

# MicroJam: An App for Sharing Tiny Touch-Screen Performances

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## ABSTRACT

MicroJam is a mobile app for sharing tiny touch-screen performances. Mobile applications that streamline creativity and social interaction have enabled a very broad audience to develop their own creative practices. While these apps have been very successful in visual arts (particularly photography), the idea of social music-making has not had such a broad impact. MicroJam includes several novel performance concepts intended to engage the casual music maker and inspired by current trends in social creativity support tools. Touch-screen performances are limited to five seconds, instrument settings are posed as sonic “filters”, and past performances are arranged as a timeline with replies and layers. These features of MicroJam encourage users not only to perform music more frequently, but to engage with others in impromptu ensemble music making.

## Author Keywords

mobile music, touchscreen, social computing, ensemble

## ACM Classification

H.5.5. [Information Interfaces and Presentation] Sound and Music Computing — Systems, H.5.3. [Information Interfaces and Presentation] Group and Organization Interfaces — Asynchronous Interaction

## 1. INTRODUCTION

MicroJam is a touch-screen app designed to encourage *ensemble* interactions among users who are separated in space and time. Much as forum posts and tweets can have replies, so might musical performances. In MicroJam, users perform short performances on the touchscreen, up to a maximum time of five seconds, which are uploaded automatically. Other users’ apps automatically download their friends performances, to which they can listen and reply. The interface for MicroJam emphasises frequent creation of short performances and direct connection between touch-screen interaction and sound. The layering of replies and performances allows ensemble performances to be accrued over time, enabling distributed and asynchronous collaborative creativity. In this demo, MicroJam is presented a working

prototype<sup>1</sup>. We aim to explore possibilities for ensemble interaction in a mobile music DMI and the creative space of tiny touch-screen musical performances.

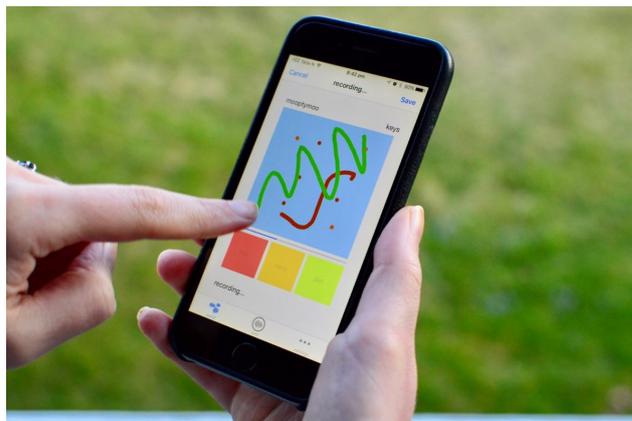


Figure 1: MicroJam is an app for recording and sharing very short touch-screen performances.

## 1.1 Jamming through space and time

Ensemble performances generally take place in the place, and at the same time, for all performers in the group. This is most often the case for ensemble NIME performances that occur in the concert hall, studio, or pub stage. HCI frameworks for cooperative work systems do address the collaboration across space and time [4]. What could such systems look like for musical performances? Can performers derive some of positive aspects of ensemble performances by collaborating asynchronously?

Mobile devices are a prime candidate for asynchronous and distributed ensemble performances as users tend to carry these wherever they go. Mobile device ensembles have been extensively explored [6, 3, 5] although these have usually focussed on co-located and synchronous performances. Smule’s apps such as Ocarina [7], Magic Piano, and Sing Karaoke notably connected remote users. Ocarina introduced the concept of a “world stage” where users could listen and rate performances by other users and Sing Karaoke allows users to record different layers of pop songs creating asynchronous band demos.

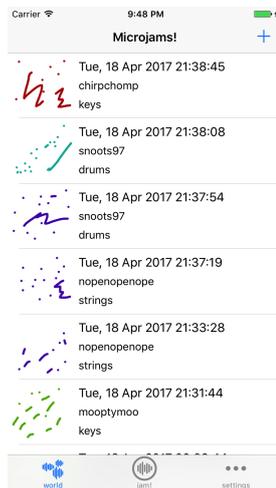
While Sing Karaoke is limited to pre-arranged pop songs, many musical possibilities are ruled out by this restriction; in particular, new interface designs not modelled on existing instruments could be distributed and tested by ensembles of remote users. Such users may find hidden affordances of this online medium and expand the possibilities of mobile music

<sup>1</sup>The source code for MicroJam is available at: <http://doi.org/10.5281/zenodo.322364>



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**Figure 2: MicroJam’s list screen showing previously recorded jams. Each can be selected for playback or recording a reply.**

performance. MicroJam is posed as an app platform for exploring mobile, distributed, and asynchronous co-creative systems.

## 2. DESIGN

The present version of MicroJam is an iOS app written in Swift with web backend provided by Apple CloudKit. The main screen consists of a list of performances (see Figure 2) downloaded from other app users. These can be selected, played back, and used as the basis for reply performances.

New performances can be created by selecting the “+” symbol. The jamming screen (Figure 3) then appears, allowing the user to record a new performance. A number of sound schemes can be selected for the performance. As of writing, these consist of a simple theremin-like sound, a keyboard sound, a Karplus-Strong modelled string sound, and a drum set. Refinements in the mapping from touch-screen to synthesised sounds is ongoing to provide a variety of expressive options for users. During performance, touchscreen interactions are visualised similarly to a simple “paint” app. This visual trace of the performance is used to represent the jam on the list screen. As seen in Figure 3, initial tests suggest that users enjoy creative cross-over between visual doodling and musical performance.

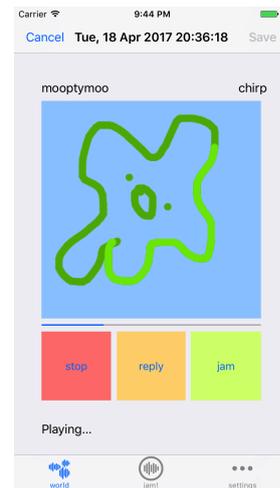
While the current prototype only supports one reply, further enhancements aim to support multiple replies leading to threads of continually evolving ensemble performances.

### 2.1 Tiny Musical Performance

In MicroJam, a musical performance is defined to be five seconds of interaction in the square touch screen area seen in Figure 3. In this five seconds, users may tap, swipe, swirl, and otherwise interact in any way in the touch-screen area. Touchscreen data is simultaneously recorded, mapped to synthesised sounds, and visualised. After the performance, a list of the touch-screen interactions is stored on the web service (CloudKit). This recording can also be exported as a CSV file for later analysis. MicroJam performances recorded so far result in CSV files of about 5kB in size so uploading is possible even on very slow connections.

## 3. RESEARCH GOALS

MicroJam is intended to be used as a research tool to examine the potential for ensemble performance in everyday



**Figure 3: The MicroJam recording screen; 5-second long performances encourage a fast cycle of recording, listening, and replies.**

smartphone music interaction. Research goals include developing a large corpus of tiny musical performances and developing methods for generating these automatically based on the styles of individual users. Future investigations in this app will focus on the potential to predict [1] reactions from a user’s friends and implement improvising and accompanying algorithms [2] that emulate an ensemble performance experience in real-time.

### Acknowledgments

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