

BlueTable: Connecting Wireless Mobile Devices on Interactive Surfaces Using Vision-Based Handshaking

Seminar
2008

Qian Qin
mail@qianqin.de
TU Berlin
SS 2008

Motivation

- Connecting mobile devices is a cumbersome and stressful process.
- For example: Bluetooth needs unintuitive steps for pairing.
- Building up a connection doesn't related to the physical world.

Studies in similar direction

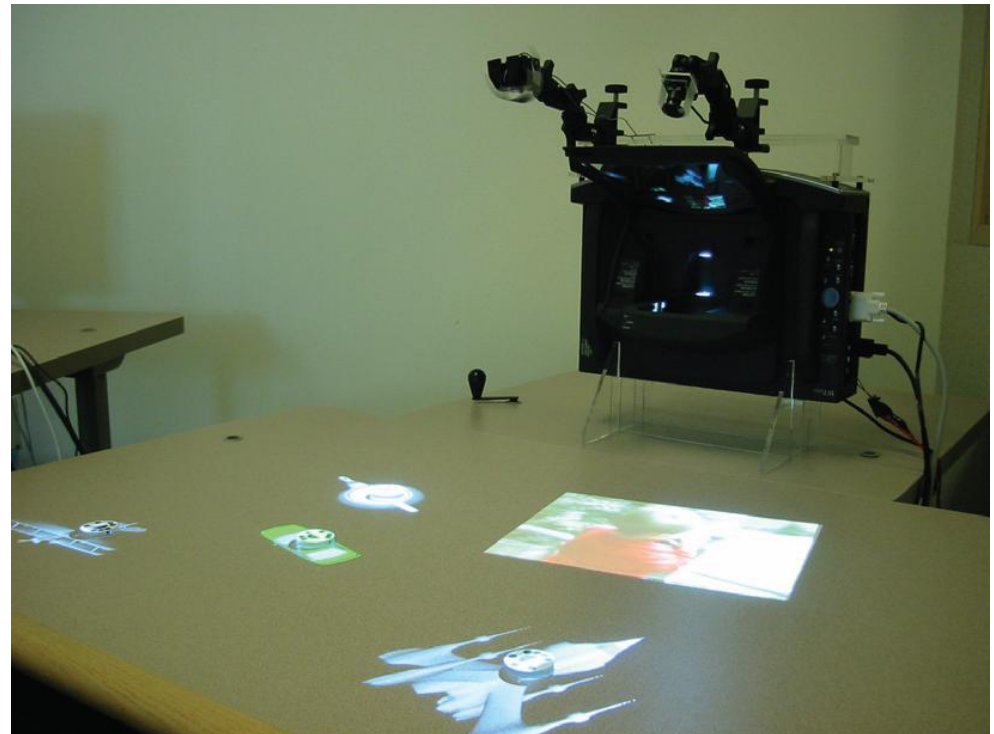
- Pairing through bumping or touching the devices together
- Pressing the same key at the same time
- Random number or gesture on a Display
- Visual pattern which can be captured by a cameraphone
- NFC through RFID

BlueTable Setup

- Bluetooth Interaction on a table via PlayAnywhere
- Using Bluetooth enabled mobiles w/ or w/o IrDA

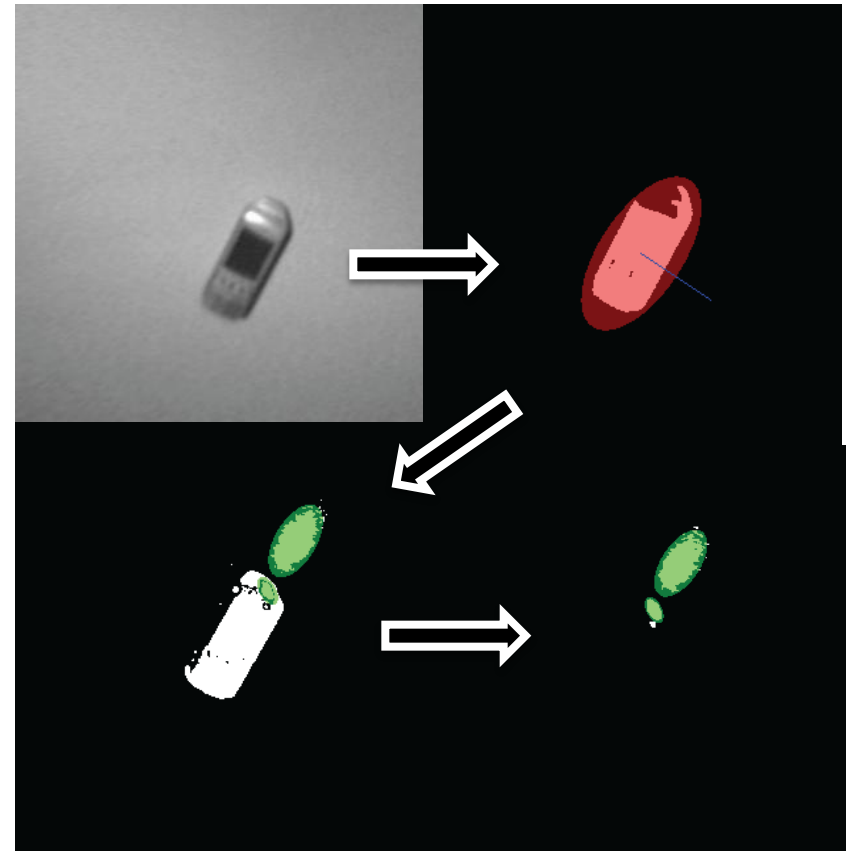


PlayAnywhere.flv



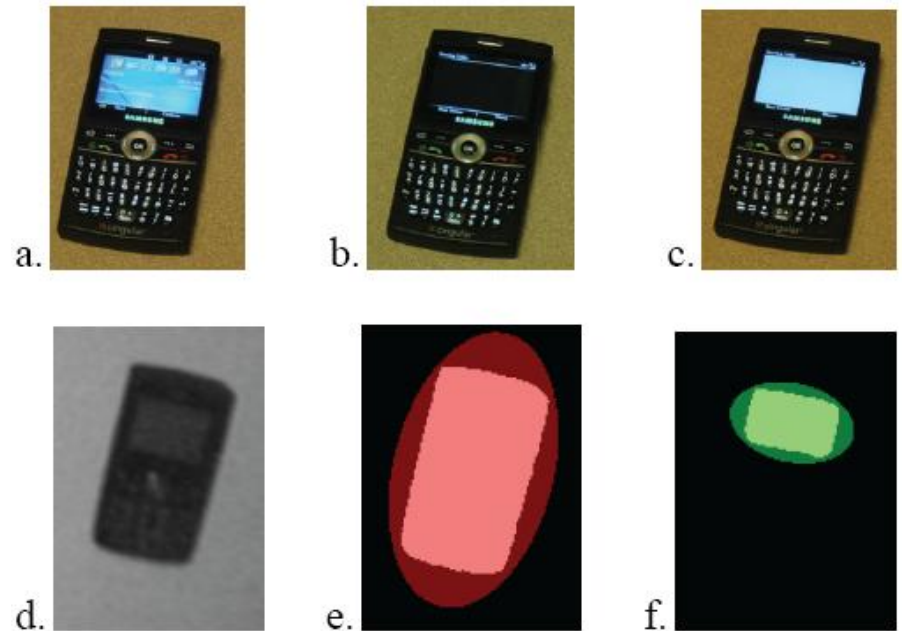
Pairing on BlueTable with IrDA

- Detect phone shape
- Detect GUID of phones
- Request blinking with IrDA
- If the correct device blinks, detect orientation



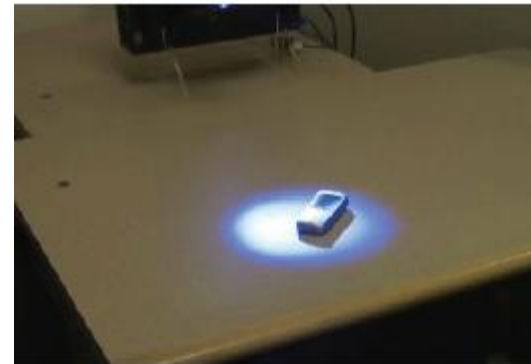
Pairing on BlueTable without IrDA

- Detect phone shape
- Detect GUID of phones
- Request blinking with Display
- If the correct device blinks, start pairing



Usage Example: Photo Sync

- After placing the phone on the BlueTable, a blue circle appears on the phone during the pairing process.
- When pairing finishes, photos are loaded from the phones and displayed on the BlueTable.



PlayAnywhere Bluetooth Photo Sync.wmv

Usage Example: Photo Transfer

- Due to PlayAnywhere, Interaction is possible with the pictures.
- Dragging a picture into a different devices blue circle will transfer the file.



Future Work

- Connecting multiple devices
- Mixing display with user interface



Observations with users

- No actual study done
- Demonstration in front of adults and children showed that the system was very intuitive
- Users could “see” the connection:
 - Phone on table => connected
 - Phone taken off the table => disconnected

Conclusions

- BlueTable is a intuitive way of pairing devices allowing new ways of interaction between multiple devices.
- This can be used as base for more complex user interfaces.
- Further development is needed.

Questions for Discussion

- Where would you think is a system like BlueTable useful? (home, café, anywhere)
- What future applications could there be?
- What problems could occur when using BlueTable?
- Security and privacy issues?