Vrije Universiteit Brussel

Proposal bachelor thesis

Title: AmbientCast: An ambient-oriented media streamer

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Includes preparation course: No

Context

Music, movies and images are almost exclusively enjoyed and recorded in digital formats. In recent years the industry has finally caught up with this revolution resulting in technology such as digital television or speakers connecting to media devices via Bluetooth.
In July 2013 Google released their Chromecast(1), a device which allows to stream media content from a phone or a tablet to one's television. However, Chromecast and its accompanying applications lack functionality when it comes to multiple users streaming media to the same device (in fact only YouTube fully employs multi-casting).
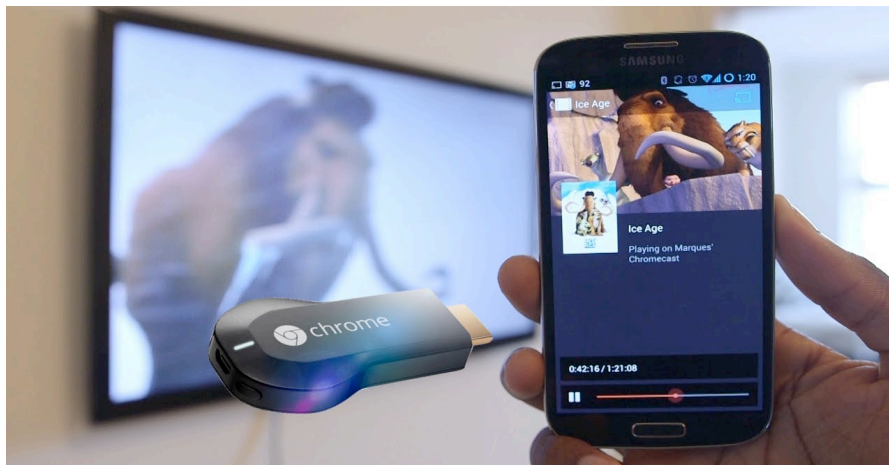
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This proposal is aimed at developing a Chromecast-like system using AmbientTalk(3) that allows multiple clients to stream media content to a server simultaneously. The goal is to design and implement a media streaming system in which a Raspberry Pi(2) acts as a server and Android devices act as clients.

The system should behave in the following fashion: multiple clients connect to the AmbientCast server (the Raspberry Pi) after which they are able to stream their songs to it. On the other side, the server receives and schedules these different songs to be played through a set of speakers (as show on the image bellow).
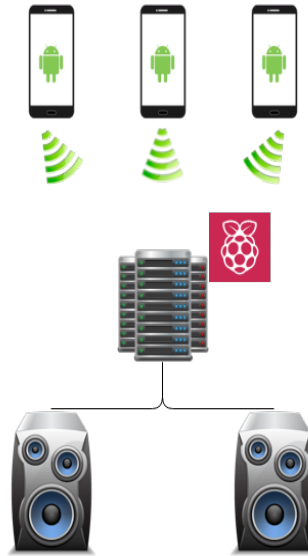
Requirements

The thesis will be considered successful if the following top-level requirements are met:

1. Users need to be able to stream music stored on their phone to the AmbientCast.
2. If a user is already streaming music, other users should be able to schedule their stream for later processing by the AmbientCast.
3. The amount of connected users should not influence the system's behavior in terms of responsiveness.

Furthermore, the following requirements are optional:

1. Besides streaming audio to the AmbientCast which outputs the data to speakers, an optional requirement could be the streaming of video in which case the AmbientCast needs to output the data to a screen.
2. The system as it's detailed in the baseline requirements supports on-way communication (i.e. the AmbientCast does not communicate with the clients) a possible addition to this system would enable clients to "pick-up"(i.e. download) a stream (be it music or video) that is currently played by the AmbientCast.
3. Any suggestions and ideas from the student are more than welcome and will influence the final grade positively.

References

1. Chromecast

2. Raspberry Pi

3. AmbientTalk

Contact

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