Theory and Summarization TUIO task

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ABSTRACT

This document shows the summarization and the research of each one in the team.This document aims to reveal the problems that researchers are trying to solve,what are the methods that researchers have used to solve this particular problem and how the researchers evaluated their work.

TUIO: A Protocol for Table-Top Tangible User Interfaces

Summary

The main purpose of this project was to create a communication protocol for a table-top interface using TUIO, using objects that are tracked by sensors. The way the system works is objects have two types of messages, set message which contains positional and rotational data, Alive messages contain the set of objects currently present on the table. The usage of a UDP connection grants low latency and an alternative TCP connection would grant more reliability but at the cost of higher latency. However, the reliability issue of UDP was solved by sending the same state multiple times to insure non was lost during a packet loss.

reacTIVision: A Computer-Vision Framework for Table-Based Tangible Interaction

Summary

The purpose of this paper is to demonstrate the usage of reacTIvision as a computer vision framework. The live camera feed send an image to the application frame by frame as the application scans for any fiducial symbols and sends their respective data. The paper also shows the component needed to construct such a system such as architecture, hardware and programming, as well as ideas to use such a framework with. These ideas include reacTables, recipe tables and blinks buttons. This shows the interactive ability ,variety and robustness of the reacTIvision framework.

The reacTable: Exploring the Synergy between Live Music Performance and Tabletop Tangible Interfaces

Summary

This paper demonstrates the usage of a tabletop tangible interface as a means of usage in live music performances as a way of achieving human computer interaction. This uses the reacTable and its symbols which can control music volume and sound based on proximity and rotation relative to other symbols around it. The paper also denies the common misconception that computer vision-based systems have high latency, which is not the case in the current day as computer vision systems these days have very low latency due to advancements in technology and the generally more reliable performance of internet bandwidth.

Open Sound Control: State of the Art 2003

Summary

This paper discusses the protocol known as OSC or Open sound control, as well as it's architecture. This system uses the client server architecture, its main data type is a message which contains an address pattern a tag string and arguments. The system uses queries to retrieve data from the server. The system uses gestures captured by a wide variety of sensors just as acetometers, magnetic field sensors and light sensors which the system receives data from up to 16 of those sensors. To conclude this system is meant to create an organization scheme for building live performance instruments via programming techniques.

STL subtraction: A new method for digital treatment planning

Summary

The purpose of this paper is to combine traditional treatment planning methods with digital tools in order to reach a more accurate and desirable result for the patient. By using 2D 3D digital models which allow the process of construction to be done digitally. The 3D planning process was done by scanning the teeth of the patient and then adding the digital crowns onto them. This helps a lot with doing small or huge changes in the 3D digital representation before carrying out an irreversible dental procedure that could result in an upset customer.

References

1. Kaltenbrunner,M., Bovermann, T., Bencina, R., Costanza, E.: ”TUIO - A Protocol for Table-Top Tangible User Interfaces”. Proceedings of the 6th International Workshop on Gesture in Human-Computer Interaction and Sim- ulation (GW 2005), Vannes, France, 2005

2. Kaltenbrunner, M., Bencina, R.: ”reacTIVision: A Computer-Vision Frame- work for Table-Based Tangible Interaction”. Proceedings of the first interna- tional conference on ”Tangible and Embedded Interaction” (TEI07). Baton Rouge, Louisiana, 2007

3. Jorda, S., Geiger, G., Alonso, A., Kaltenbrunner, M.: ”The reacTable: Exploring the Synergy between Live Music Performance and Tabletop Tangible Interfaces”. Proceedings of the first international conference on ”Tangible and Embedded Interaction” (TEI07). Baton Rouge, Louisiana, 2007

4. Wright, M., Freed, A., Momeni A.: ”OpenSound Control: State of the Art 2003”. Proceedings of the 3rd Conference on New Instruments for Musical Expression (NIME 03), Montreal, Canada, 2003.

5. European Association for Osseointegration. Inspyred volume 5 issue 1, summer 2017. Retrieved from https://issuu.com/eao.org/docs/03727_inspyred_volume_5_issue_1__su