

# A Virtual Cocktail Party: Supporting Informal Social Interactions in a Virtual Conference

Poster Paper

Bill Rogers  
Department of Computer Science  
University of Waikato  
New Zealand  
william.rogers@waikato.ac.nz

Masood Masoodian  
Department of Media  
Aalto University  
Finland  
masood.masoodian@aalto.fi

Mark Apperley  
Department of Computer Science  
University of Waikato  
New Zealand  
mark.apperley@waikato.ac.nz

## ABSTRACT

Whilst the primary purpose of conferences is work – formal exchange and sharing of information – they almost always also include elements of play: informal social and entertainment elements, such as receptions, dinners, and tourism activities. These activities also provide the opportunity for ‘serious’ discussions, meeting people, and networking, and are an essential part of a good conference. Despite this, most virtual conferencing tools fail to provide support for such activities, instead focusing on austere goals related to saving money, time, and travel. This paper describes the concept of a Virtual Cocktail Party (VCP) tool to integrate into a virtual conference environment. In VCP the ‘party’ is presented as a mixture of individuals and small conversation groups ‘circulating’ at the virtual venue. Exploiting an automated speech-to-text system words from conversations are shown in word-clouds displayed around conversation groups, sufficient to identify topics of conversation allowing participants to decide whether or not to join a particular group.

## CCS CONCEPTS

• **Human-centered computing** → **Collaborative and social computing systems and tools**;

## KEYWORDS

Virtual conference, virtual party, virtual socialization, conversation visualization, speech recognition, speech-to-text.

## ACM Reference format:

Rogers, B, Masoodian, M., and Apperley, M. 2018. A Virtual Cocktail Party: Supporting Informal Social Interactions in a Virtual Conference. In *Proceedings of International Conference on Advanced Visual Interfaces (AVI'18)*. ACM, New York, NY, USA, Article 3 pages.

---

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).

AVI'18, May 2018, Grosseto, Italy  
© 2018 Copyright held by the owner/author(s)

## 1 INTRODUCTION

The primary purpose of a work-related conference is to be a venue for the exchange of knowledge, providing participants with an opportunity to present their work, and see or hear about the work of others. However, conferences have other benefits. They are usually held in interesting locations, providing a ‘vacation’ element. There are dinners and receptions and sometimes entertainment. Participants may group together outside the organisation of the conference itself, and meet to explore and experience local attractions. Attending a conference can be a ‘fun’ experience, as well as a professionally satisfying one [2].

Of course, the ‘fun’ or ‘social’ dimensions interact with, and support, the more obvious ‘serious’ dimensions. Being away from day-to-day working and home life enables participants to fully engage at a conference without the interference of other responsibilities. Meeting and talking to other participants provides ‘side-band’ information: what topics are hot; what are people thinking of doing next; whose views are respected and whose are not; good ways of approaching funding sources; are people really serious about particular topics – information that cannot be, or rarely is, written down. Being together in an unfamiliar setting without distractions pushes people to interact. It might be hard for a new member of the community to approach a senior colleague in their home setting, and harder still to maintain a useful conversation. At a conference the two might be seated next to each other at a dinner, or find themselves in a transport queue together. Conversation can be partly about circumstances, the food or the traffic, and partly ‘serious’.

Although virtual conferences are often advocated as suitable, or even superior, alternatives to physical conferences, they generally overlook these social aspects of face-to-face conferences. In this paper we propose a first step towards creating virtual conferences which maintain some of the engagement and side-band activity of real conferences. For this context we present a preliminary design for a system we call the Virtual Cocktail Party (VCP) and describe a partial prototype implementation demonstrating both the technical feasibility of the design, and its appearance and interaction style.

## 2 FUN AT VIRTUAL CONFERENCES

Various virtual conference formats and arrangements are possible, but the format used by the Humanities Climate Change Conference (HCCC) 2016 is well documented. It was designed specifically to replace the alternative face-to-face conference [6]. The conference took place over three weeks, with an opening session, keynote talks, and paper sessions (panels) with discussions. Written abstracts and video presentations were made available electronically in advance. A range of advantages over a conventional conference are claimed in the report, including, for example, lower cost, more efficient use of time, and no streaming, but the “loss of direct human contact” is acknowledged. Although reference is made to studies showing that “young adults consider their Facebook friends just as important as ...”, implying that good ‘human’ contact can occur electronically, the report largely dismisses the importance of contact outside the formal part of a conference, noting that it is “a privilege and a limiting one”.

Online activity need not be austere. In other settings social interaction on-line is pursued primarily for ‘fun’, for example World of Warcraft<sup>2</sup> and Second Life<sup>3</sup>. Second Life has also been widely used for virtual meetings, allowing participants to move around in the extensive world setting making it possible to get together and talk outside the immediate setting of the meeting itself. There are limitations however, in its forms of interaction. Avatars offer very little opportunity for expression and can be clumsy to manipulate [1]. These limitations have been addressed for example, in experimental systems for small virtual meetings where avatars faces were replaced by video feeds of the participants [4]. Our concept lies somewhere between such a model and a conventional video conference.

## 3 VIRTUAL COCKTAIL PARTY

In VCP the virtual conference participants are assumed to be physically alone, with a computer connection to the conference ‘cocktail party’. The main screen of VCP presents a party scene, showing groups of people and individuals who are at the conference. As with a real party with a large crowd, only some of the groups are immediately visible, and in VCP participants can pan around the party scene using their mouse.

At a real party, there are at least two factors which help people make a decision whether or not to join a group: the actual set of group participants – both the individuals and the group size; and some sense of the topic of conversation, perhaps after overheard snippets. To facilitate this decision in the virtual environment, VCP shows the names of group members, and displays words extracted using speech recognition, as shown in Figure 1. The speech-to-text approach leverages a particular advantage of the virtual conference environment: that there is clean audio from each participant. The human ability to focus attention on one speaker amid many – the “cocktail party effect” – is essential for

communication in a real party [3], but there is no such need in the virtual conference. VCP chooses words from the transcribed text, and displays them in word-clouds around the groups. We hypothesise that some level of inaccuracy in word recognition is likely to be acceptable, and the rendition of keywords is a useful attention grabber [7]. Randomly ordering and mixing words preserves an element of privacy (our system does not actually record conversations), and VCP removes hints after a period of time, to keep the display current.

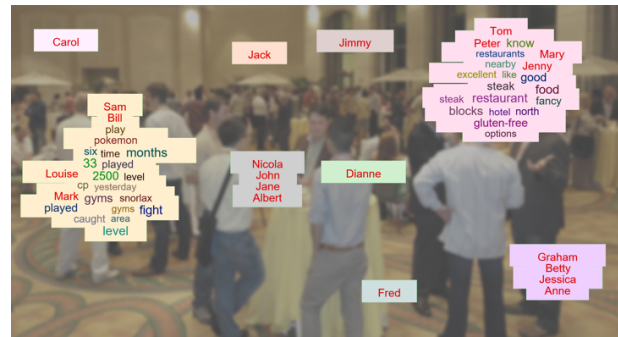


Figure 1: An individual’s view of the VCP prototype

## 4 VCP PROTOTYPE

We are currently developing a prototype VCP tool, with the expected appearance as in Figure 1. The screen shot is partly fabricated in that we have manually overlaid word clouds generated by our prototype onto a background image. The word clouds are words extracted by our speech recognition system from sample speech and the prototype software did generate the layout. The view shown is part of a virtual cocktail party involving 21 people, 16 of whom form four discussion groups (each with 4 people,) and five of whom are ‘individuals’ not involved in any group (Carol, Jack, Jimmy, Dianne, and Fred). Such a view would show only part of an entire party; panning would reveal more people and conversations. The first names of all the participants are shown in red, names mixed in with other words in clouds. This is the view shown to individual participants, before they join a conversation group.

For groups with ongoing conversations, a word-cloud of the keywords from their conversation is created and displayed around their names. In our example, there are two groups with ongoing conversations; the first about restaurants, and the second about a computer game. Although in both these cases the recogniser is quite accurate, we expect that even when the accuracy is less than perfect, there will be enough information available from the recognised speech to allow VCP to produce useful snapshots of group conversations.

The VCP prototype implements its own video conferencing, with a server/client model using the WebRTC communication protocols to efficiently transmit audio and video between participants. Our next step is to complete the implementation and evaluate its effectiveness in supporting informal fun interactions in a real virtual conference setting. This evaluation will explore other issues, such as the effect of time-zone differences, and the need for private, one-to-one conversations.

<sup>2</sup> <http://worldofwarcraft.com>

<sup>3</sup> <http://www.secondlife.com>

## REFERENCES

- [1] S. H. Al Qahtani. 2010. Virtual worlds as meeting places. Unpublished Dissertation. (2010).
- [2] Paul M. Aoki, Matthew Romaine, Margaret H. Szymanski, James D. Thornton, Daniel Wilson, and Allison Woodru . 2003. The Mad Hatter's Cocktail Party: A Social Mobile Audio Space Supporting Multiple Simultaneous Conversations. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '03). ACM, New York, NY, USA, 425–432. <https://doi.org/10.1145/642611.642686>
- [3] Colin Cherry. 1980. On Human Communication: A Review, a Survey, and a Criticism (third ed.). The MIT Press.
- [4] Jesse Dean, Mark Apperley, and Bill Rogers. 2014. Refining Personal and Social Presence in Virtual Meetings. In Proceedings of the Fifteenth Australasian User Interface Conference - Volume 150 (AUIC '14). Australian Computer Society, Inc., Darlinghurst, Australia, Australia, 67–75. <http://dl.acm.org/citation.cfm?id=2667657.2667665>
- [5] Google. 2018. Google Cloud Speech API. <http://cloud.google.com/speech>. (Jan. 2018).
- [6] Ken Hiltner. 2018. A nearly carbon-neutral conference model. <https://hiltner.english.ucsb.edu/index.php/ncnc-guide/>. (Jan. 2018).
- [7] Rieks op den Akker, Dennis Hof, Hendri Hondorp, Harm op den Akker, Job Zwiers, and Anton Nijholt. 2009. Supporting Engagement and Floor Control in Hybrid Meetings. In Cross-Modal Analysis of Speech, Gestures, Gaze and Facial Expressions, Anna Esposito and Robert Vich (Eds.). Springer Berlin Heidelberg, Berlin, Heidelberg, 276–290.