

# Identifying Suitable Projection Parameters and Display Configurations for Mobile True-3D Displays

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France*

3/ *University of Bristol  
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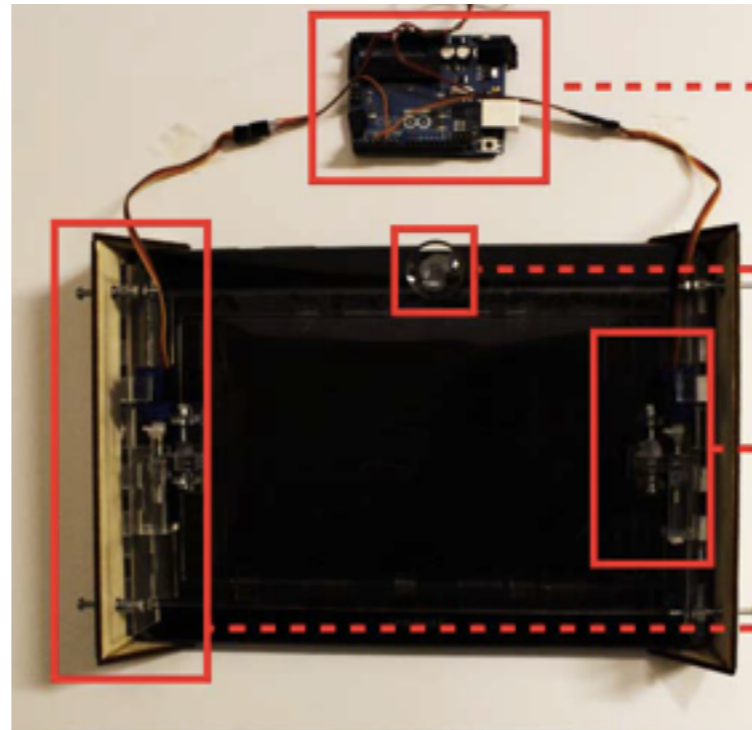
UNIVERSITÉ  
TOULOUSE III  
PAUL SABATIER



University of  
BRISTOL

# 3D on mobile devices

Auto-stereoscopic displays

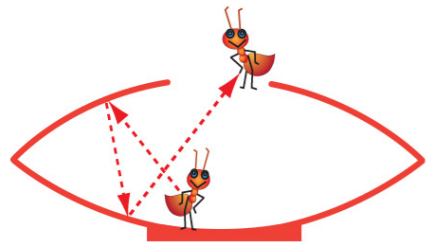


Source: <http://www.nintendo.com/3ds/features/>

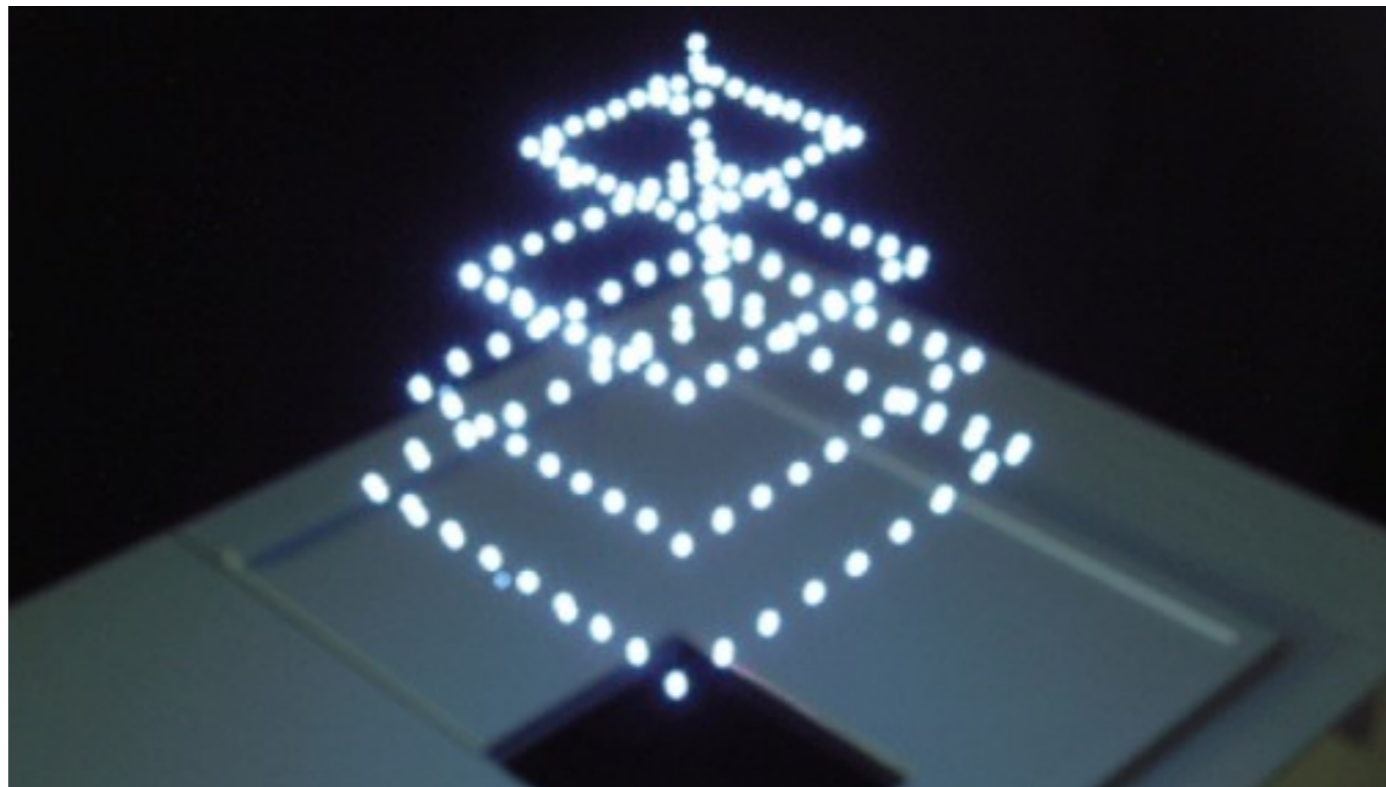
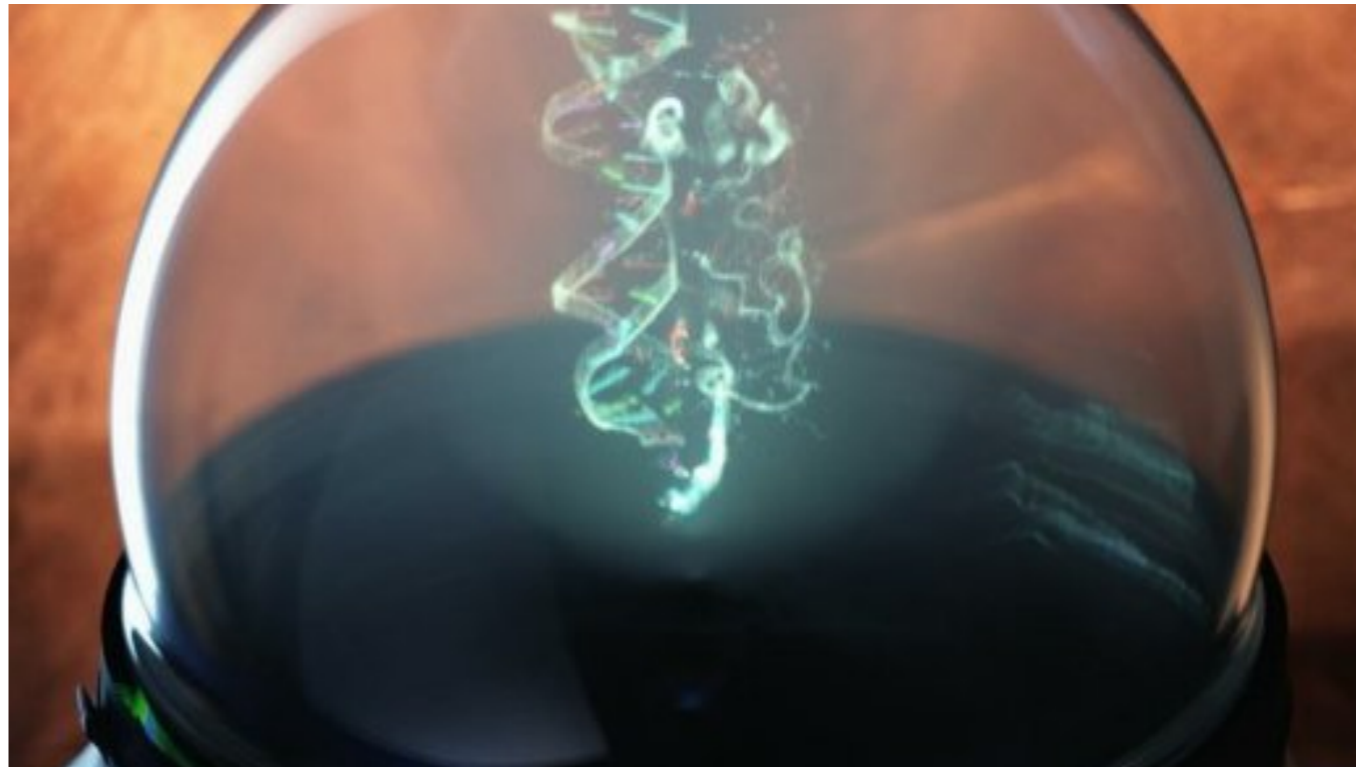
[Plasencia 2014]

**First step towards mobile true-3D**

# True-3D



Mirage parabolic mirror illusion  
Source: <http://optigone.com>



Source: <http://burton-jp.com/en/index.htm>

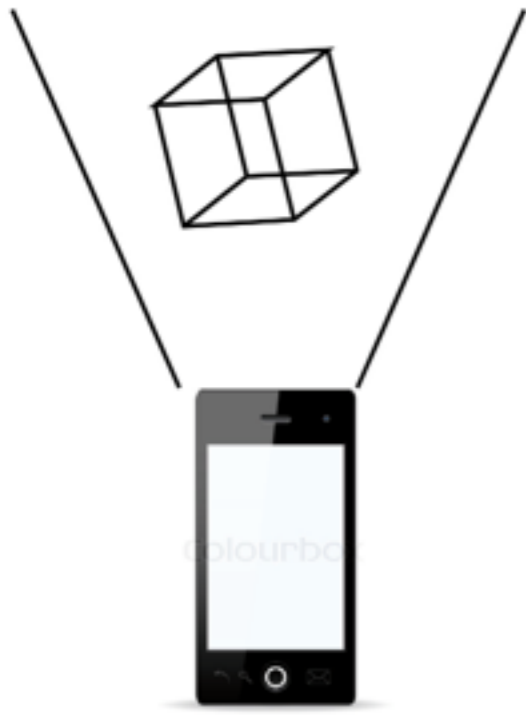
# Mobile True-3D



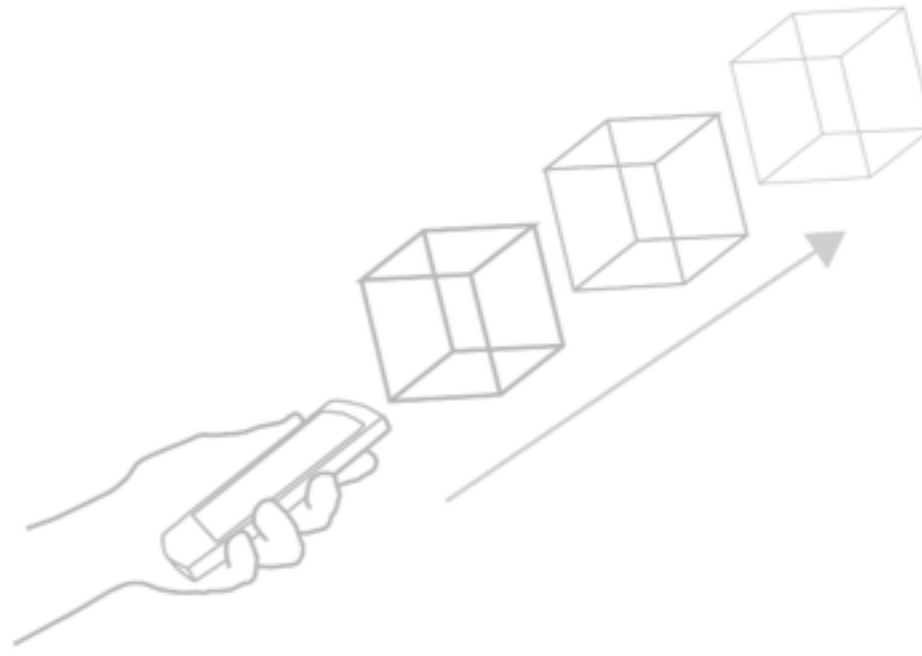
# Mobile True-3D

Display properties

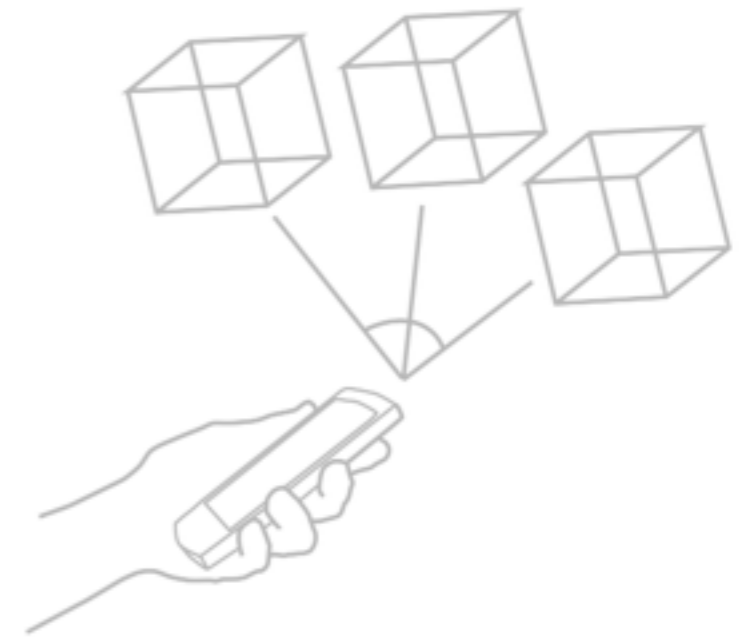
# Display Properties



projection area

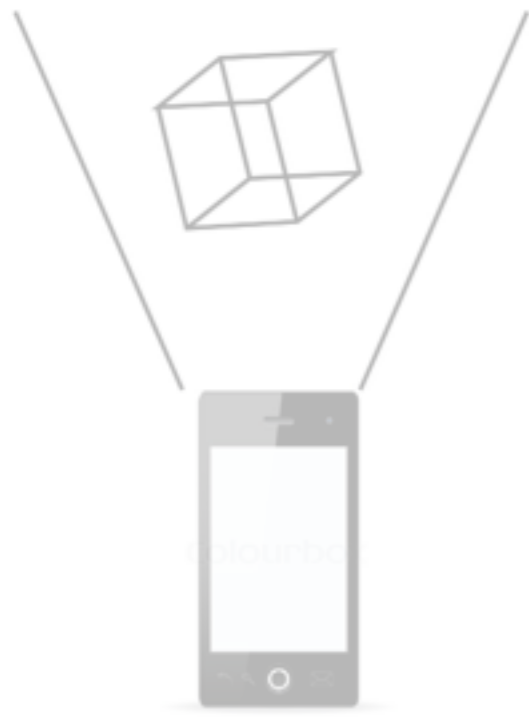


projection distance

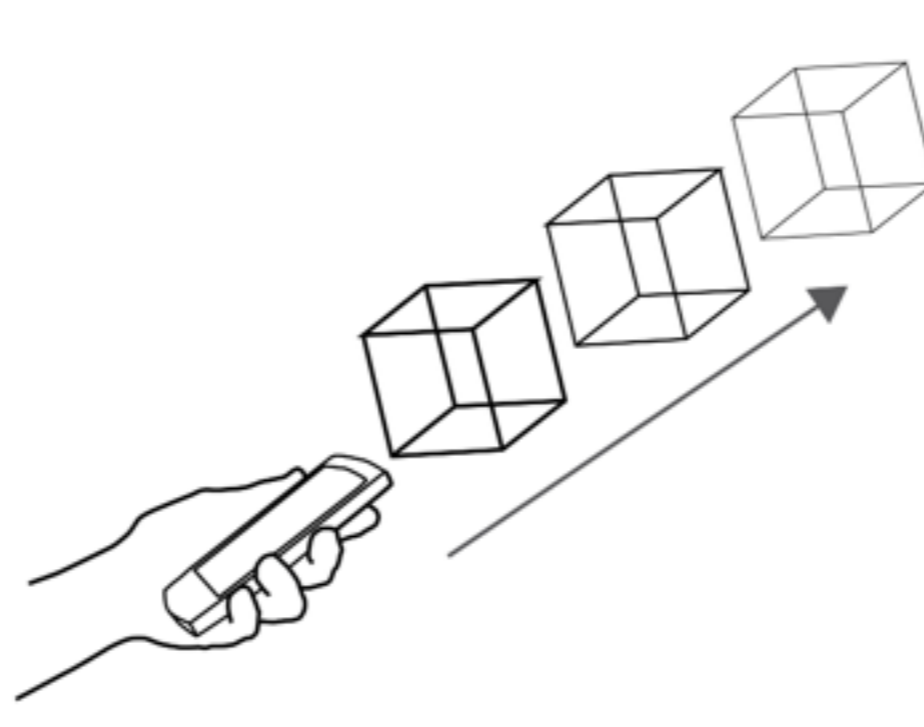


projection angle

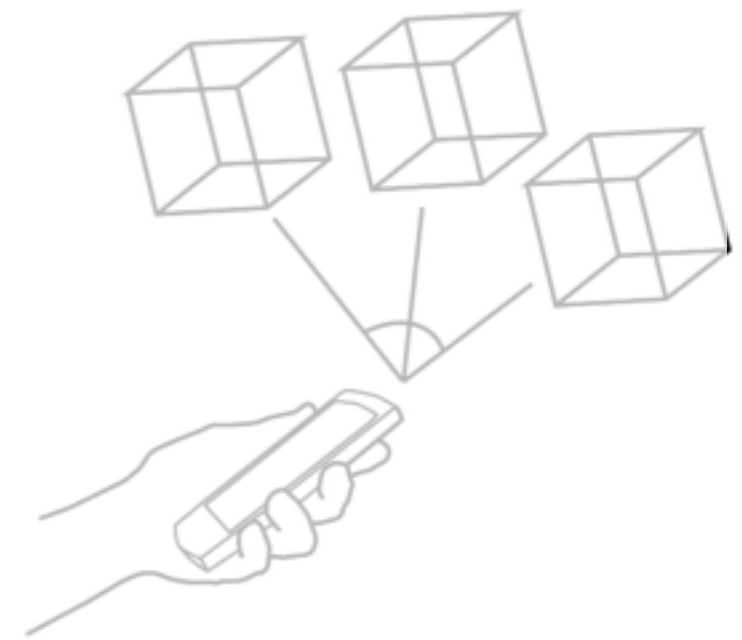
# Display Properties



projection area

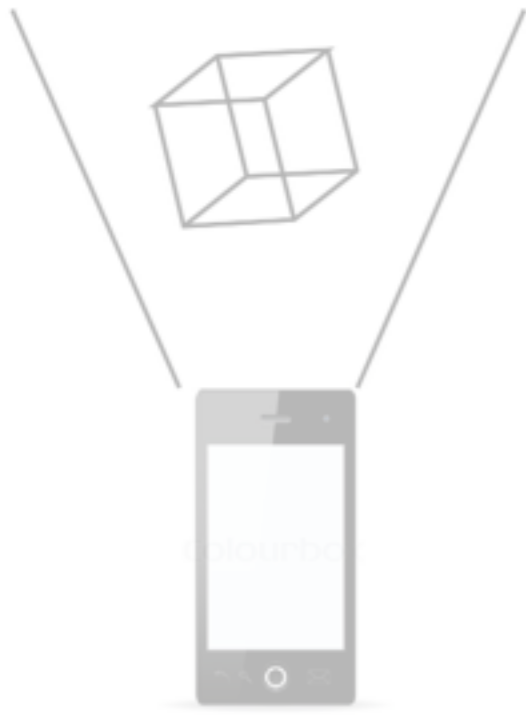


projection distance

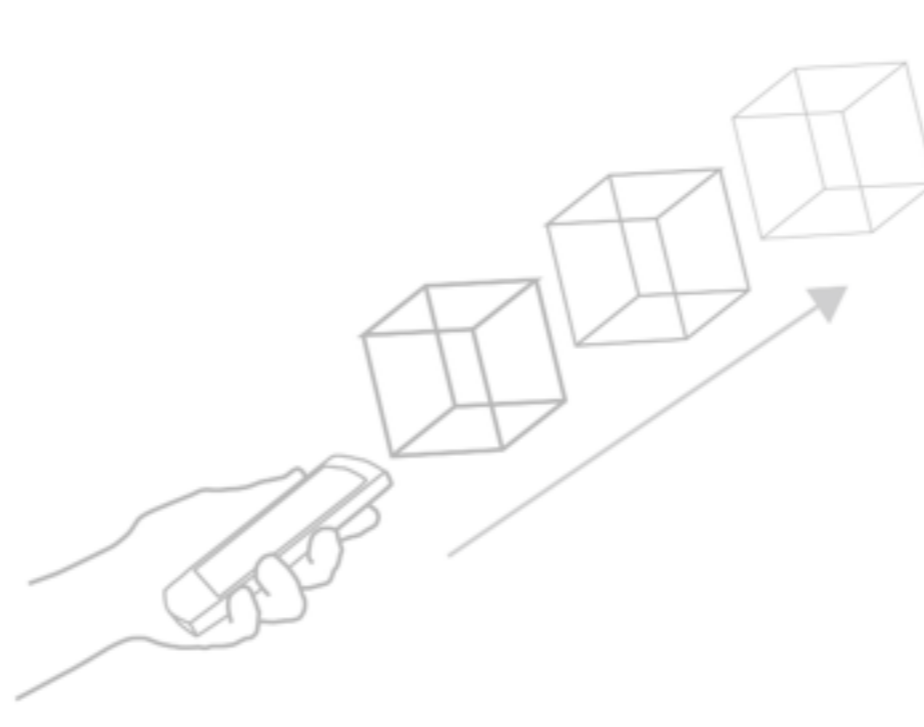


projection angle

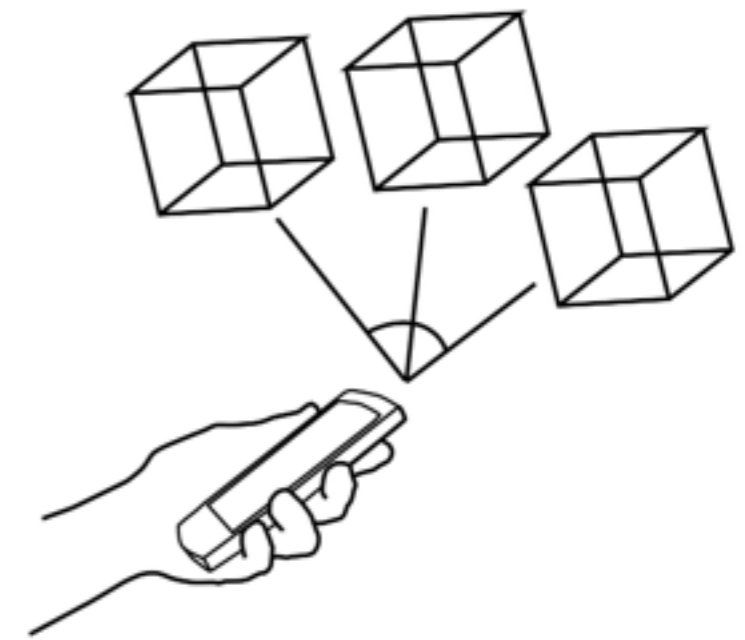
# Display Properties



projection area



projection distance



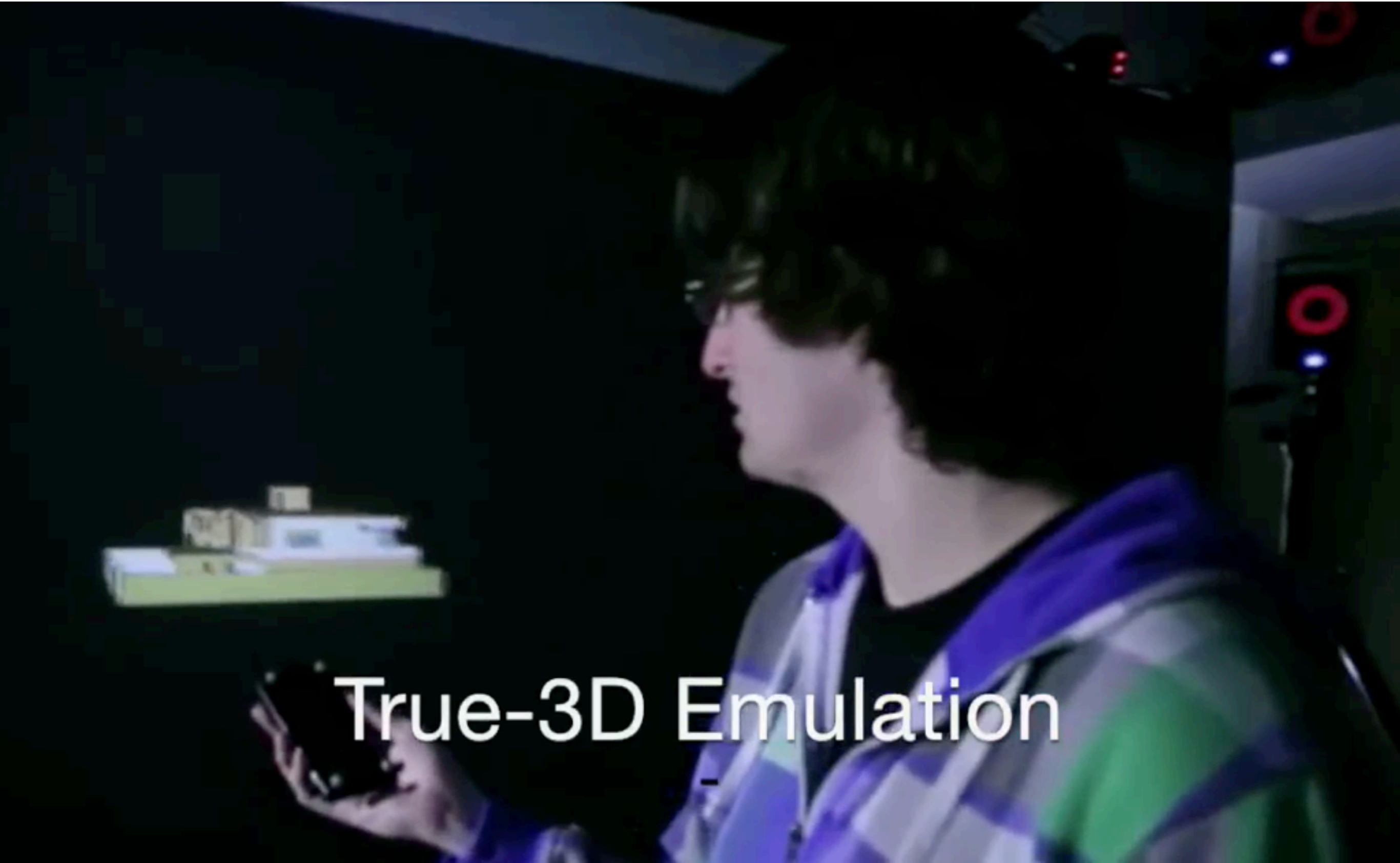
projection angle



# Prototype

## Emulating True-3D





# True-3D Emulation



# True-3D Emulation

# Study 1 : Visual search



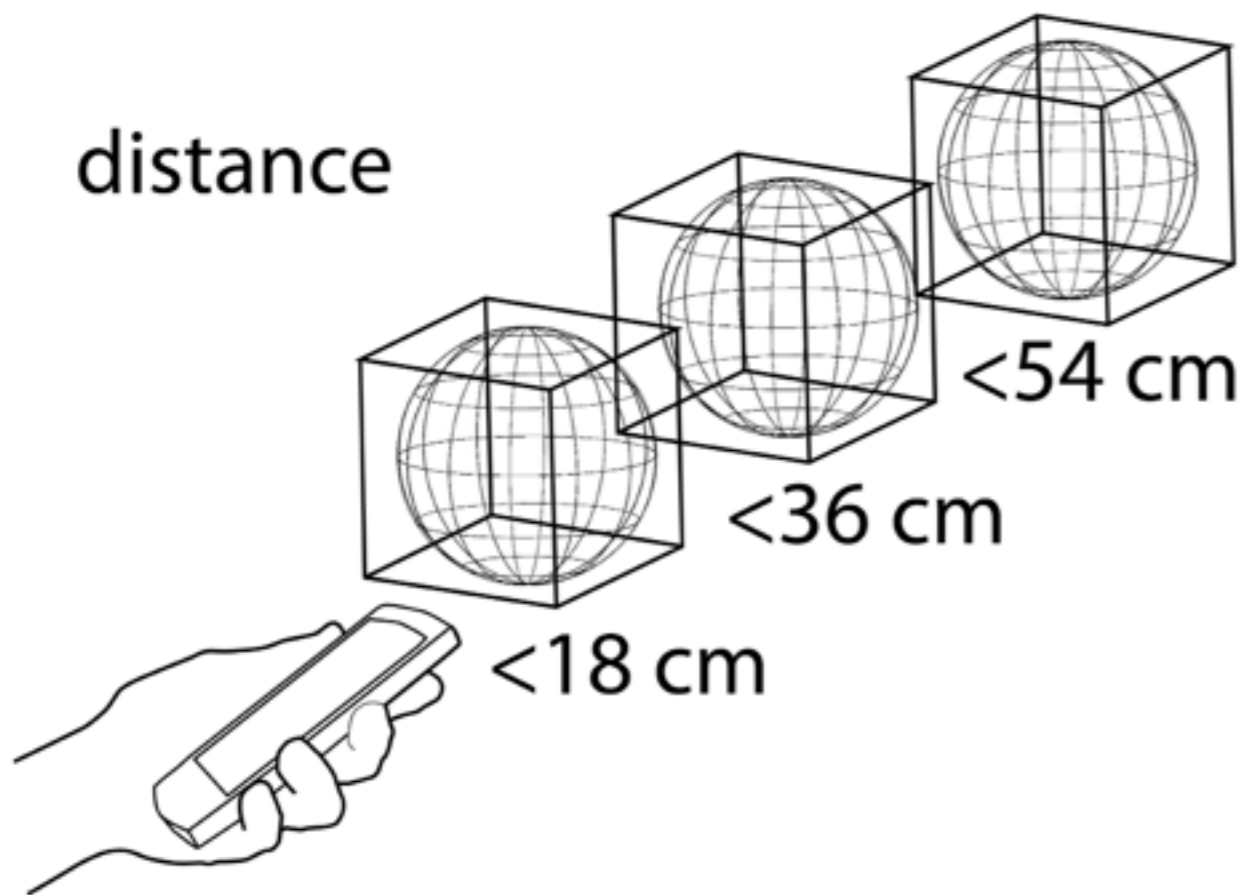
# Study 2 : Direct-Touch Interaction



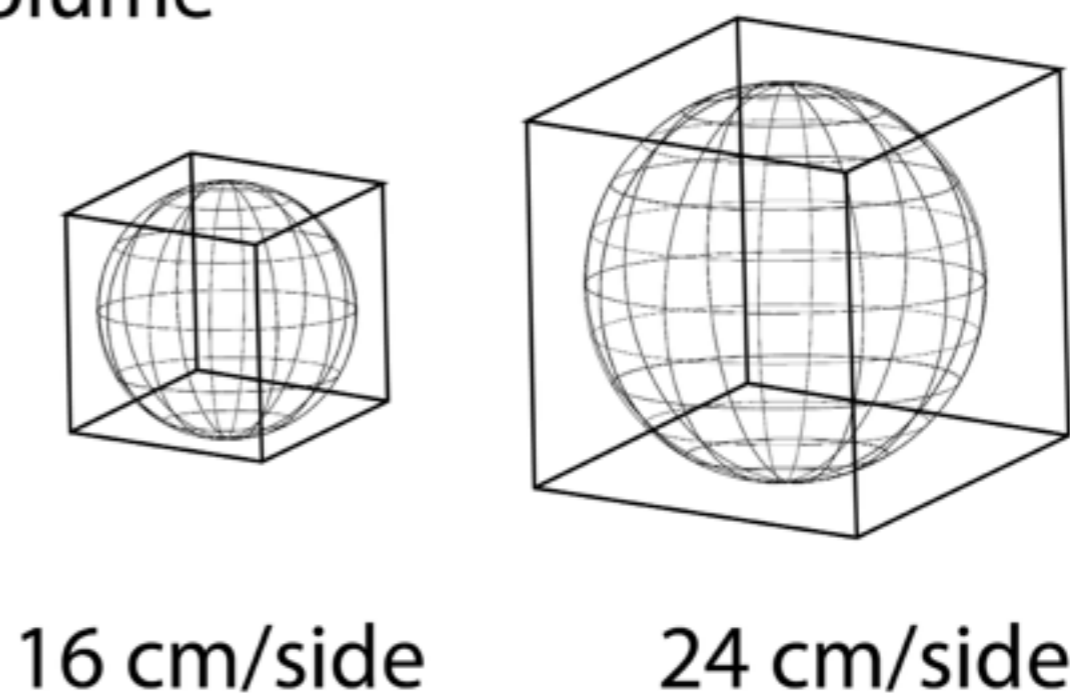




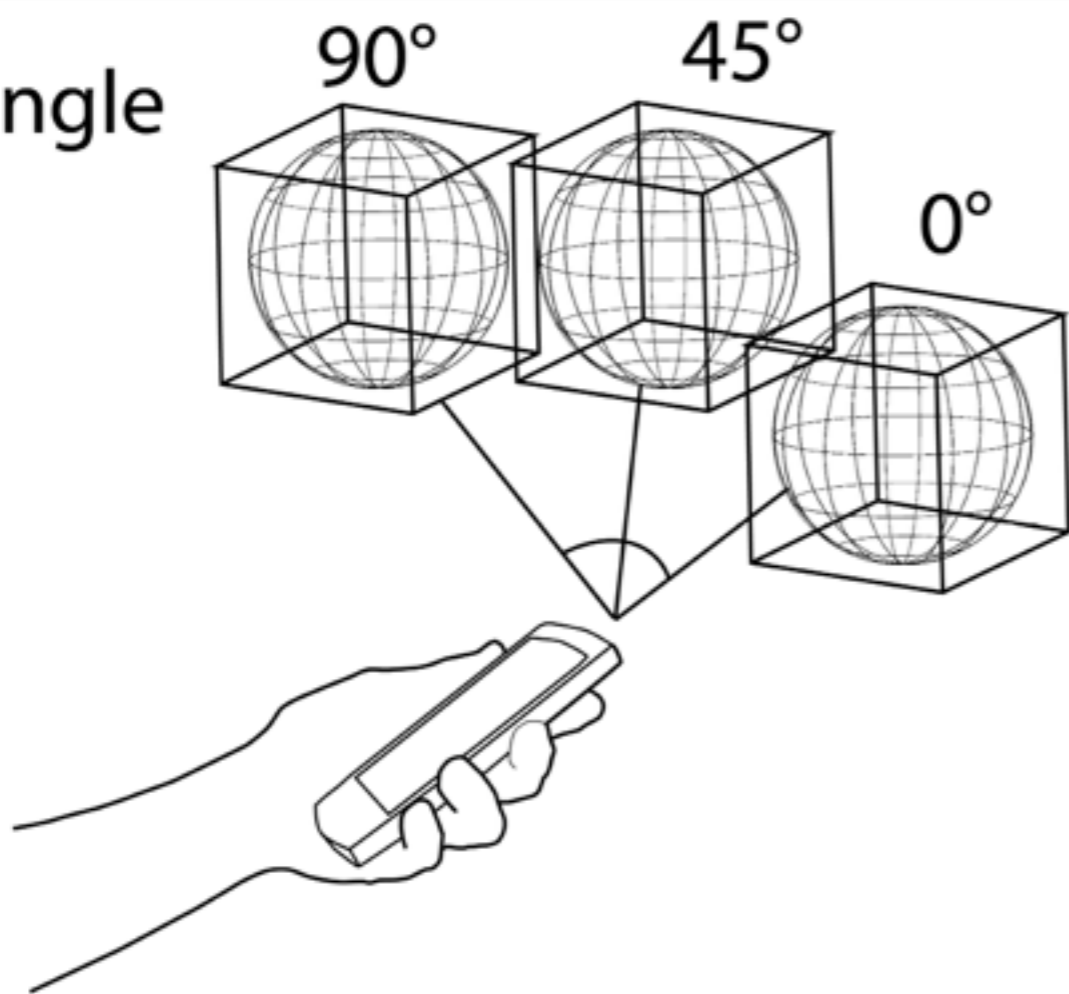
distance



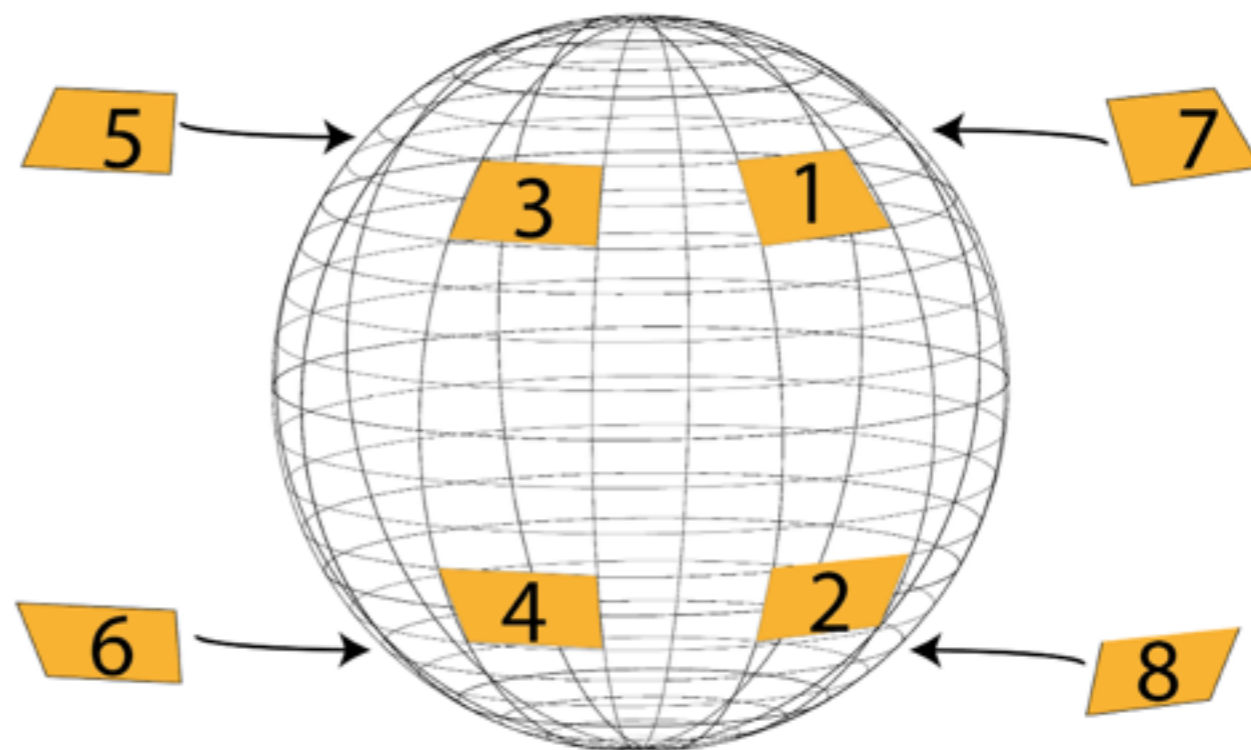
volume



angle

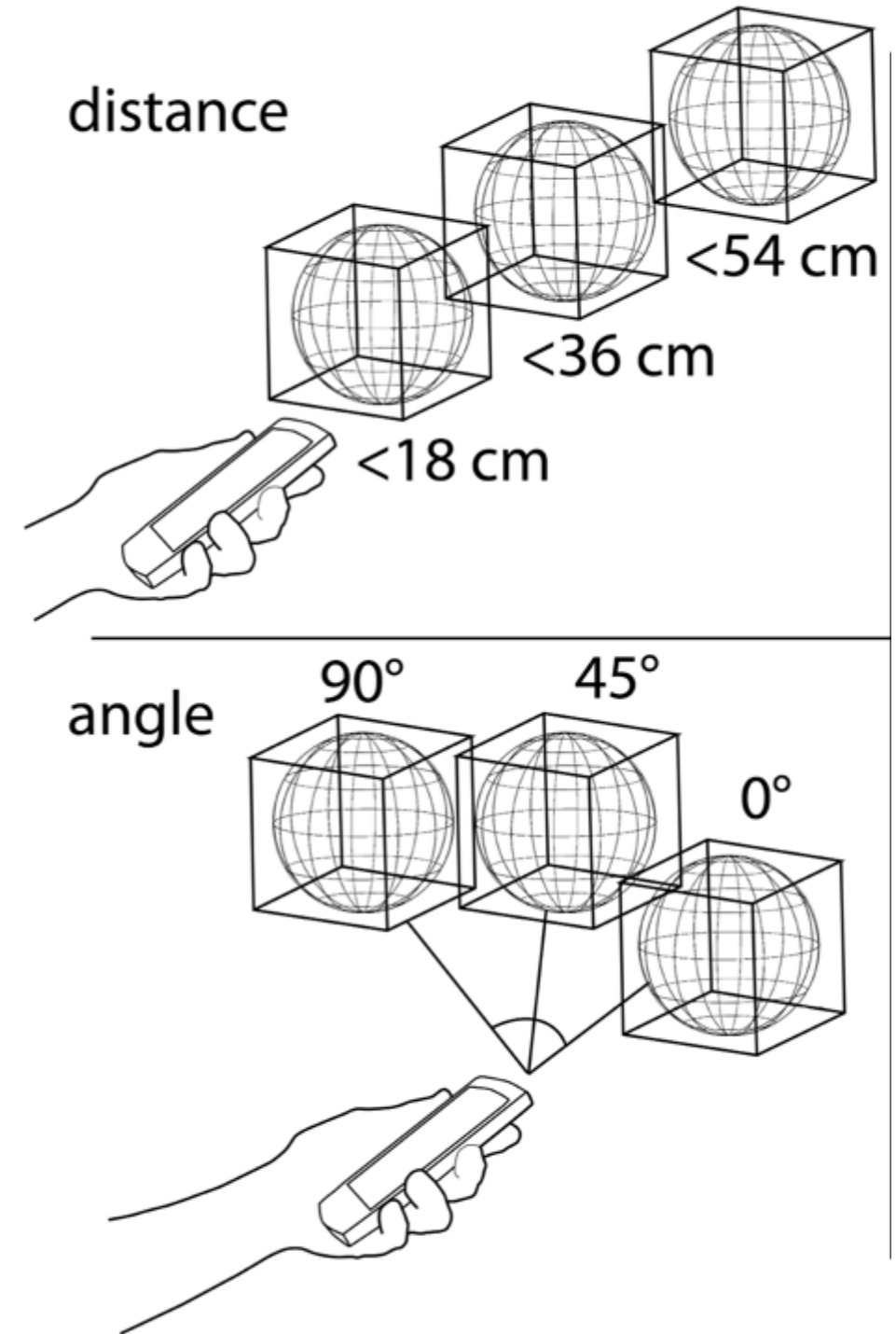
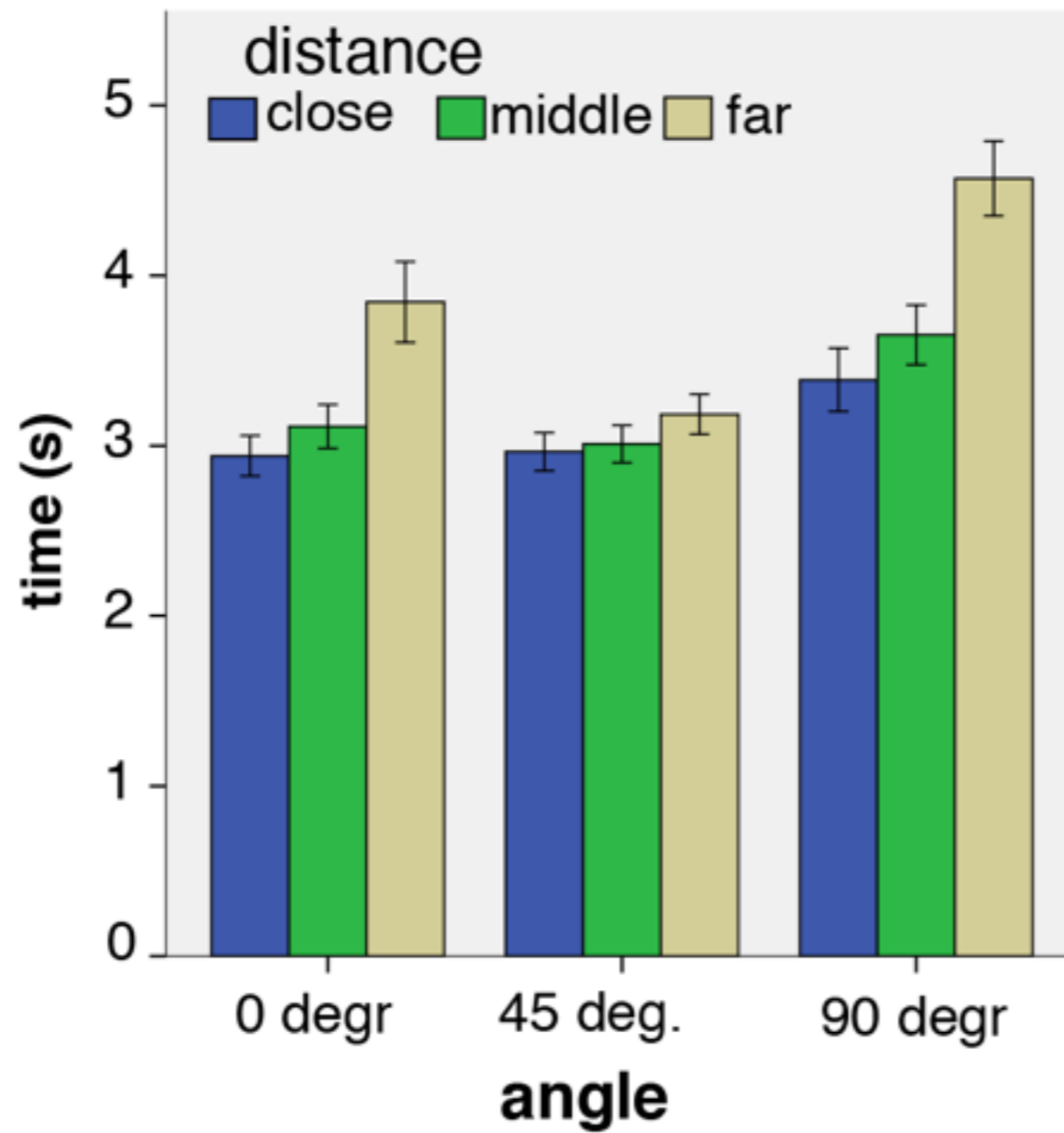


Pattern positions on the sphere



# Results

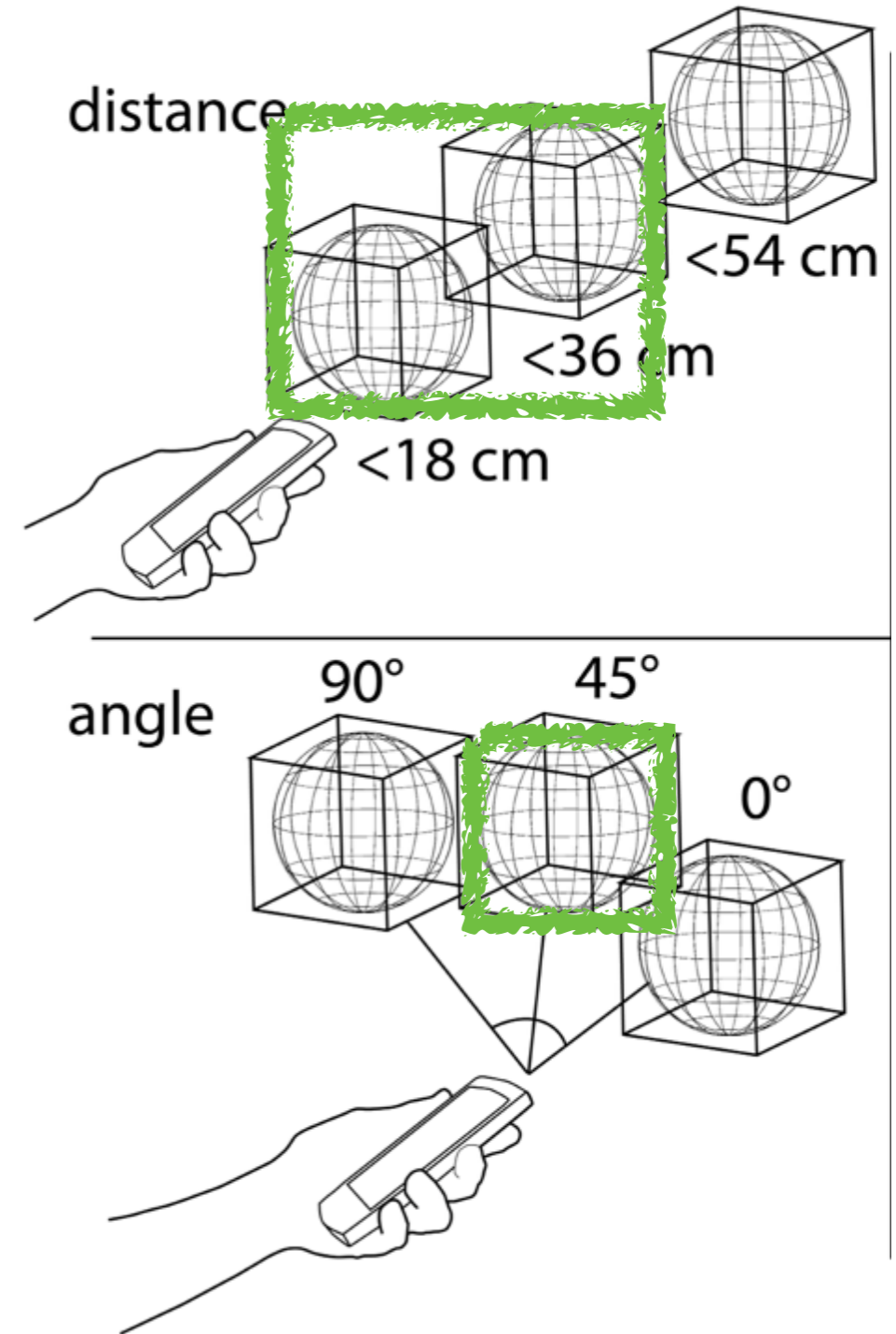
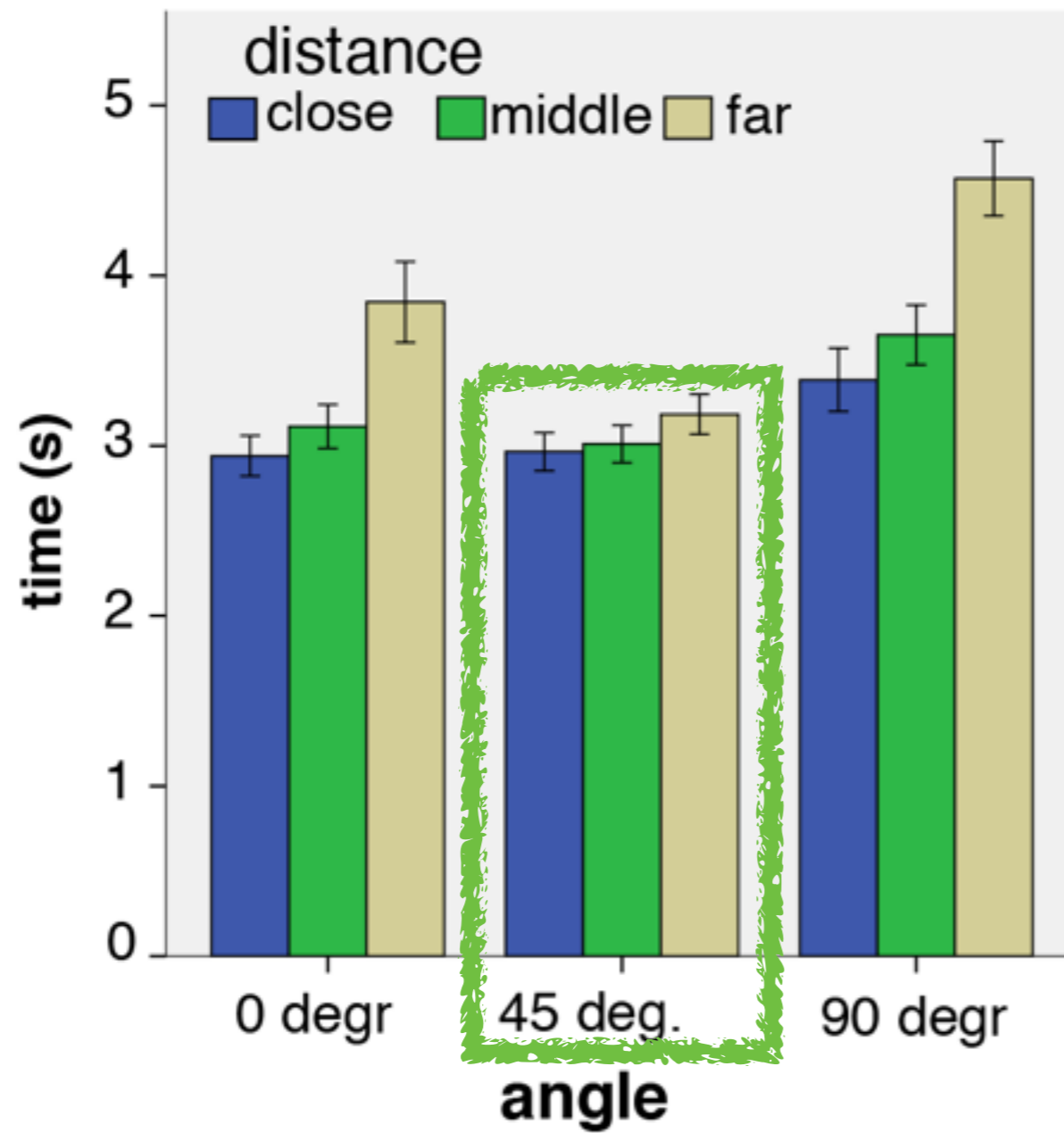
## Distance at each Angle





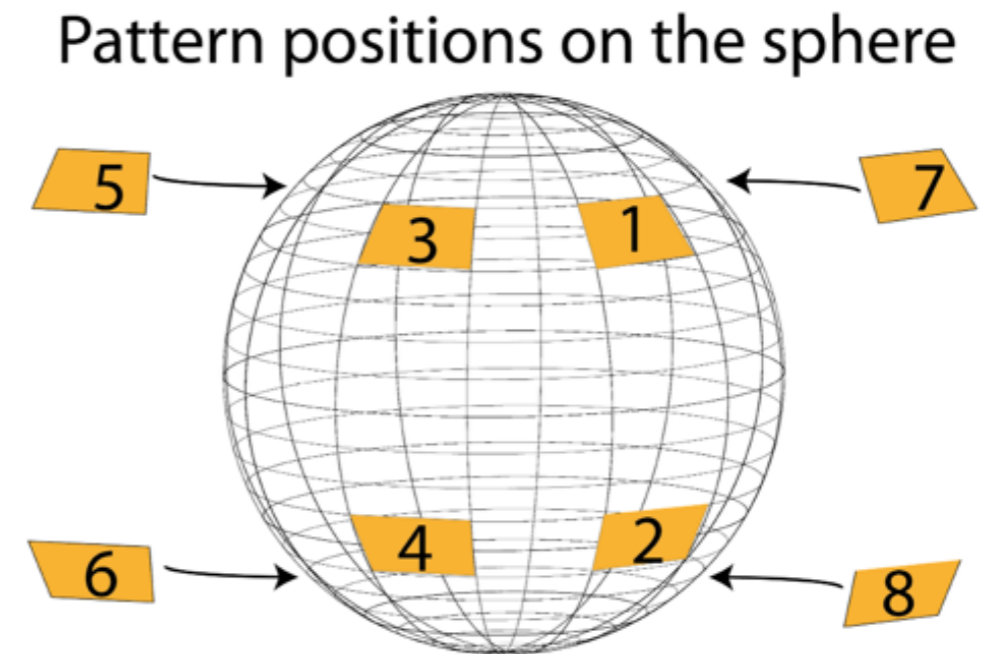
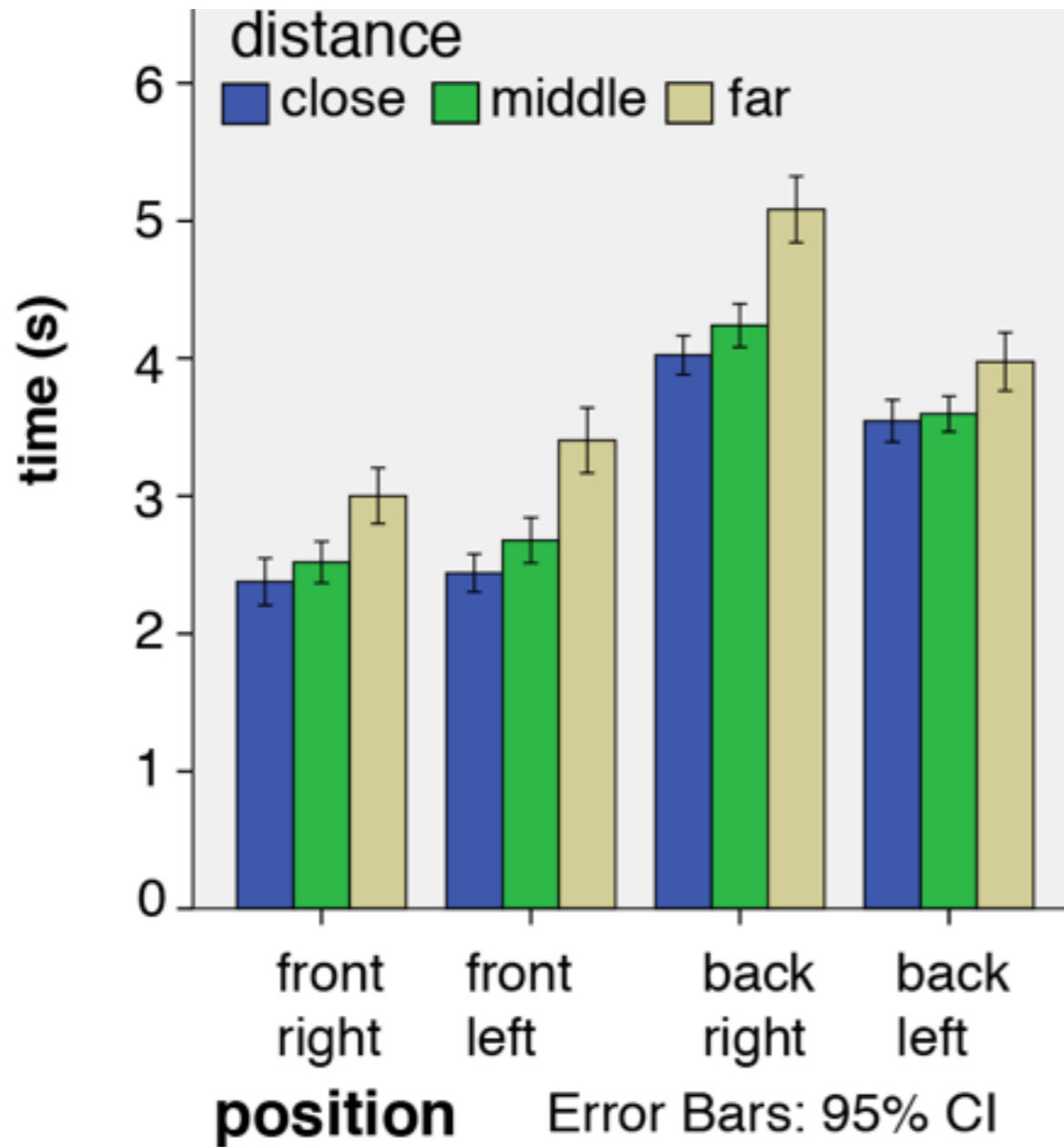
# Results

## Distance at each Angle



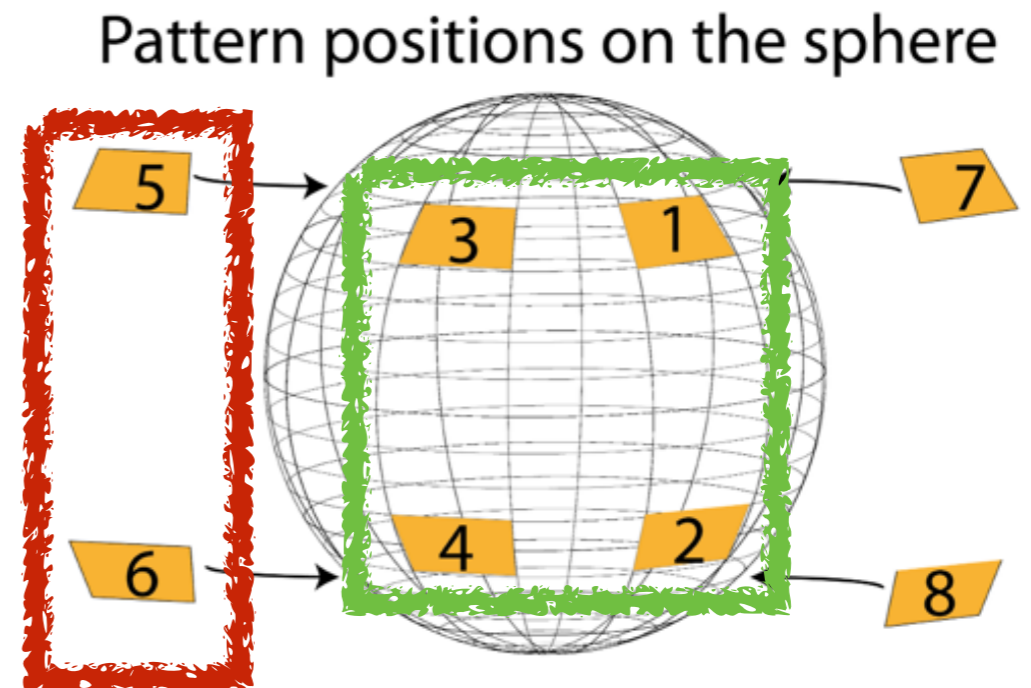
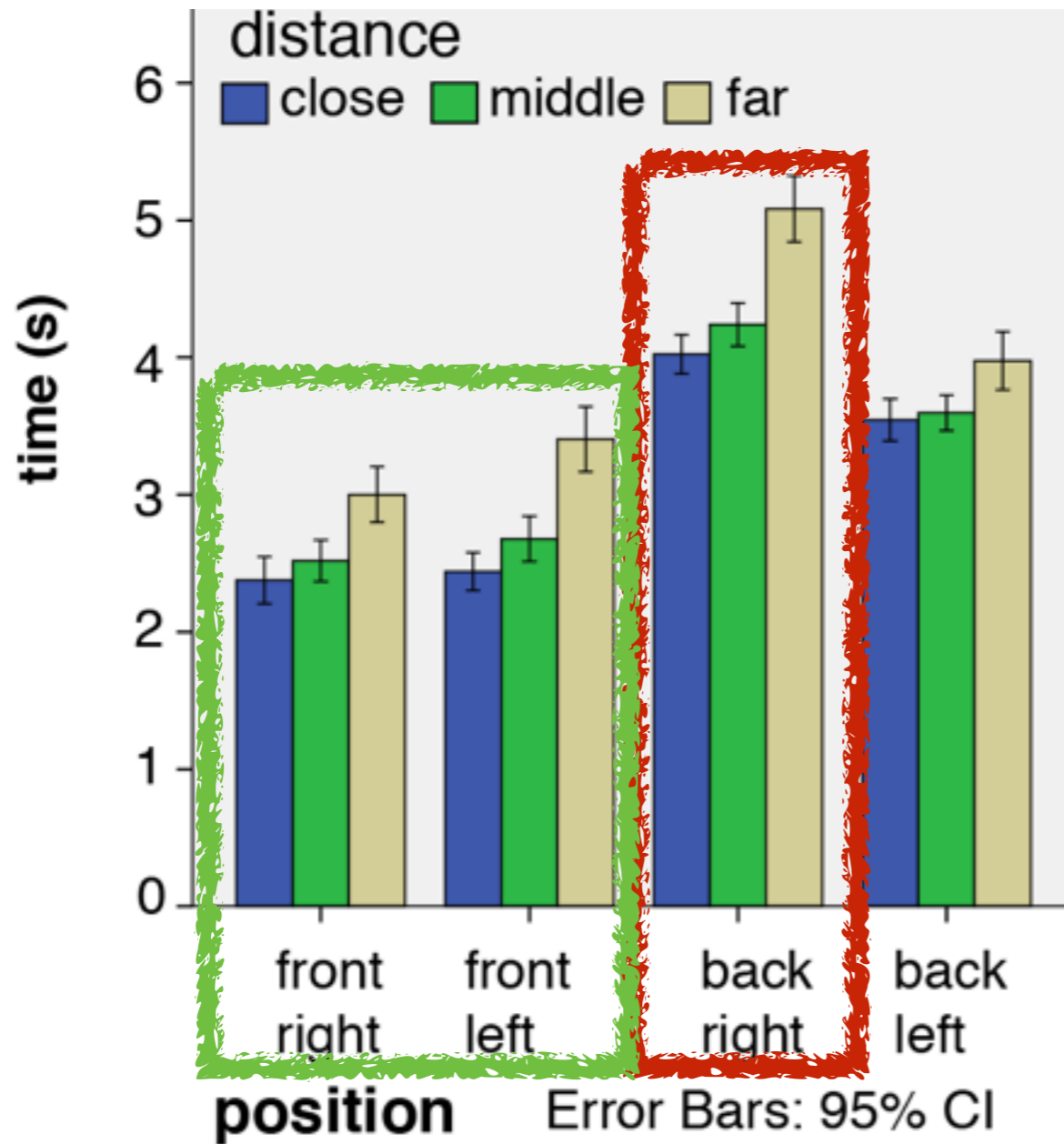
# Results

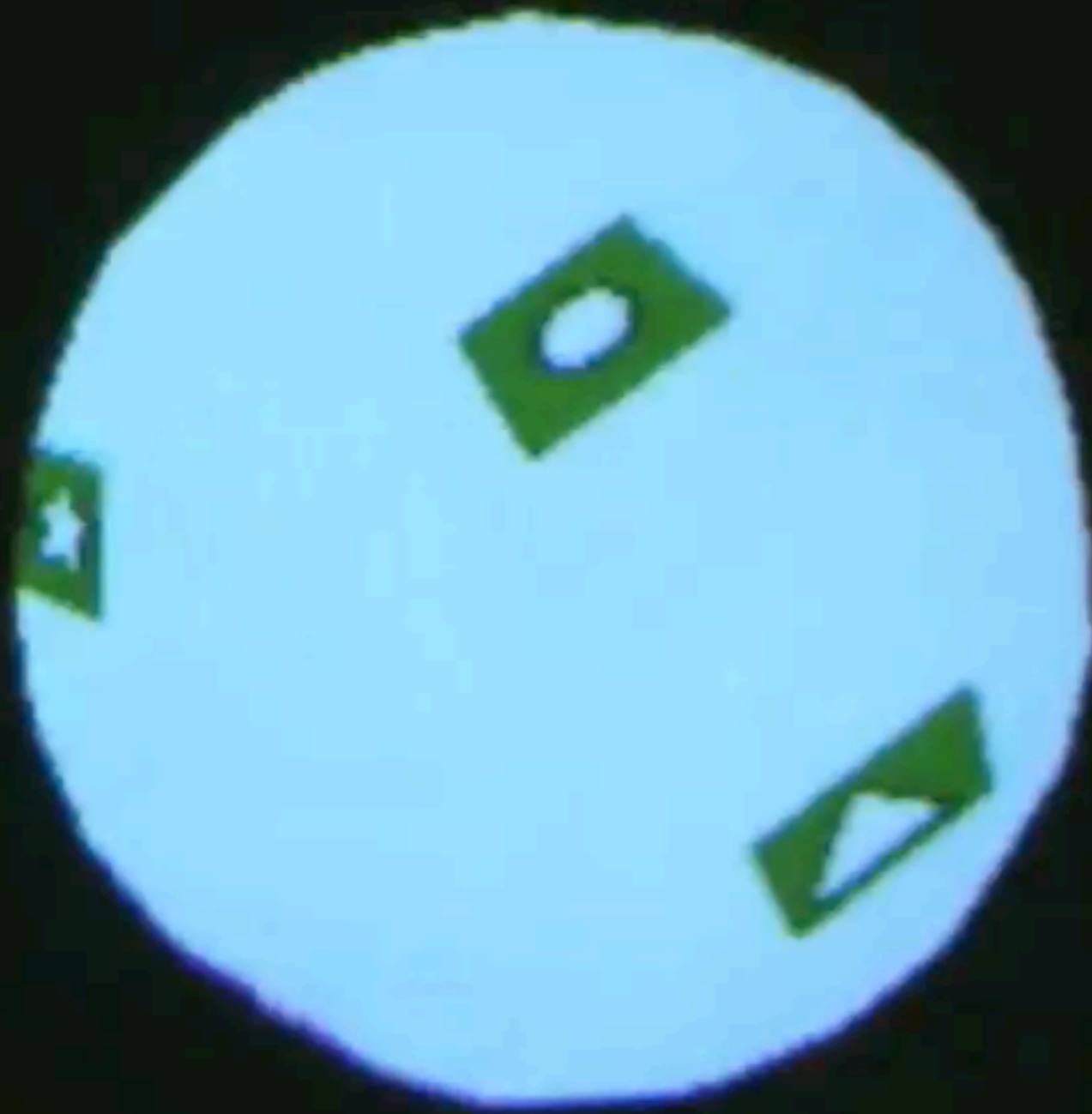
Pattern position for each Angle and Distance

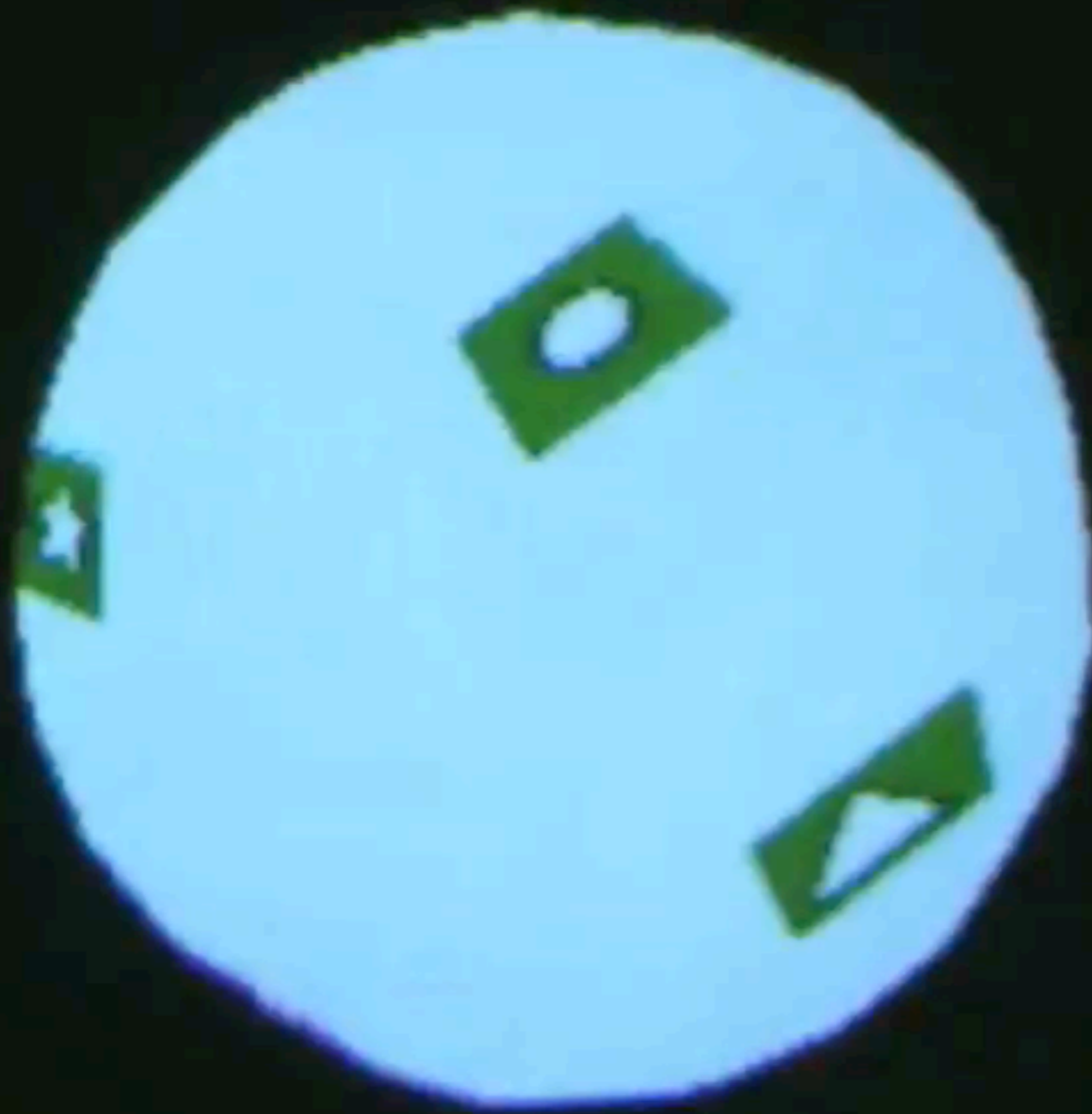


# Results

Pattern position for each Angle and Distance







# Study 1 : Visual search



# Study 2 : Direct-Touch Interaction

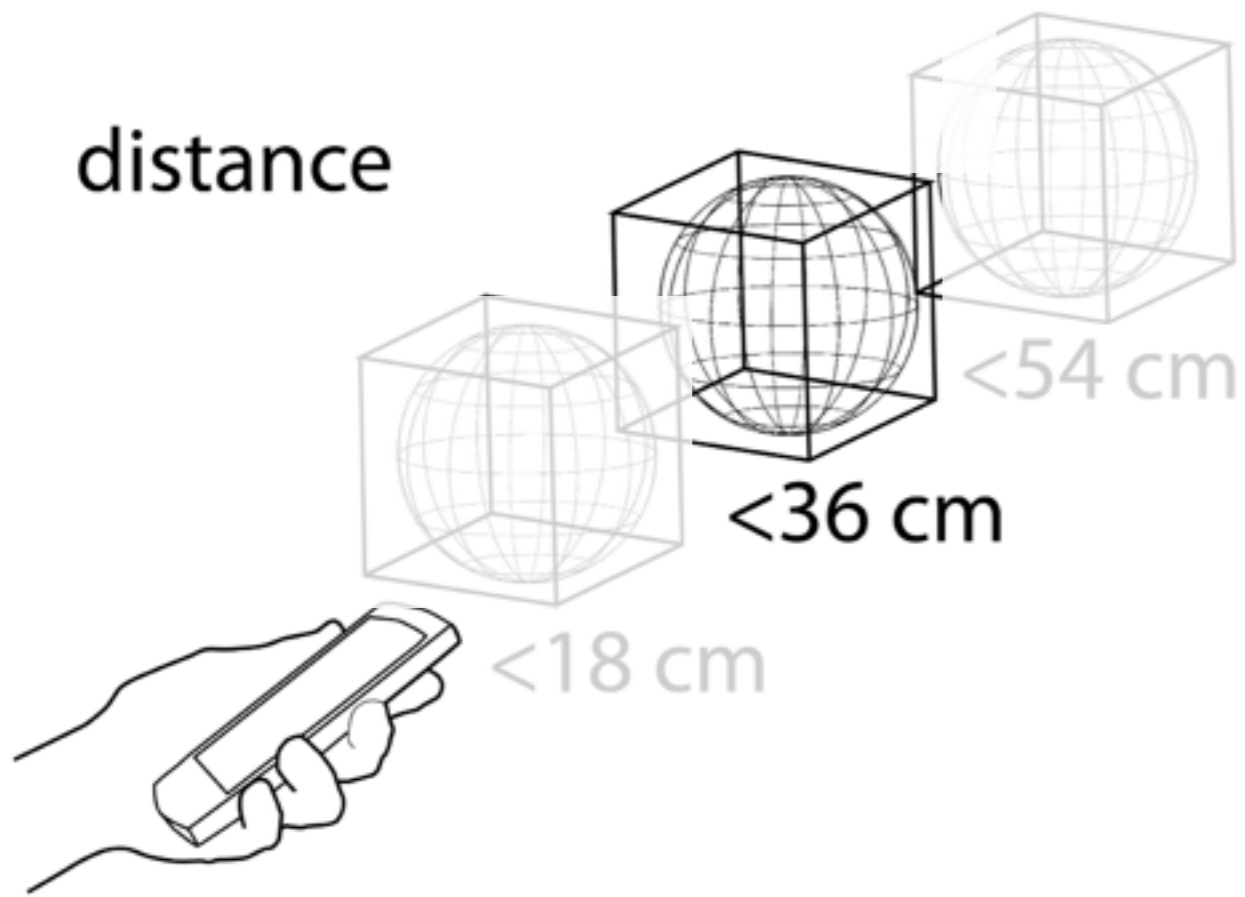




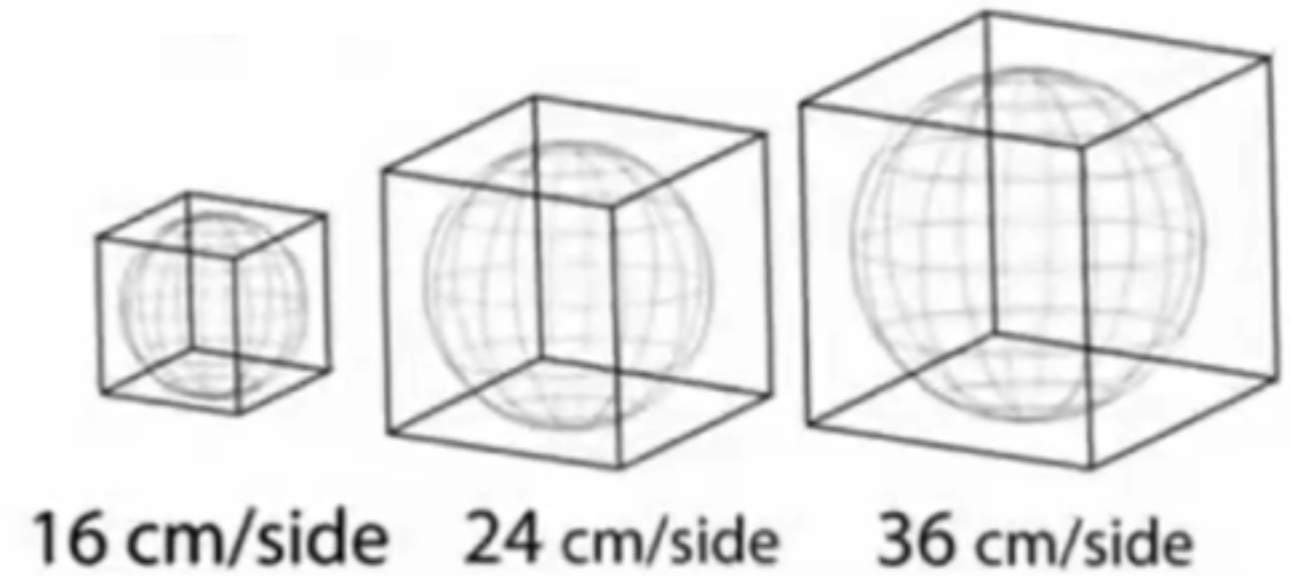




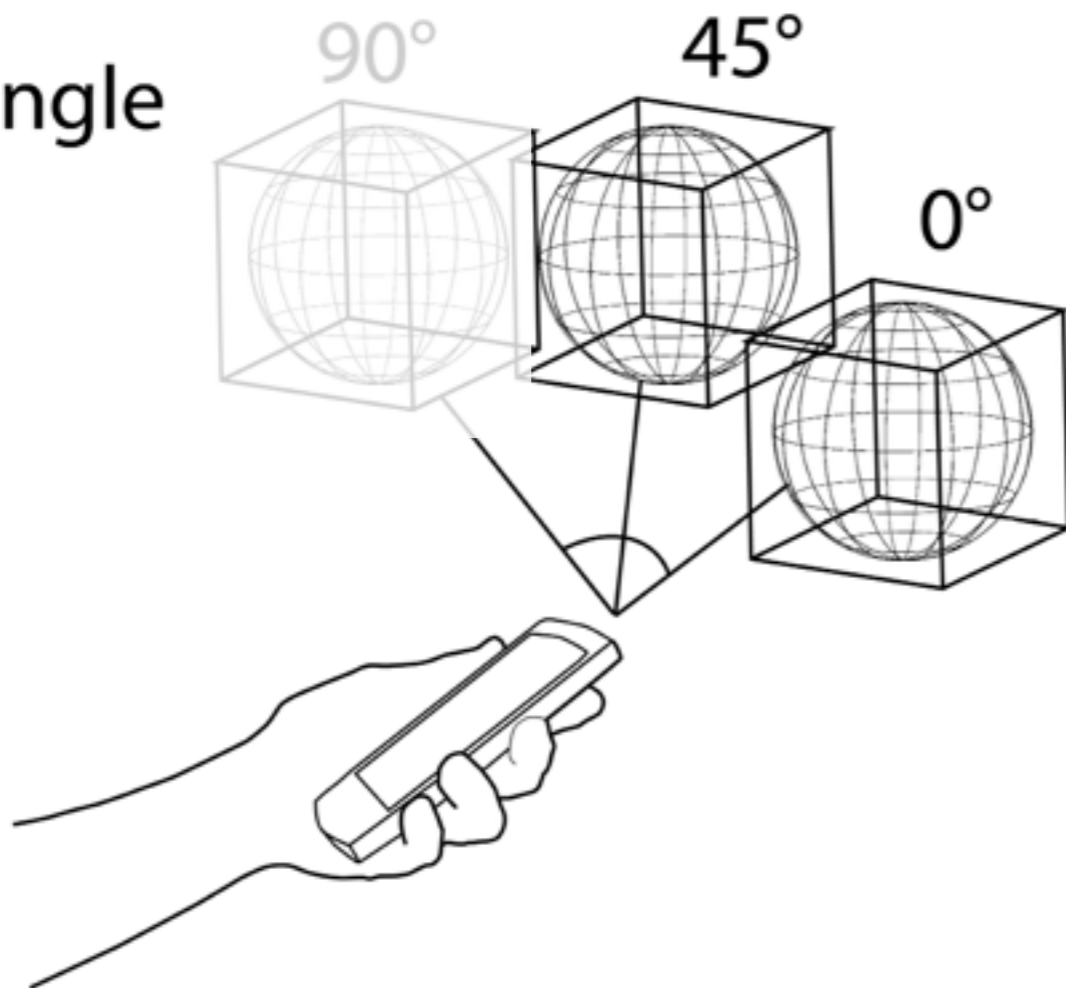
distance



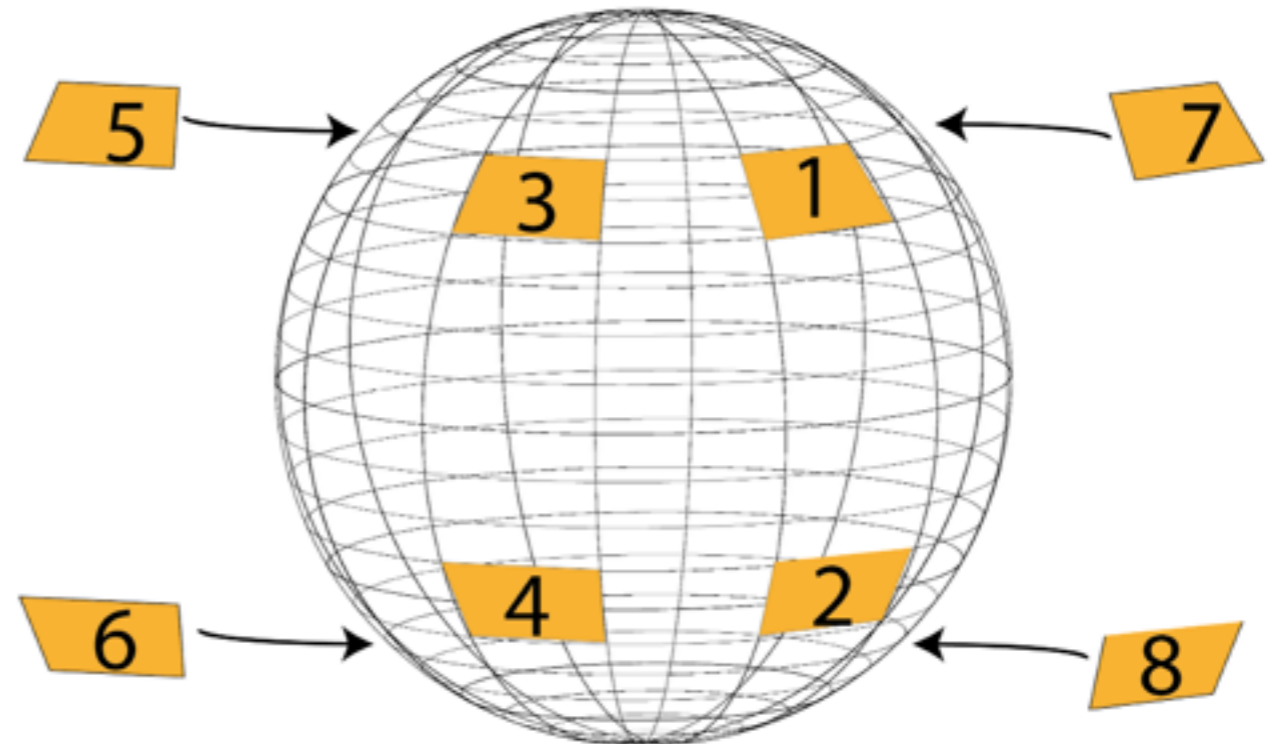
volume



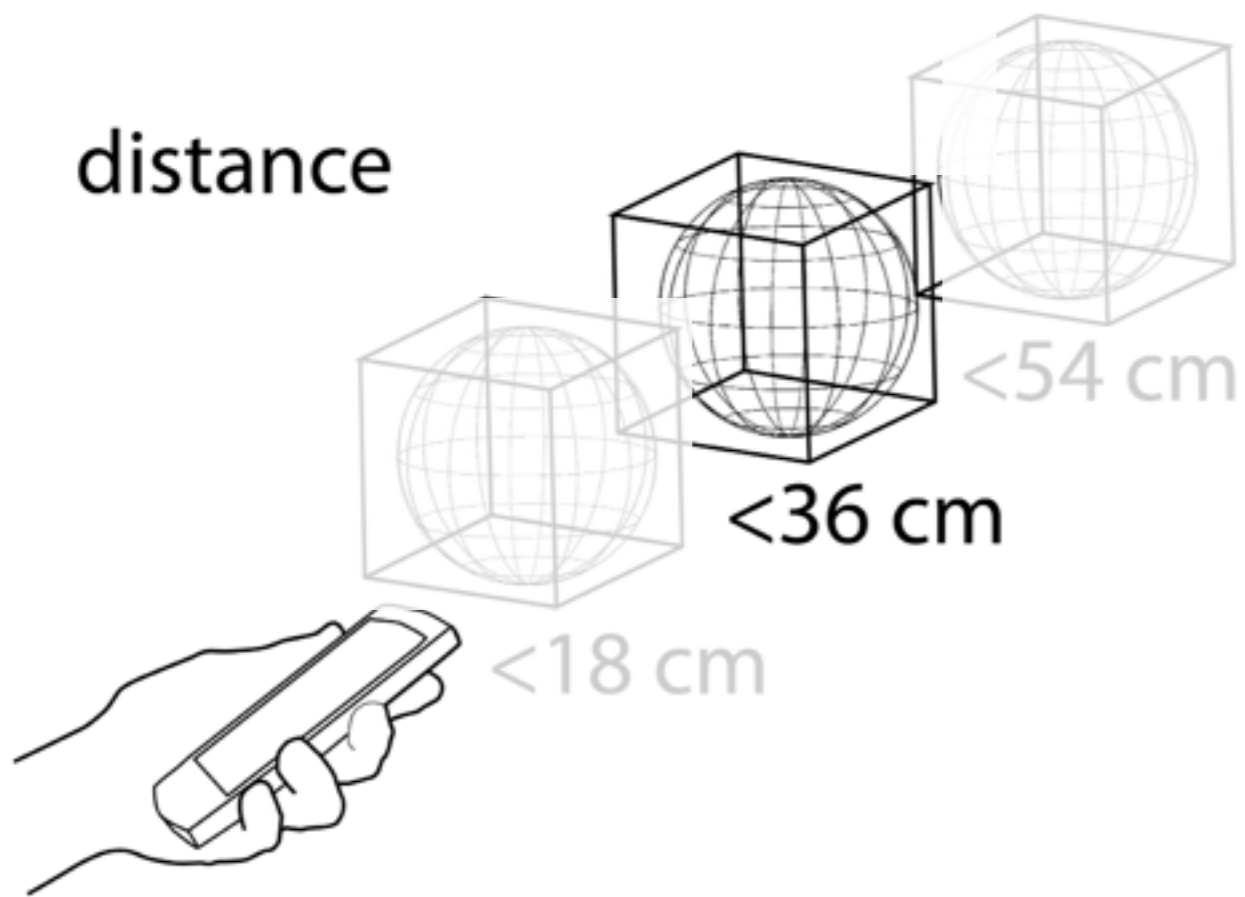
angle



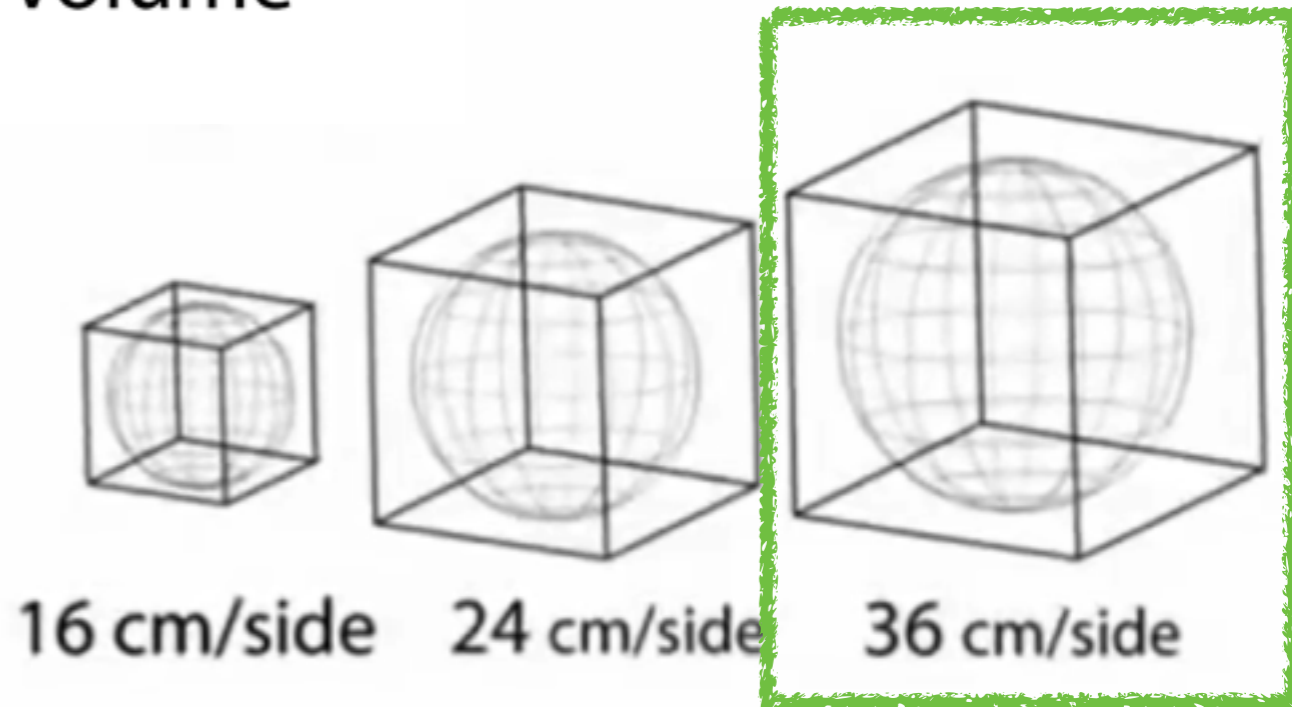
Pattern positions on the sphere



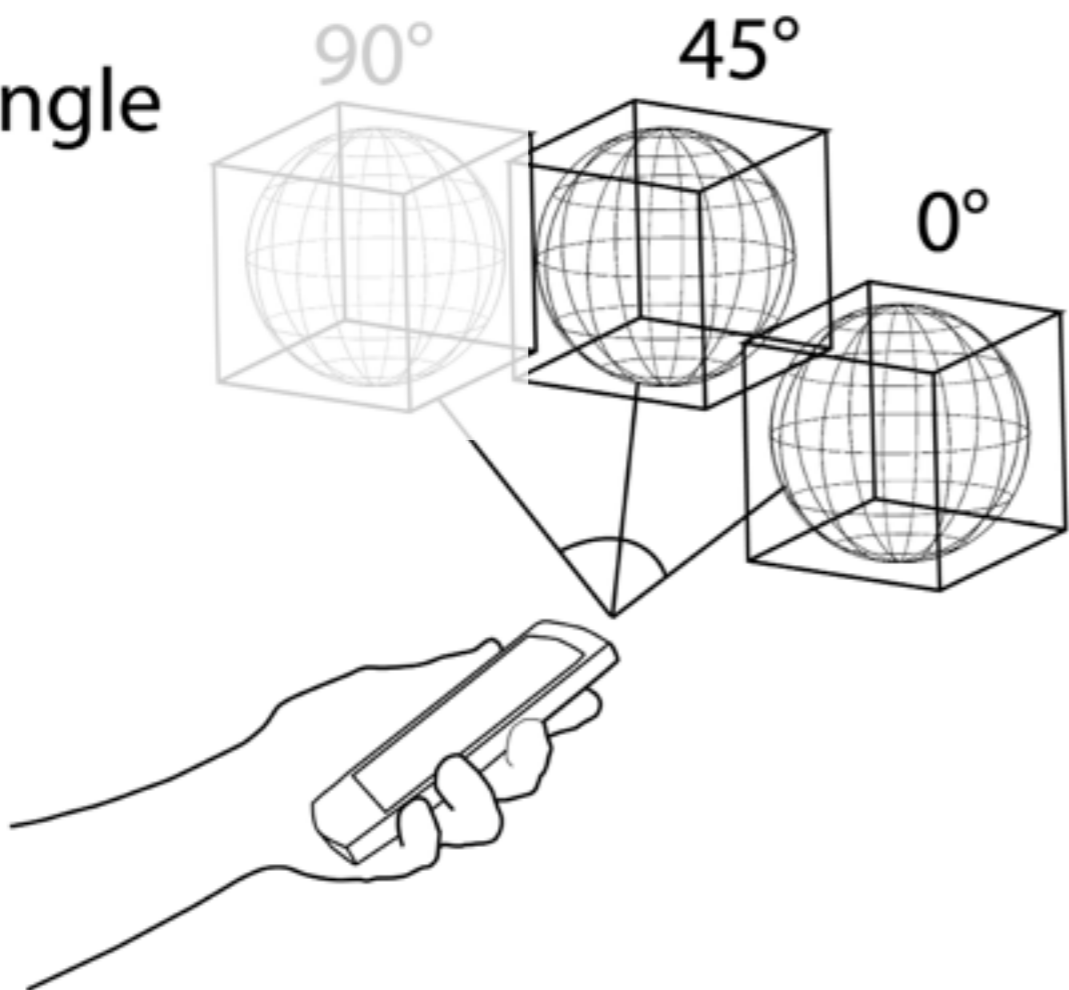
distance



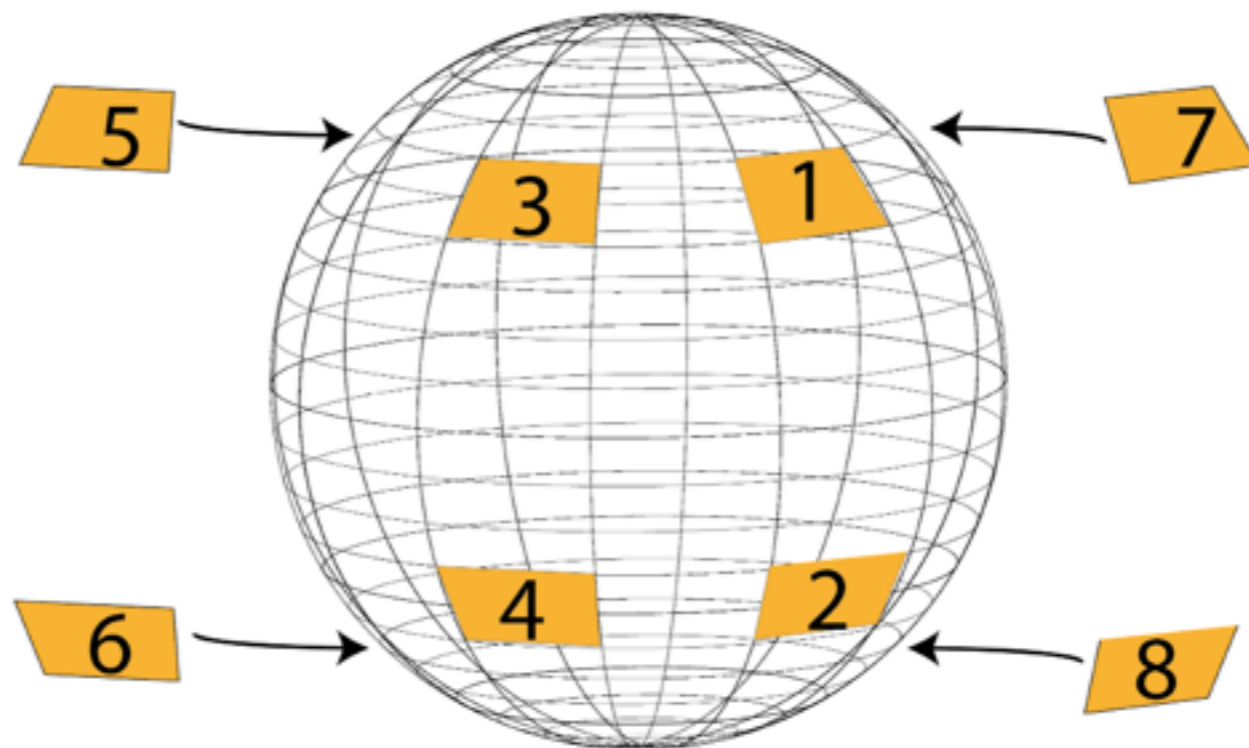
volume



angle

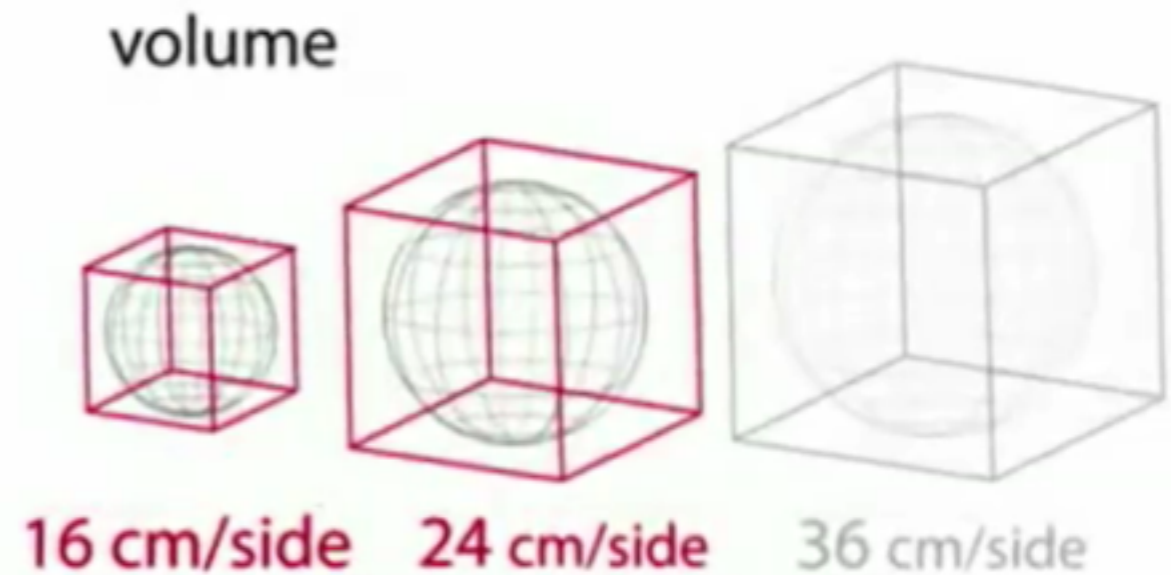
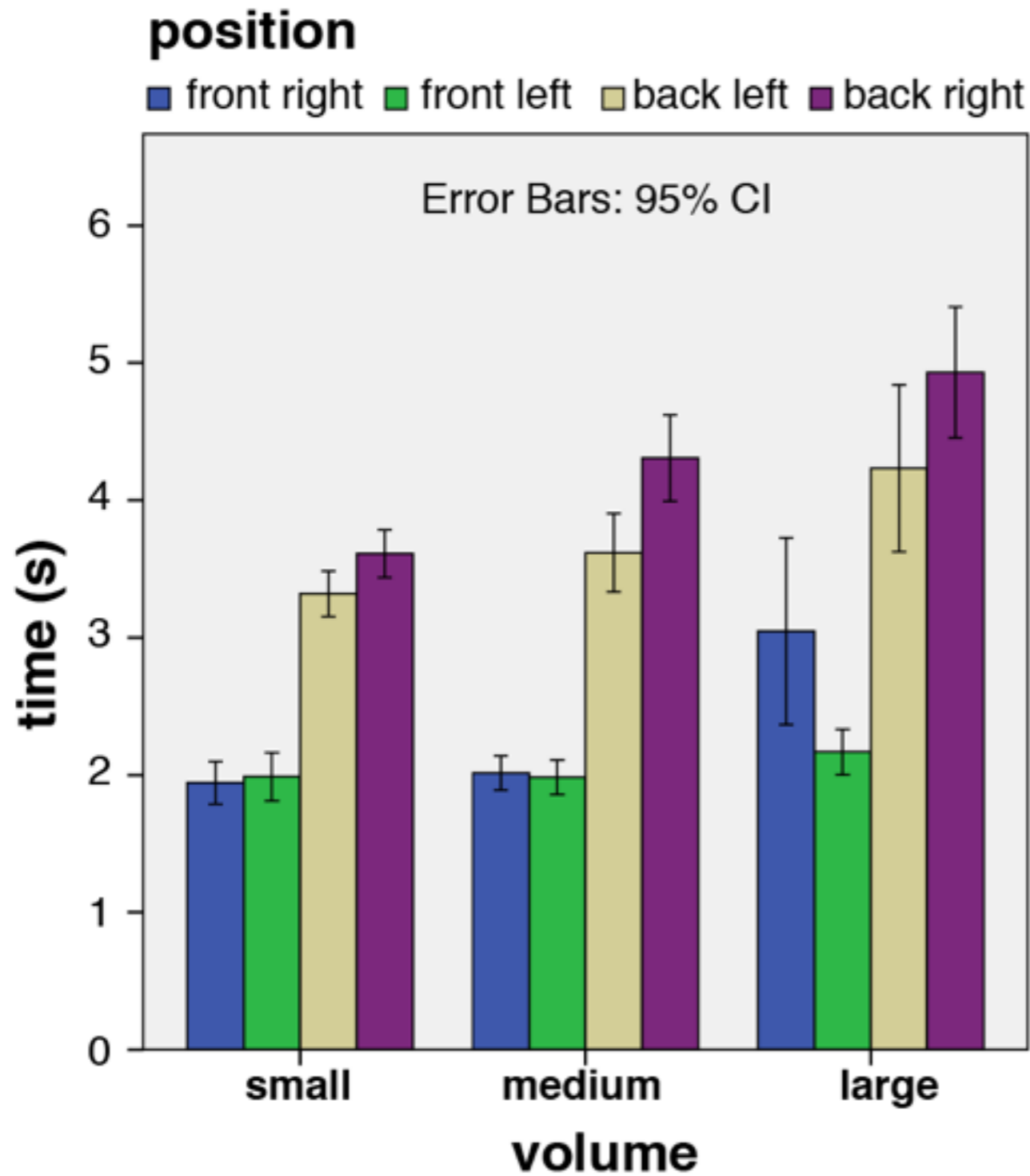


Pattern positions on the sphere



# Results

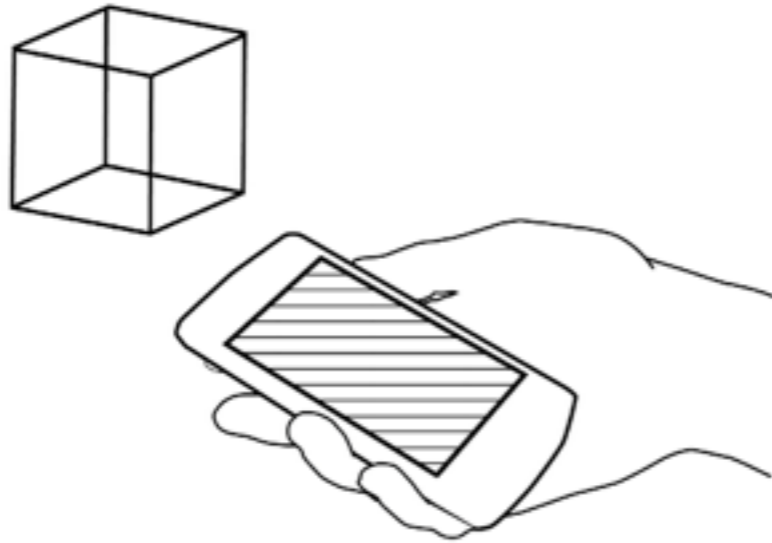
## Volume at each Position



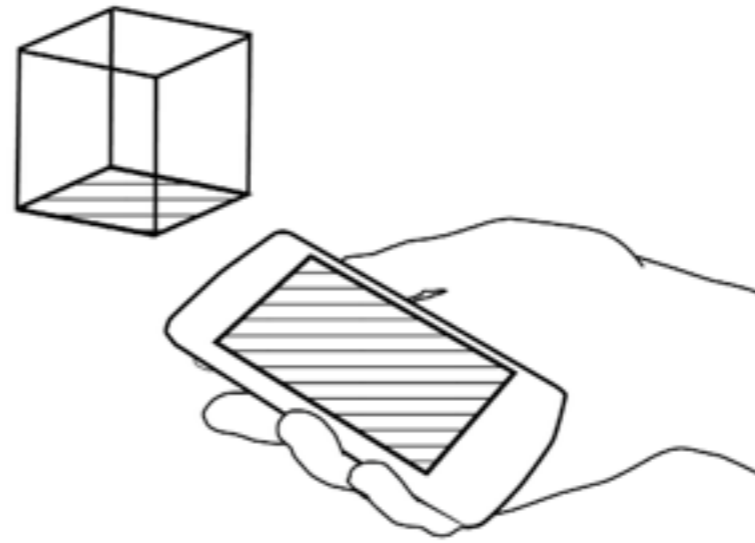
**Illustrative Examples  
and  
Coordinated Display  
Configurations**

# Coordinated Display Configurations

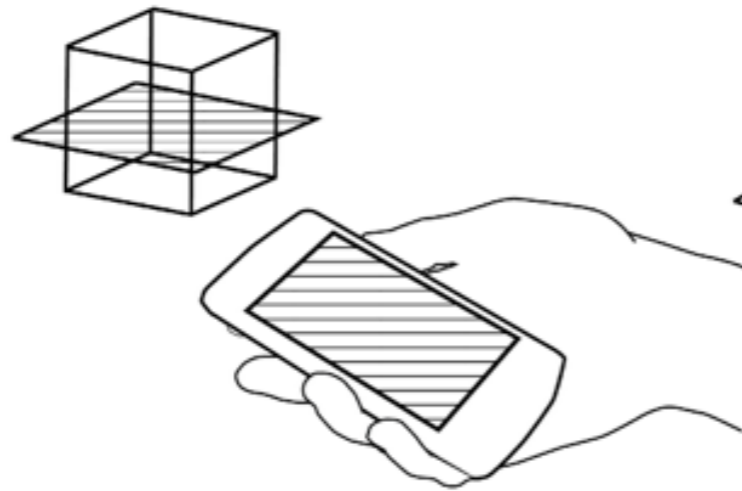
CDC



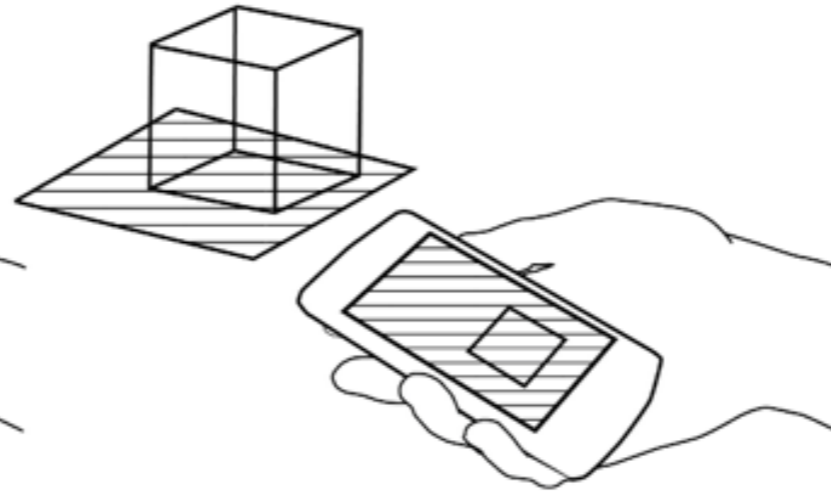
Independent



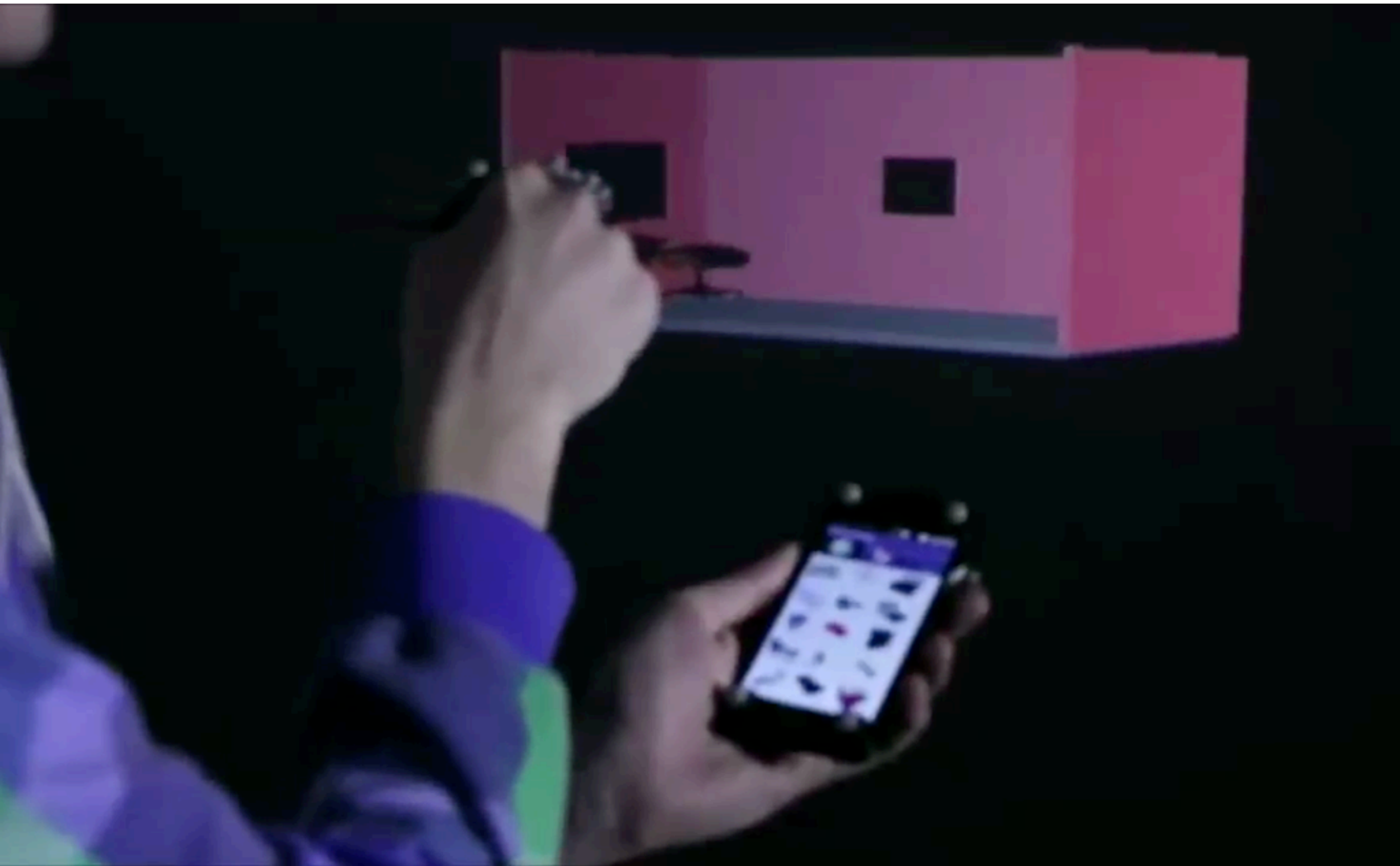
Extruded replication

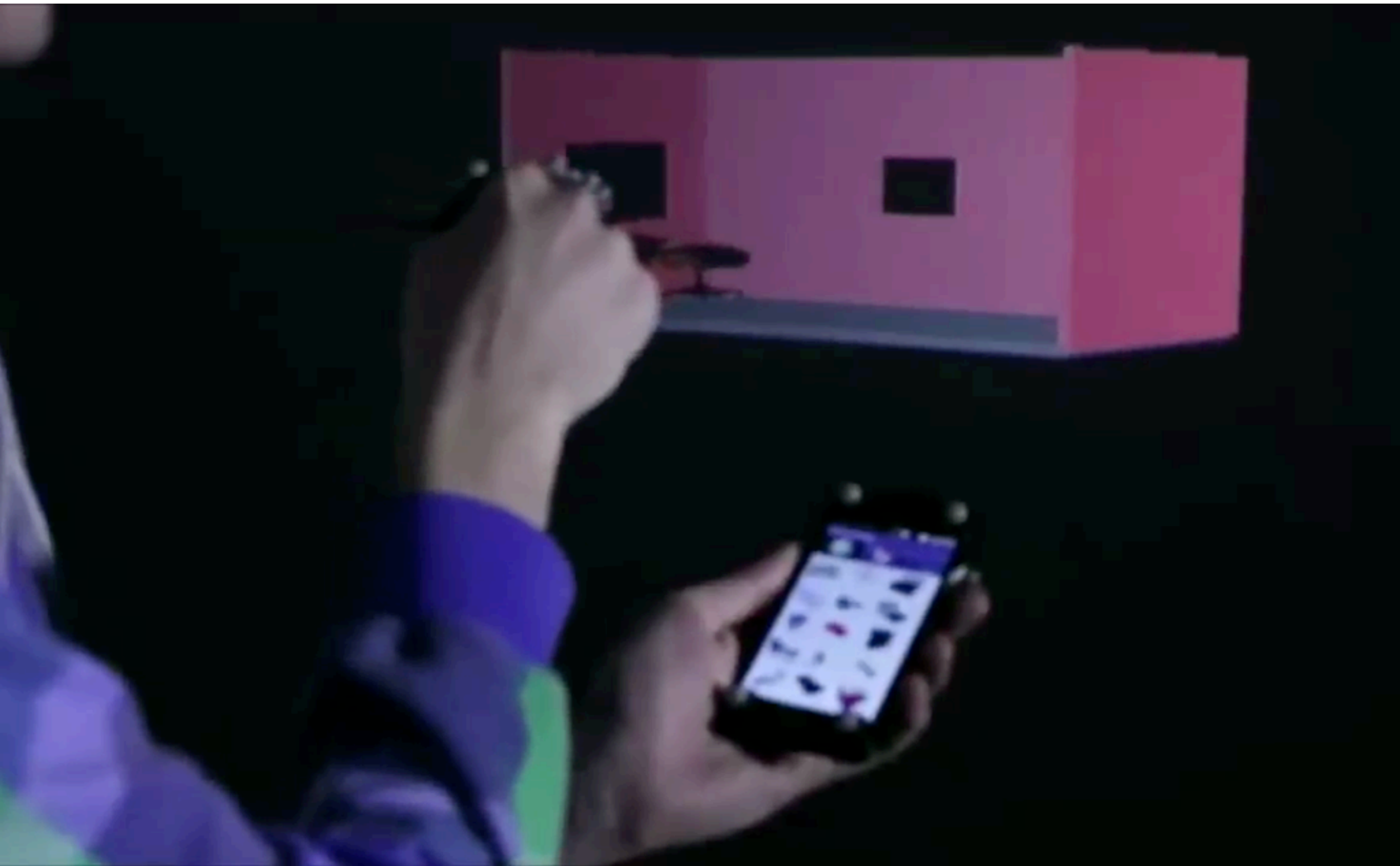


Cross-Section



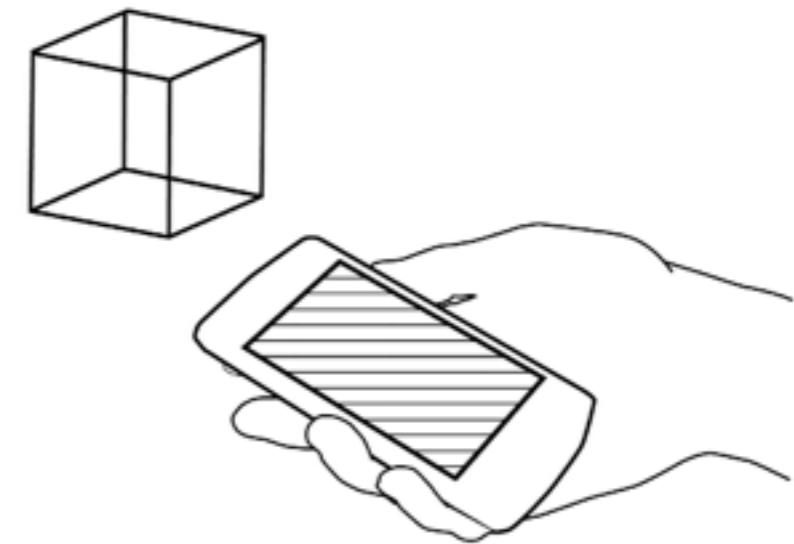
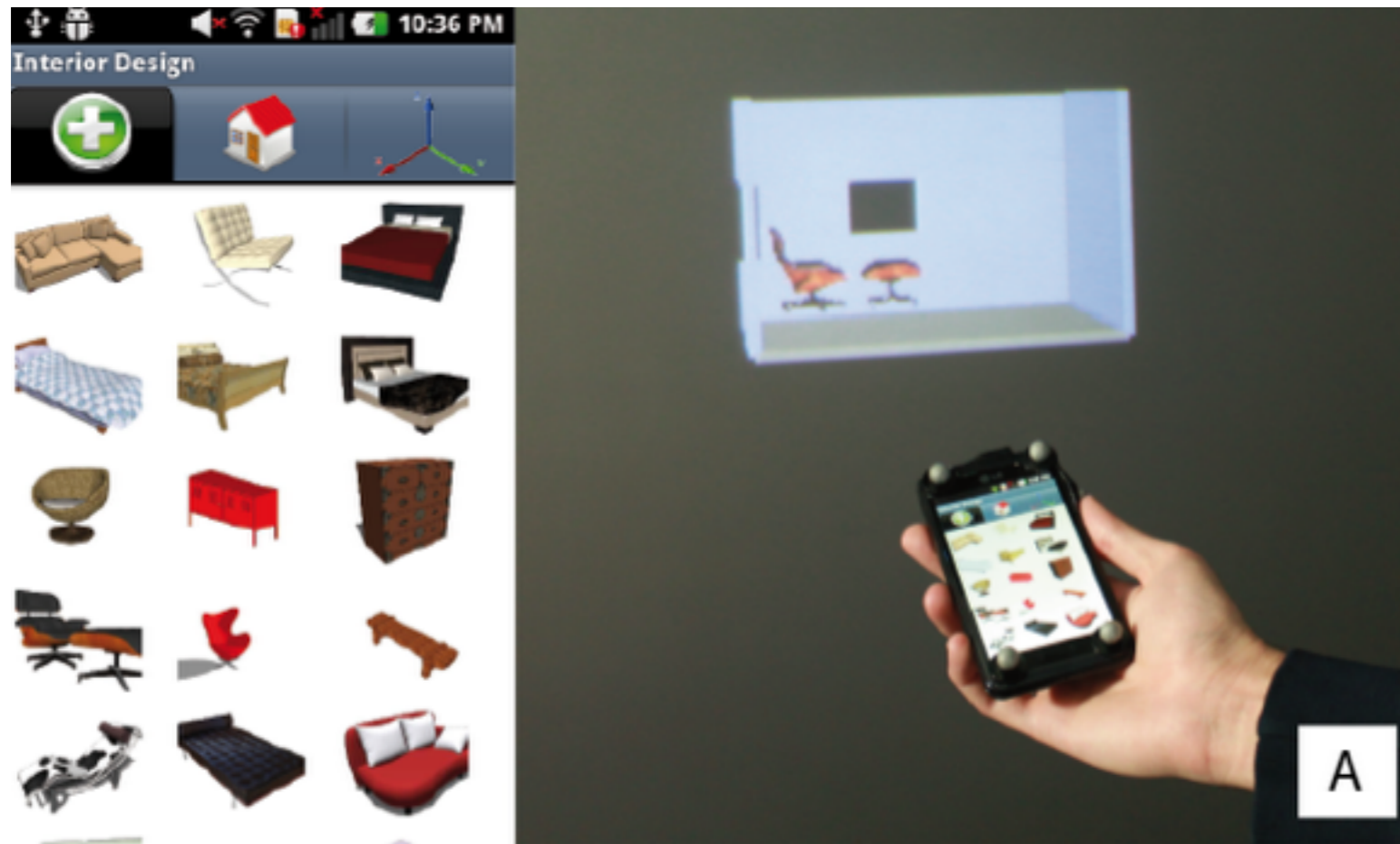
Extruded detail





# Illustrative application

Interior design

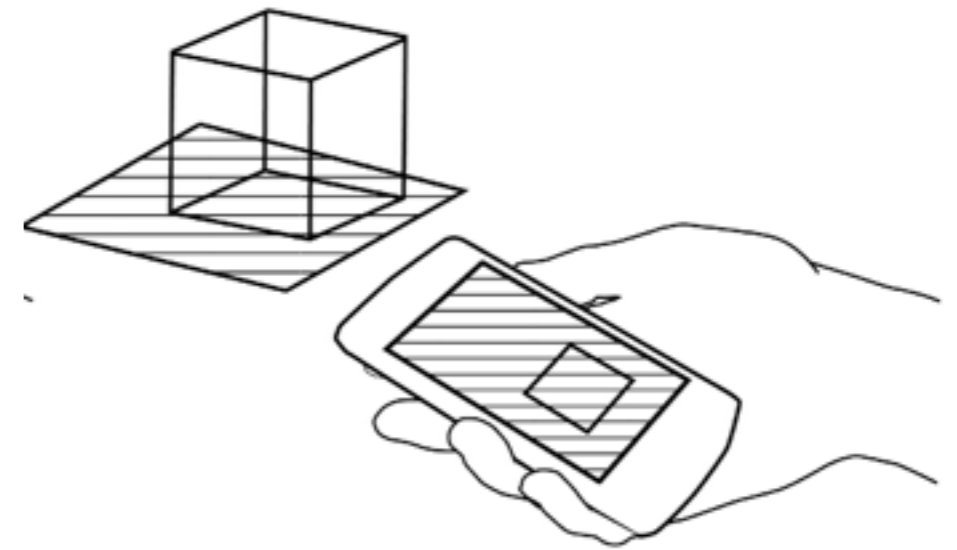


Independent



# Illustrative application

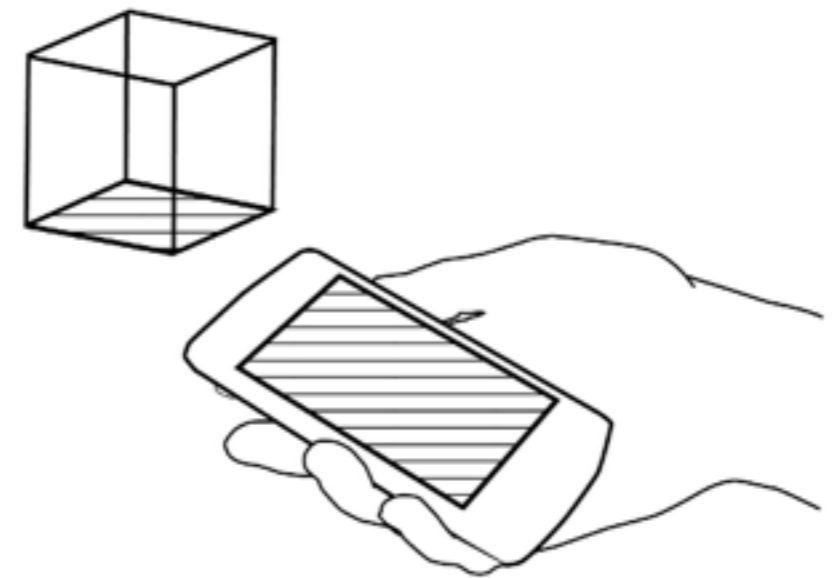
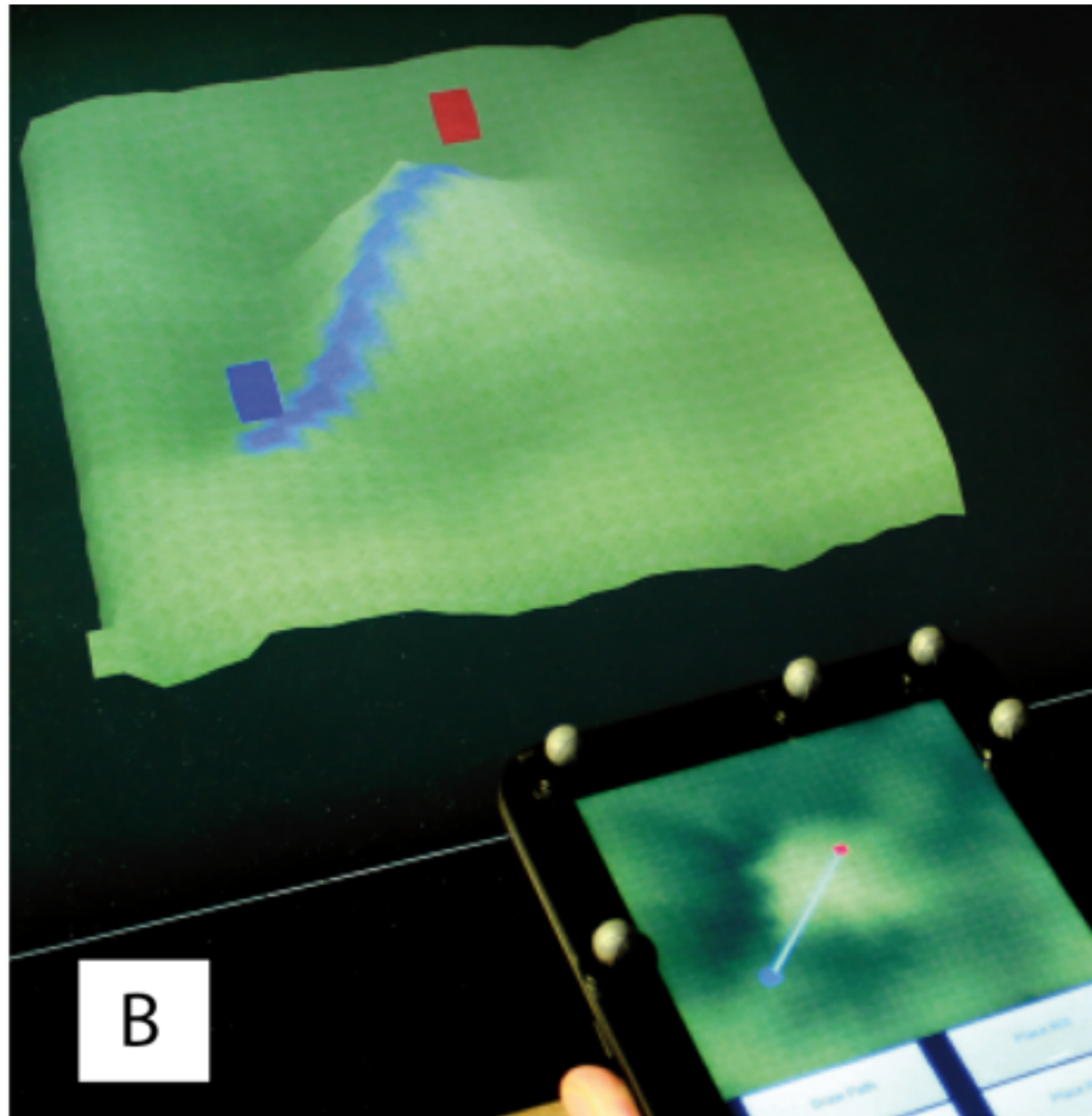
Interior design



Extruded detail

# Illustrative application

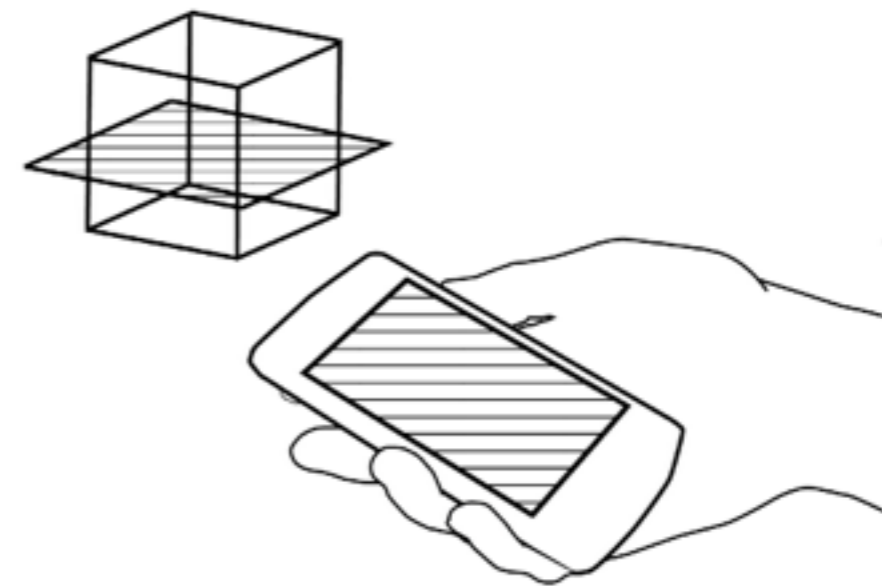
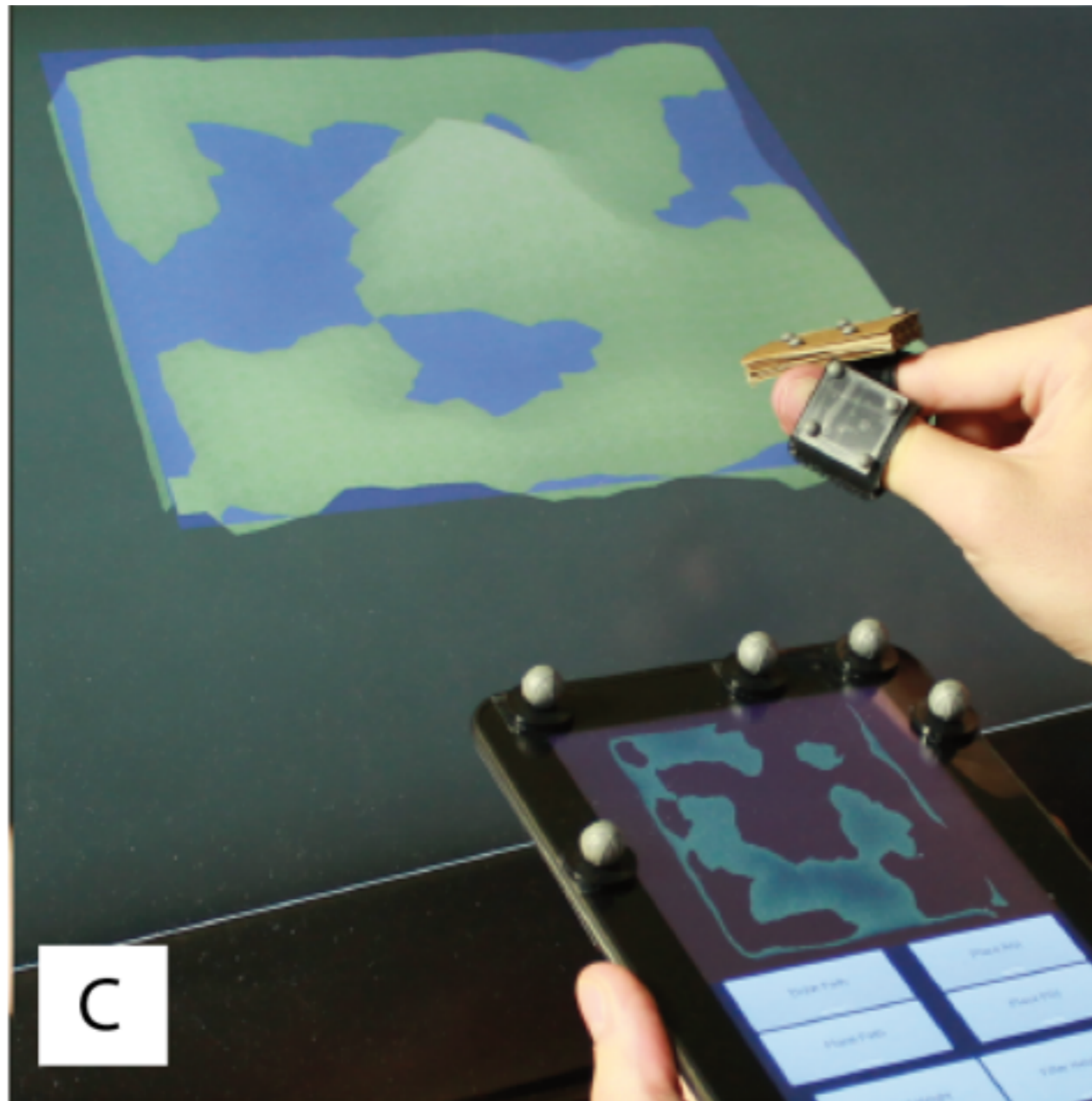
3D Map



Extruded replication

# Illustrative application

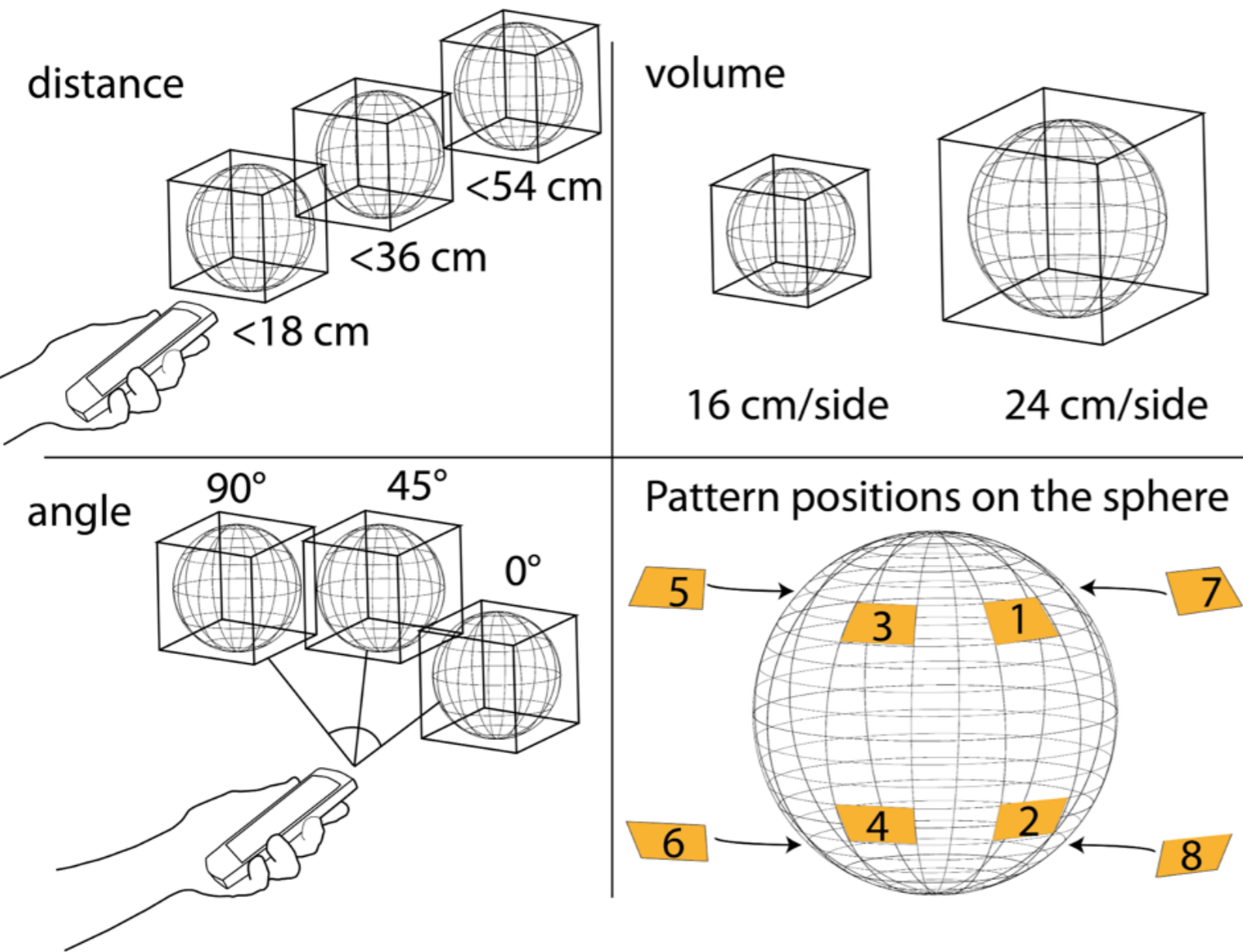
## 3D Map



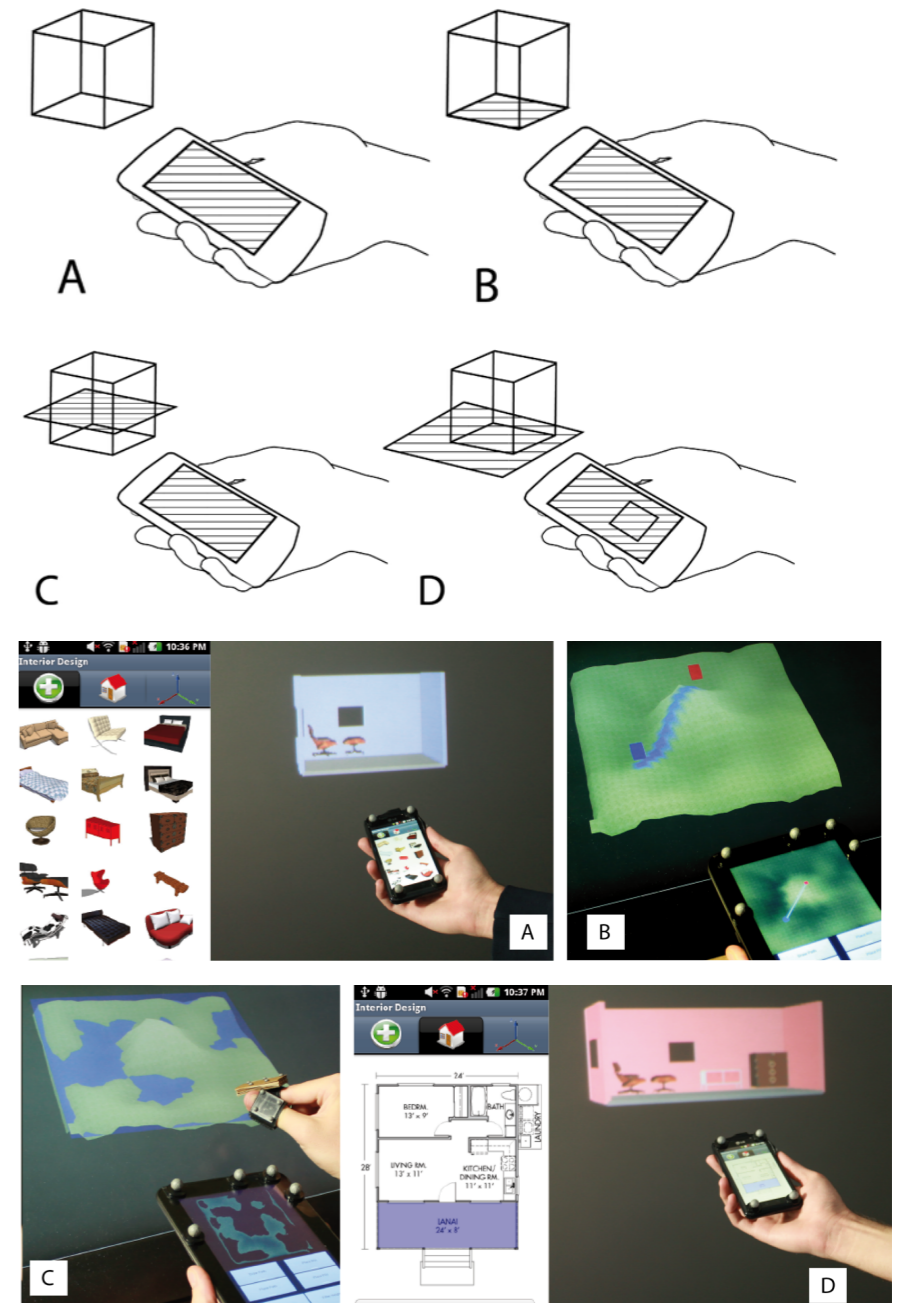
Cross-Section

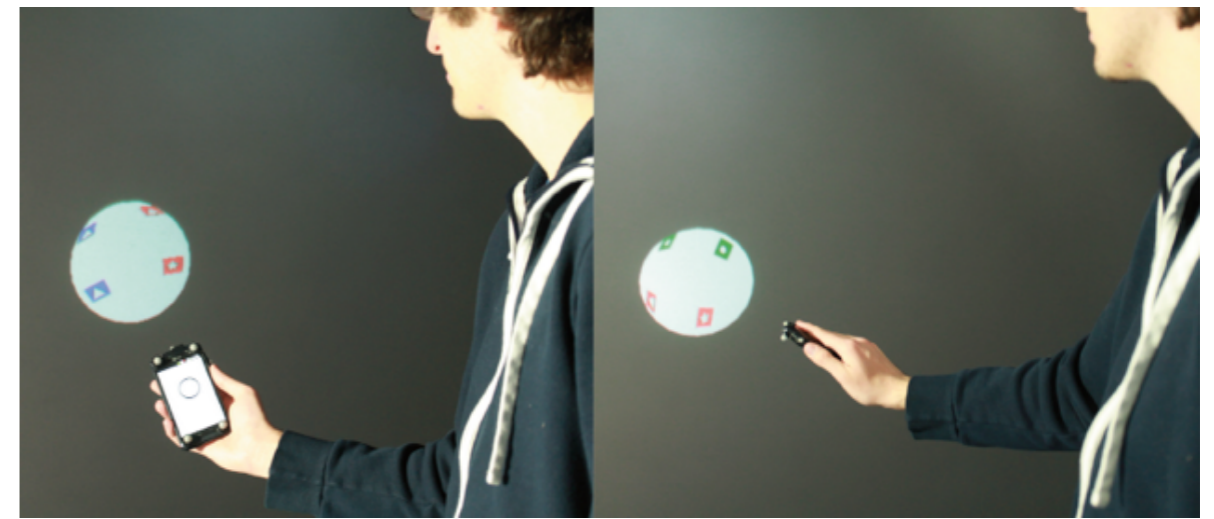
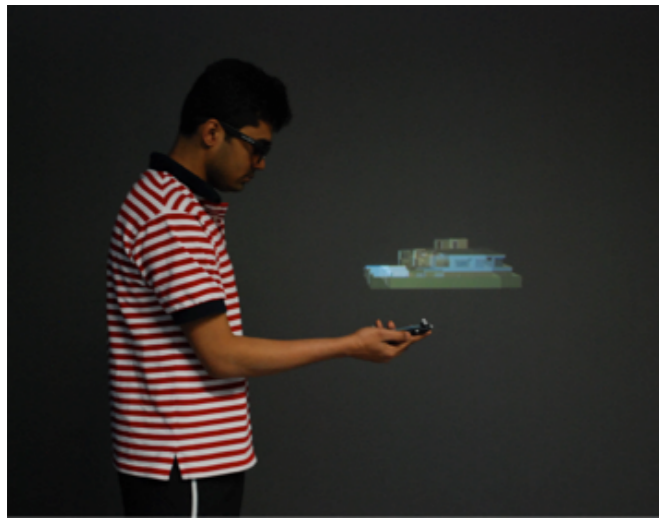
# Summary

## 1. Studies on Projection Properties



## 2. Display Configurations





# Identifying Suitable Projection Parameters and Display Configurations for Mobile True-3D Displays

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