speaks and moves, their avatar does the same. Banuba's tech provides face filters and even avatar capabilities compatible with Agora's streaming. This would appeal to users who are camera-shy or who want a playful, personalized communication experience. *(Intermediate)*

- **Immersive Virtual Tourism:** Create a platform for live, interactive VR travel experiences. A local guide in a city uses a 360° camera or a phone to stream a real-time immersive video (possibly equirectangular) to remote "tourists." Remote users, ideally with VR headsets or at least a panoramic viewer, can look around the scene as if they are there. They can talk to the guide via Agora's voice channel to ask questions like "Can we go inside that building?" Agora's network will carry the 360° video stream with low latency so the experience feels live. This can open travel experiences to anyone at home – similar to how 360 Stories enabled virtual walking tours of cities worldwide with local guides, using Agora's live streaming for crisp video/audio. *(Advanced)*

- **Spatial Audio Virtual Lounge:** Implement a 2D/3D social platform where users navigate a virtual space (not necessarily VR – could be a game-like top-down map or 2D avatar world) and converse via voice when near each other. Agora's **3D Spatial Audio** can be used so that when two avatars are close, they hear each other loudly, but as they move apart, the voices fade out. This could be like a virtual cocktail party or networking lounge – users can move their avatar with arrow keys and spontaneously join conversations by approaching groups, just like in person. The technical focus is on integration of position data with Agora's spatial audio processing. (Imagine an online version of mingling where dozens of simultaneous conversations happen, each using peer-to-peer voice channels localized by position.) This demonstrates a creative use of real-time voice in a social context. *(Intermediate)*