Life Online (Piano Telephone)

A submission by Andrew Monks for *Piano, Alone in a Room: Translating/Transcoding*.

Thematic Description

These days, aren't we are all alone in a room? Our communication–what makes us human–is mediated through a substrate of bits, waves, and networks. These systems translate and transcode our faces, our speech, our affect. And the translation is imperfect! Its encoding is incomplete! It carries latency! When our humanity is quantized, measured, made legible to the machine, we strip away its complexity and nuance. We use media that limits our emotions to "like" and "dislike", "thumbs up" and "thumbs down": conforming the richness of our spirit into schema and structure.

And yet, these same systems enable so much: we can communicate (however mediated) across space. We can form communities of interest, we can collaborate, we can play. Consumers become producers. We are all agents of cultural production: discovering, forking, contributing, remixing, archiving. With all this creation, the artifacts of our culture drag a complected web of provenance, layers of meaning translated through time, alternately accreting and shedding. Ideas and memes pass through our culture like a game of telephone, transcoded at each step.

Life Online explores these themes through the lens of piano music. We present our audience with a mediated interface to a disklavier piano: a handful of keys. Our players, geographically and temporally distributed, participate through this interface, collaboratively playing and recording a piano score. Our playing fleetingly becomes physical on the disklavier, but this is just a single moment: no human can hear it before it is captured again, transcoded into a digital audio-video, and relayed back to us through a corporate streaming platform.

Subjective Description

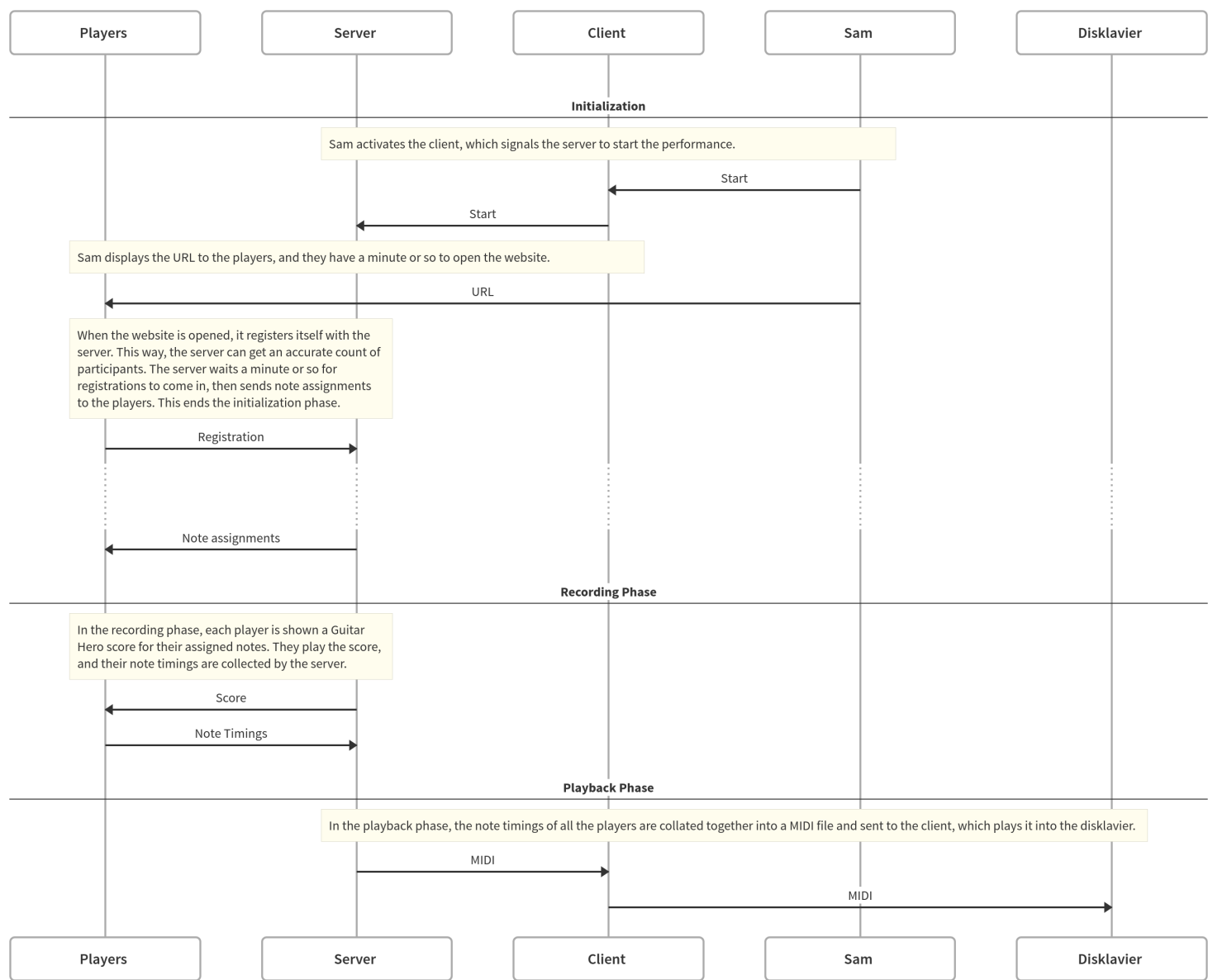This performance has two phases: recording and playback.

In the recording phase, the disklavier is not used. Audience members are invited to visit a website. Two things are on the screen: a few playable piano keys (each visitor gets a different handful of notes) and a scrolling musical score. Together, the two parts of the interface evoke rhythm games like Guitar Hero. The participants simultaneously play a round of Piano Hero, each playing a different handful of notes of the same song: if Bob is assigned D4 and B♭6, his score has only those notes, and he only sees those two keys, which he plays at the appropriate moments. Everyone's playing is sent back to the server for the playback phase, combining Bob's D4s and B♭6s with the input from other players.

In the playback phase, each participant's note timings are collated together into a single midi stream, which is sent to the disklavier, recorded, and livestreamed back to the players, who sit and listen. Finally, a midi file is made available for subsequent remixing.

Material Description

This system has the following components:

- **Sam**, contrary to the first constraint of the show, is (I presume) in the room to switch between pieces and operate the computer plugged into the disklavier.
- The **Disklavier** is a Yamaha MX100 MkII Disklavier.
- The **Client** is a program which runs on the computer plugged into the disklavier.
- The **Server** is a program which runs "in the cloud" or something. It hosts a website that is accessed by the Players. It also communicates with the Client.
- The **Players** are the audience members slash participants. They are probably watching the livestream on their computers, and they are expected to interact with the piece on their phones.

Players	Server	Client	Sam	Disklavier

Initialization

Sam activates the client, which signals the server to start the performance.

Client ← Start ← Sam

Server ← Start ← Client

Sam displays the URL to the players, and they have a minute or so to open the website.

Players ← URL ← Sam

When the website is opened, it registers itself with the server. This way, the server can get an accurate count of participants. The server waits a minute or so for registrations to come in, then sends note assignments to the players. This ends the initialization phase.

Players → Registration → Server

Players ← Note assignments ← Server

Recording Phase

In the recording phase, each player is shown a Guitar Hero score for their assigned notes. They play the score, and their note timings are collected by the server.

Players ← Score ← Server

Players → Note Timings → Server

Playback Phase

In the playback phase, the note timings of all the players are collated together into a MIDI file and sent to the client, which plays it into the disklavier.

Server → MIDI → Client

Client → MIDI → Disklavier

Players	Server	Client	Sam	Disklavier

If we zoom out and consider a larger system, we can introduce some more components:

- A **Camera** is pointed at the disklavier and plugged into Sam's Laptop.
- A **Stream Program** is running on Sam's Laptop, capturing and streaming video from the camera.
- A **Stream Server** is running in the cloud, hosted by (eg) Twitch, receiving and distributing video from the Stream Program.
- **Computers** in front of the Players receive and display video from the Stream Server
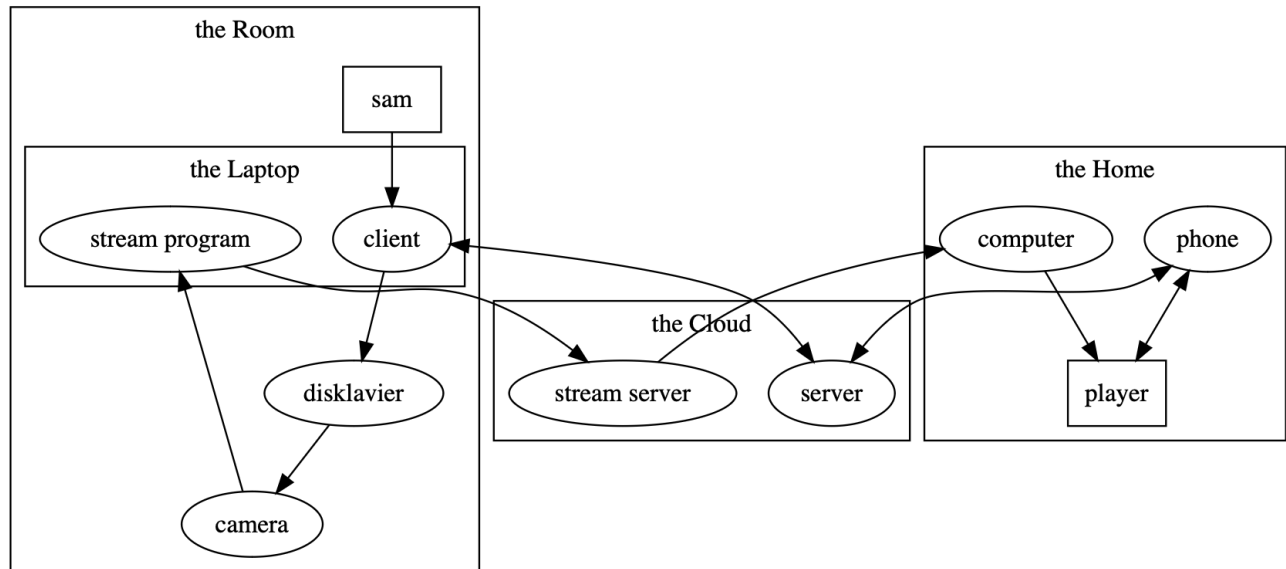
If we tease the system apart, we see that it is a circle, which is always significant.
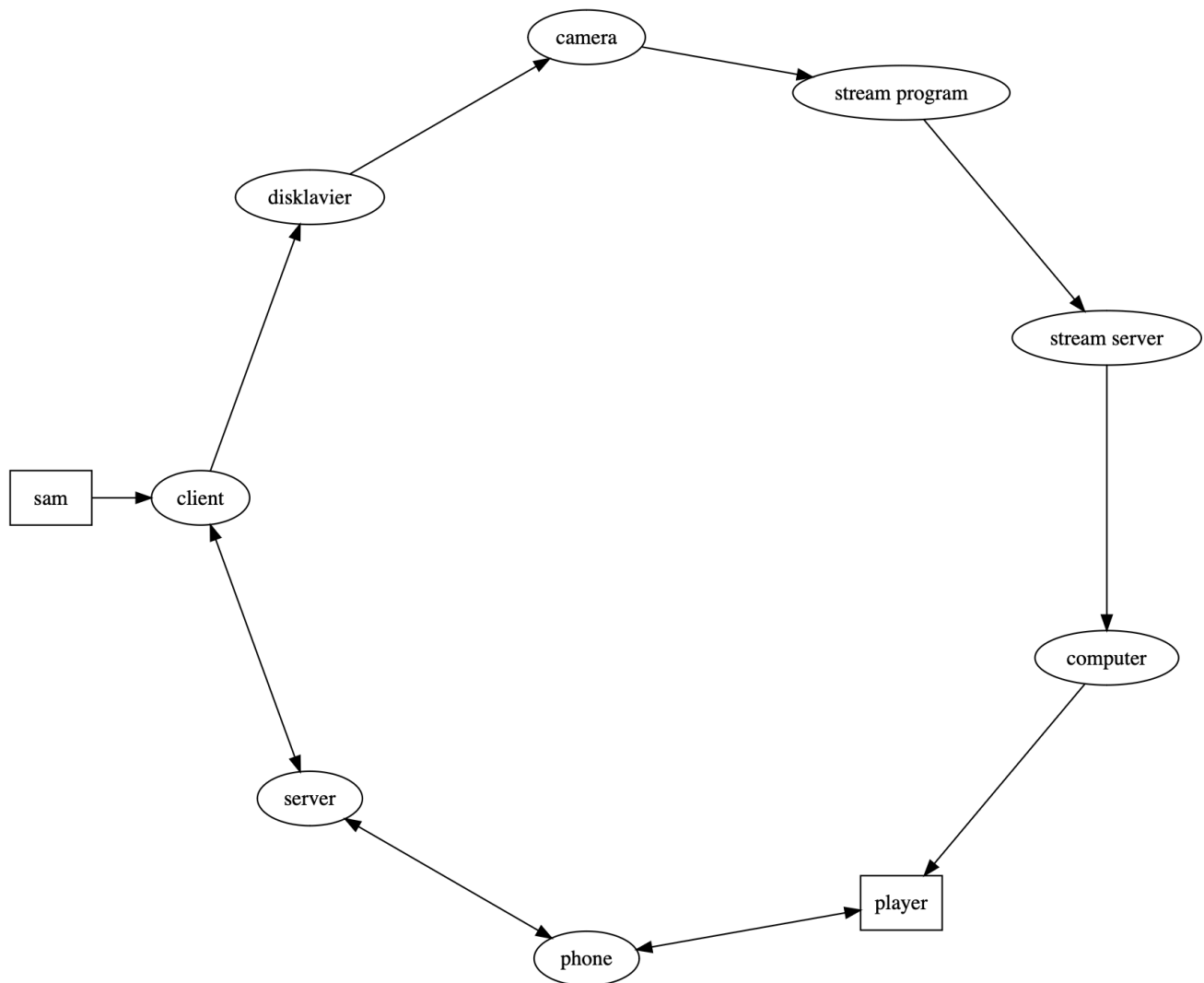
Technical Details

Duration

The duration is a bit variable, but we can estimate it as follows:

1. We'll allow a couple minutes for folks to open the website so that we can get an accurate participant count and assign notes.
2. The score should be 1 to 3 minutes in length, so that's how long the recording phase will take, plus a minute or so of padding to allow folks time to read the instructions and complete the activity at their own pace.
3. The playback phase is the same length as the score: 1 to 3 minutes

Together, that's a minimum of, let's say, 6 minutes.

I think it would be fun to do two scores: an easy demo (Happy Birthday, say) so that folks can get their bearings and understand what's going on, followed by some famously difficult section of a well-known work for piano.

If we imagine that the easy demo is 1 minute and the difficult piece is 3 minutes, that takes us to a total of no more than 15 minutes.

Client Requirements

If you're comfortable with running programs in the terminal, I'd prefer to provide the client as a single MacOS executable universal binary with no dependencies. If that's uncomfortable, I can instead provide a website url, but that's a bit more work on my end.

If there are multiple midi output ports, the client may list their names and prompt you to choose the disklavier.

Visual Element

The piece requires directing audience members to a website, so that direction is my visual element. If you'd like, I can make the client throw up a window with for you to display on the stream. Alternately, and I suspect this will be easier for your workflow, you can display the URL via whatever mechanism you're using for other visual elements.

Artist Bio

Andrew Monks makes networked systems in Chicago. Previously, he brought artists' practices to industry, helping build an IoT network connecting the millions of trucks and drivers that are America's nervous system. Now, he brings industry's practices to the arts, building critical information systems like this one.