



# 智能手表的非接触备择交互模式的设计

*Designing Alternative Contact-free Modalities for Smart Watches*

姓 名 欧长坤

计算机科学与技术学院 计算机科学与技术 1202

指导老师 陈雅茜

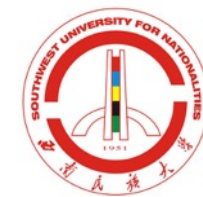
联合导师 Andreas Butz (University of Munich)

答辩时间 2016年5月17日

项目地址  <https://github.com/changkun/BachelorThesis/>  
 <https://changkun.us/bachelorthesis/>



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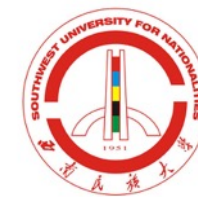
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# 选题意义

Intentions



*Demo*



# 1

## 备择交互设计

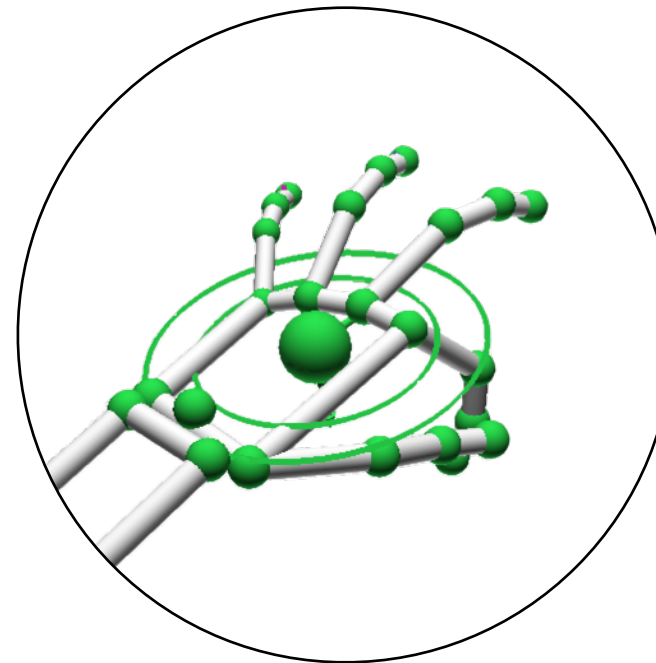
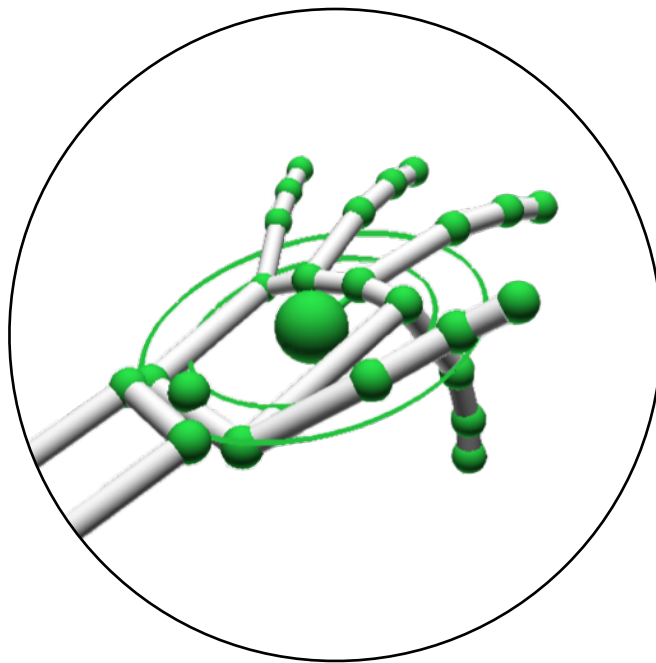
Alternative Interaction Design

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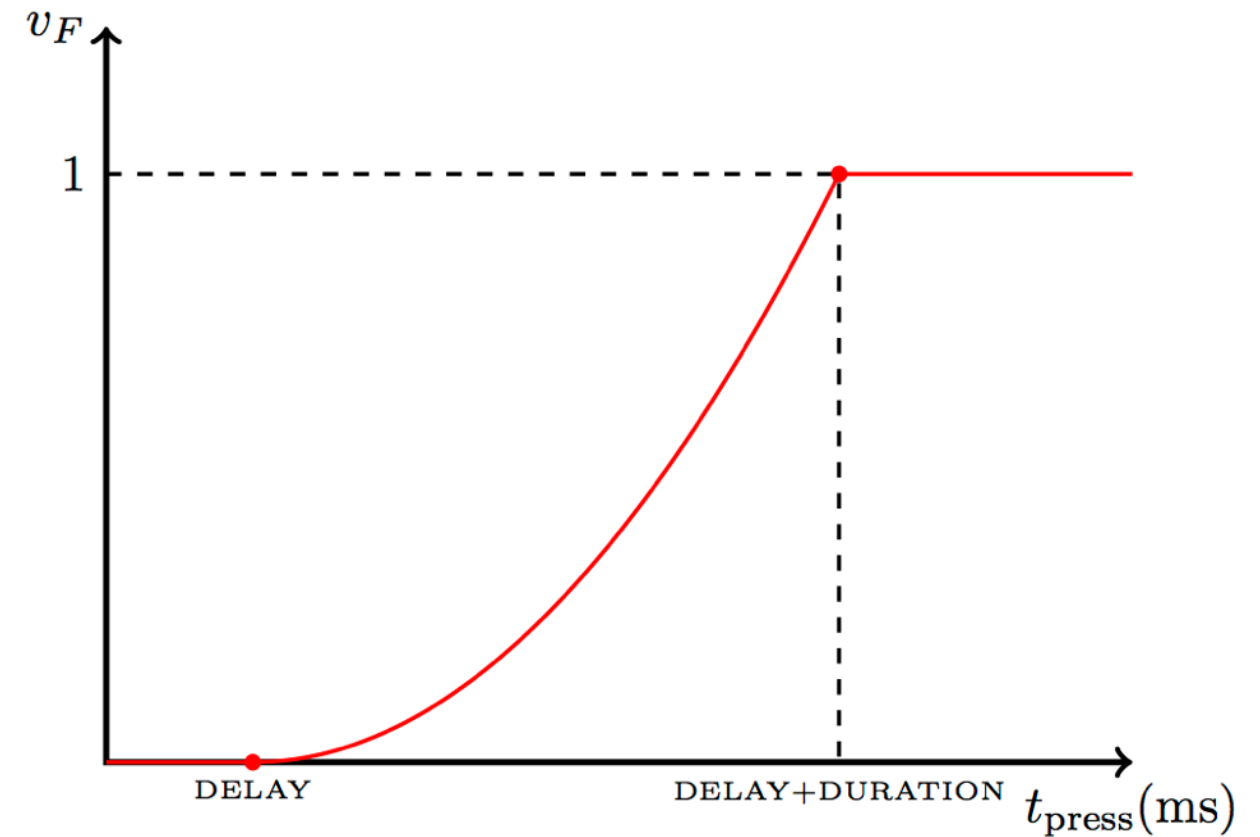
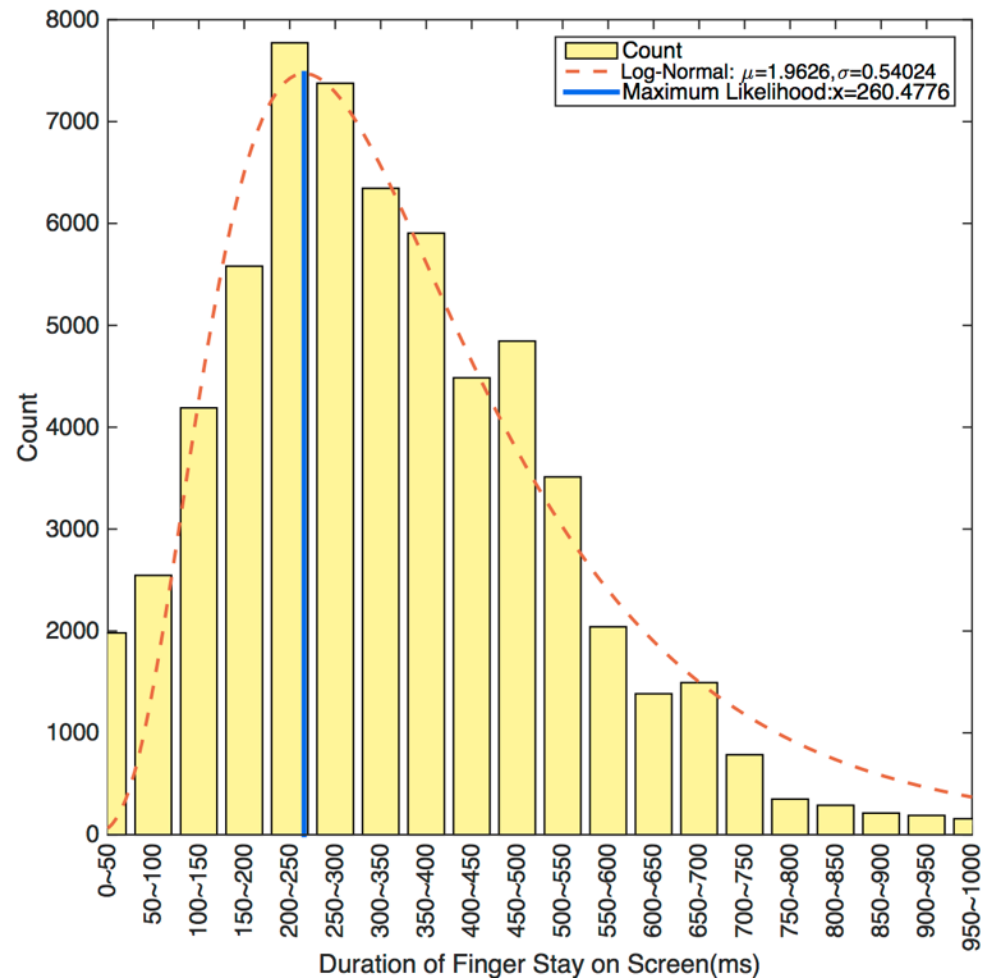


$$T = a + b \log_2 \left( \frac{A}{\sqrt{2\pi e(\sigma^2 - \sigma_a^2)}} + 1 \right)$$

Finger Fitts Law[2.1.1]



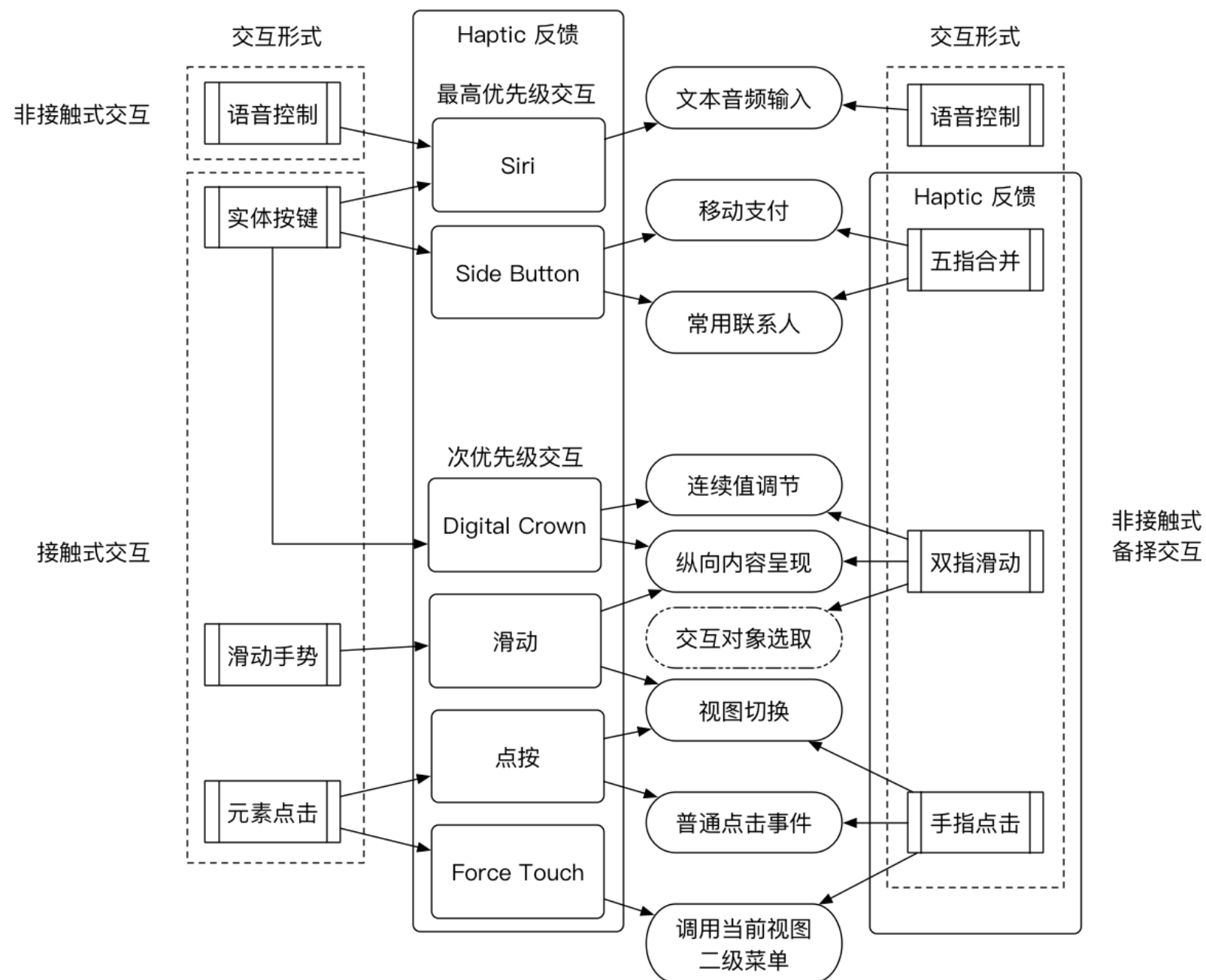
Two Fingers Swipe Gesture



Force Touch Simulation and Its Formula

AugmentedTouch 项目[3.1.3] 实施的用户调研记录了 61440 次手指点击屏幕时的停留时间, 停留时间的统计分布服从对数正态分布

$$v_F = \begin{cases} 0 & \text{if } t_{\text{press}} < \text{DELAY} \\ \left( \frac{t_{\text{press}} - \text{DELAY}}{\text{DURATION}} \right)^2 & \text{if } 0 < t_{\text{press}} - \text{DELAY} < \text{DURATION} \\ 1 & \text{Otherwise} \end{cases}$$



Original Design v.s. Alternative Design



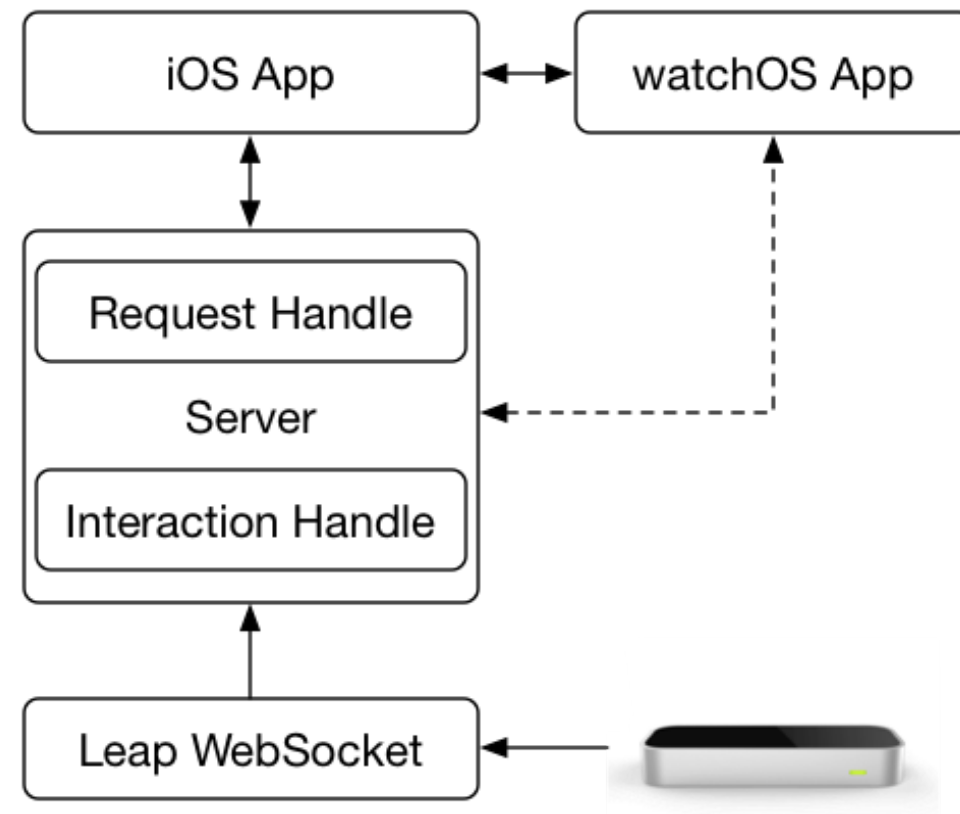


# 2

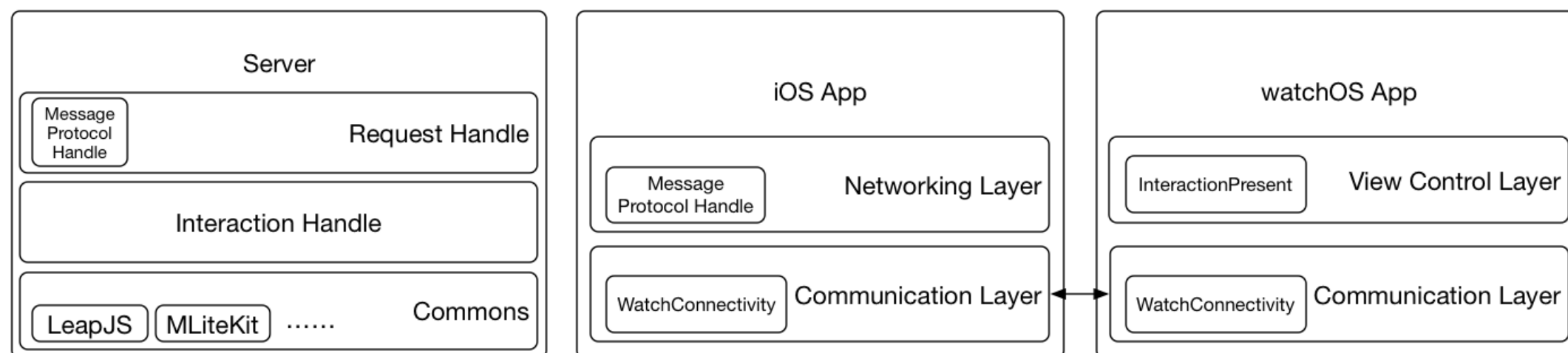
## 核心实现

Implementation

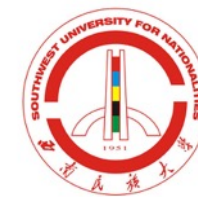
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Communication Logic



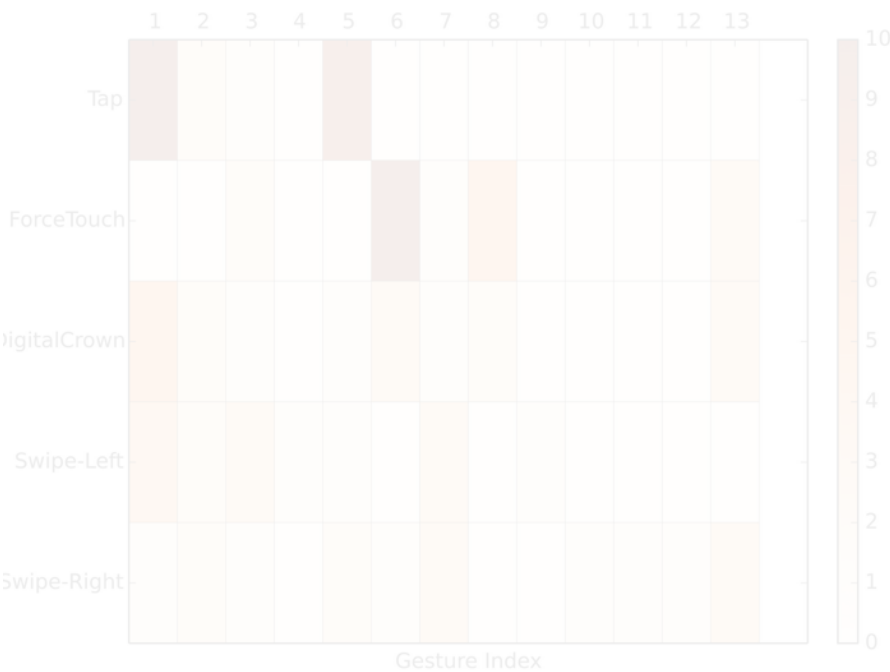
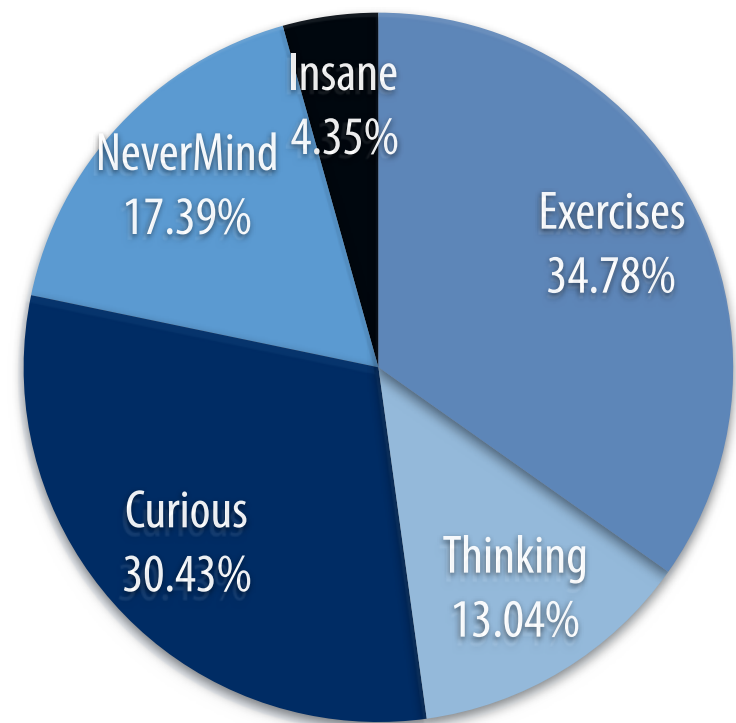
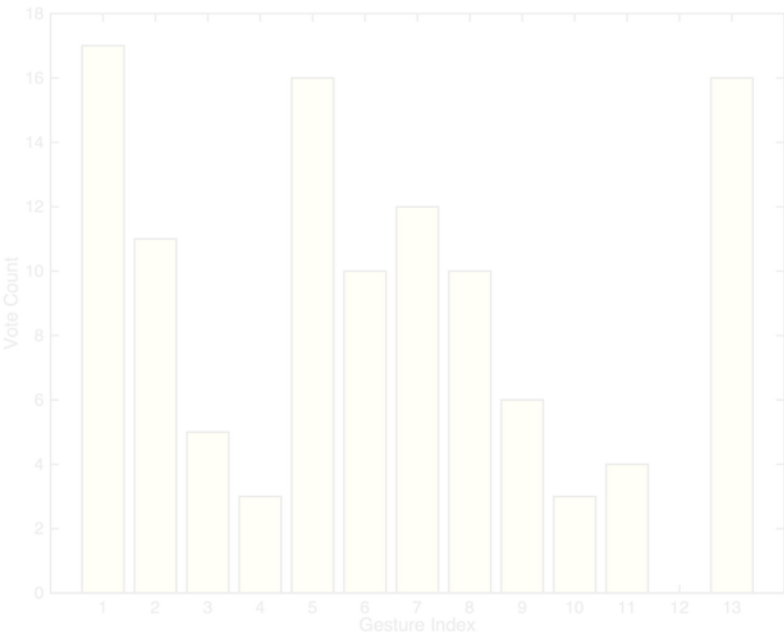
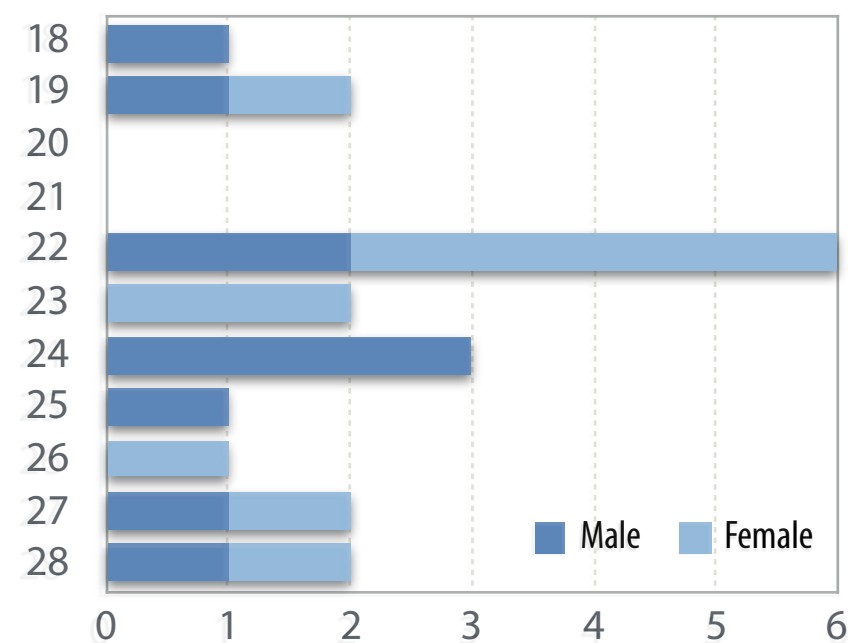
Server Side, Phone Side and Watch Side

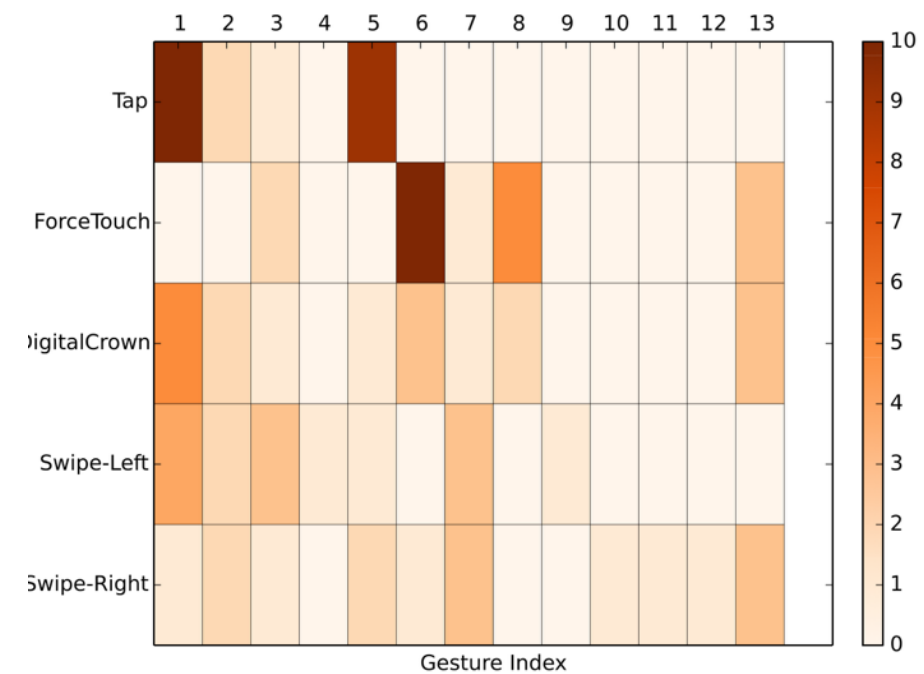
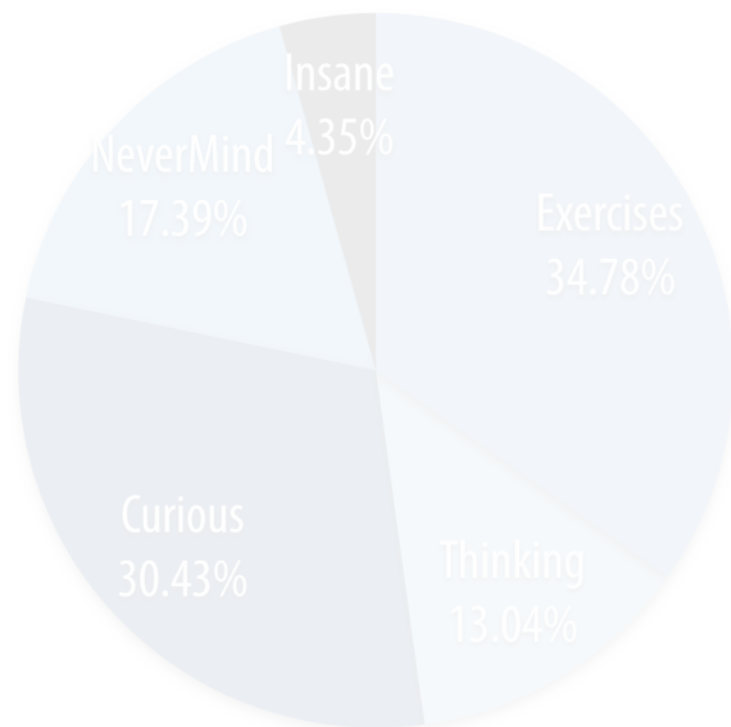
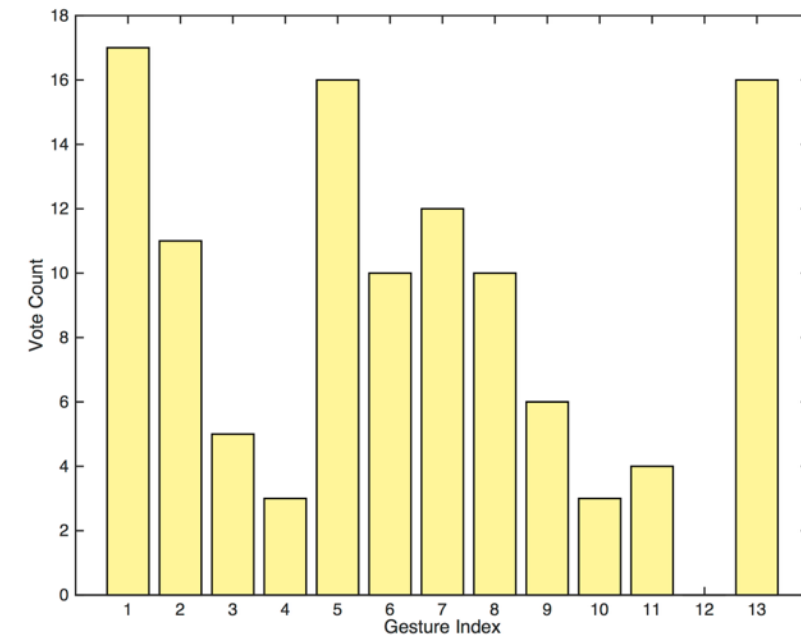
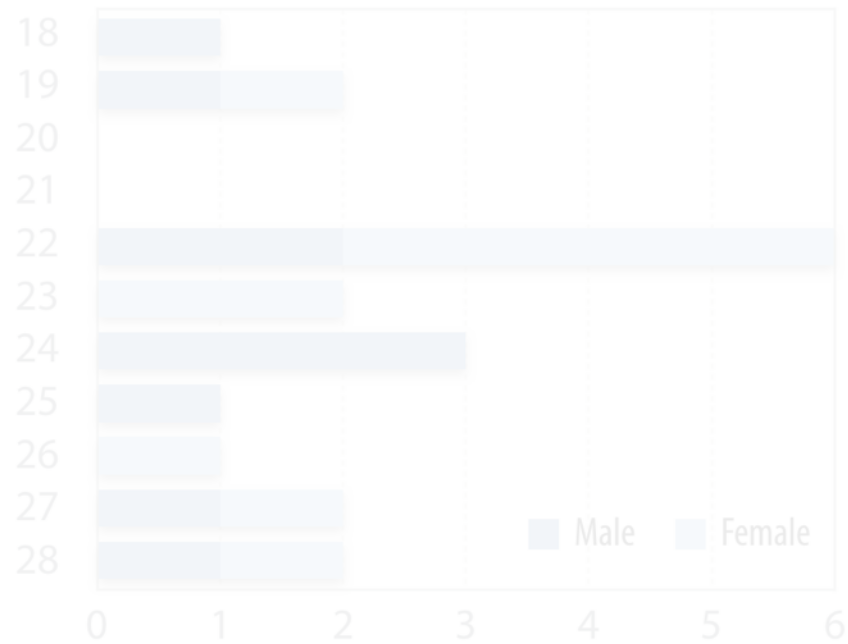


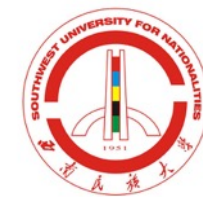
# 3

## 用户调研

User Study



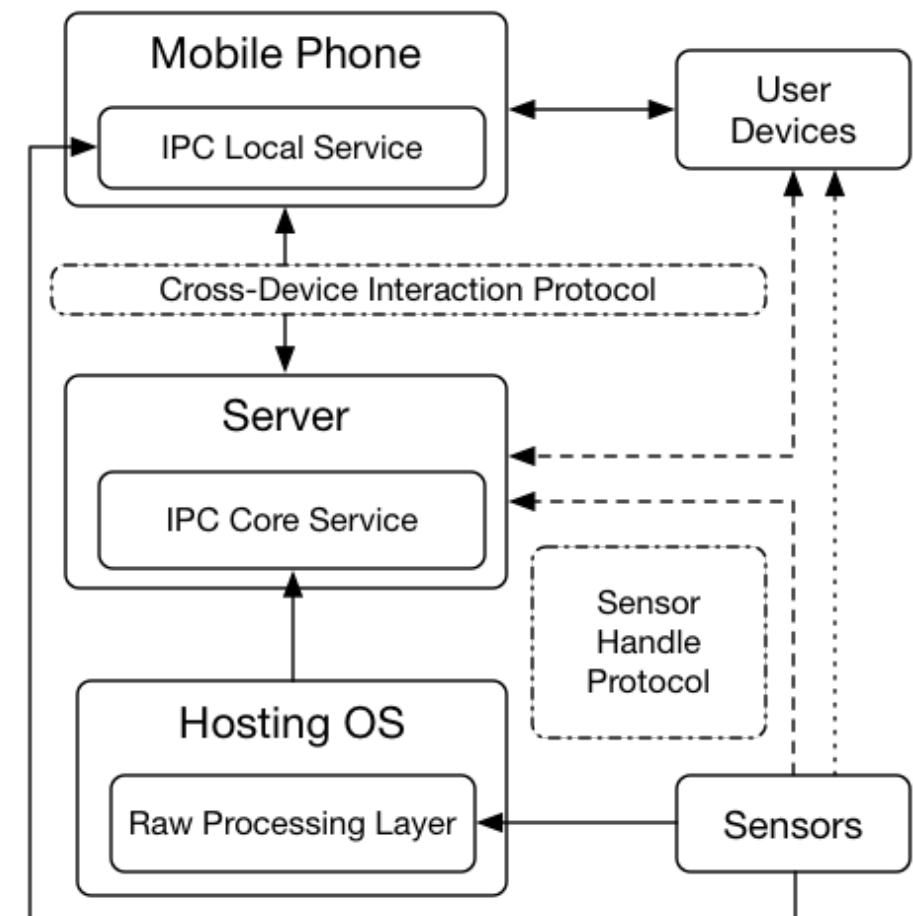
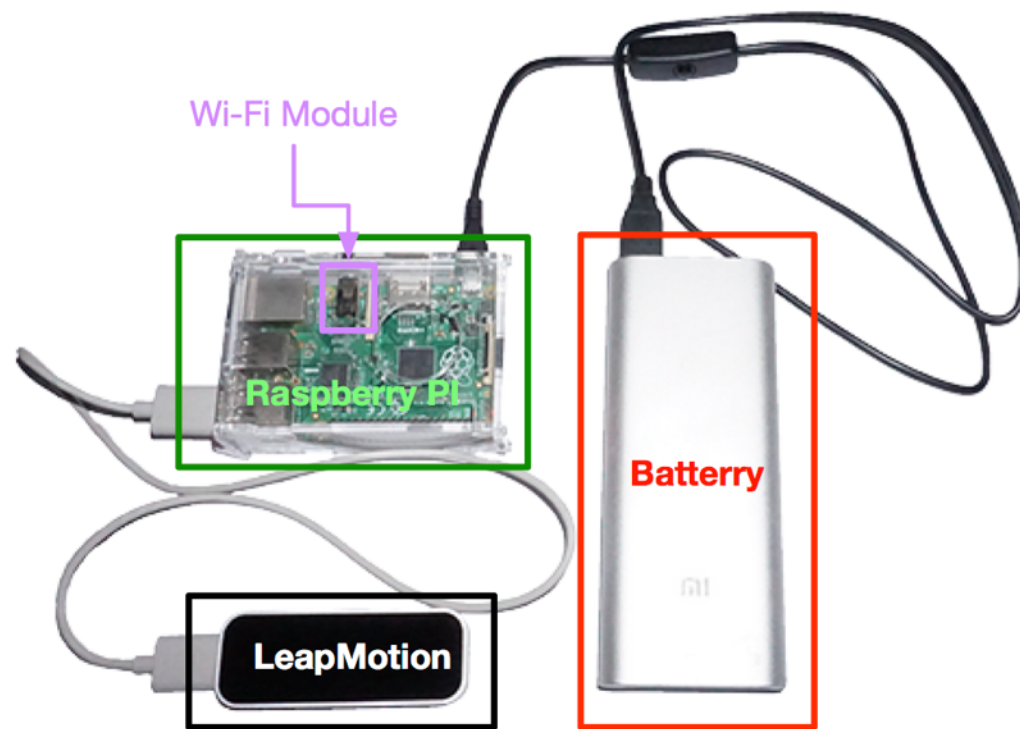




# 4

## 进一步工作

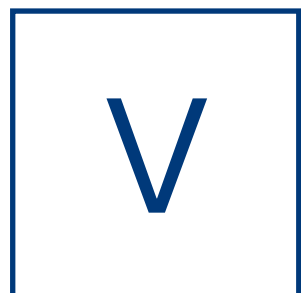
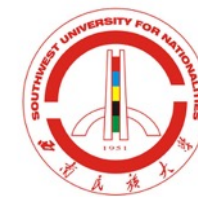
Future Works



Universal Communication Logic

\* Myo Image Source: <https://www.myo.com>



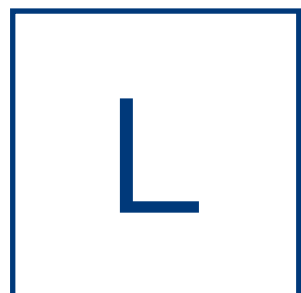
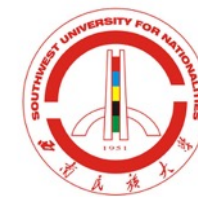


# 视频演示

Video Demo

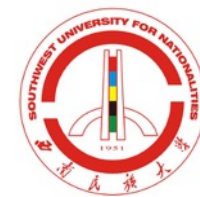


*Demo*



# 现场演示

Live Demo



# *Thanks and Never Ends.*

*Here's to the crazy ones.*

*The misfits. The rebels. The troublemakers. The round pegs in the square holes. The ones who see things differently.*

*They're not fond of rules. And they have no respect for the status quo. You can quote them, disagree with them, glorify or vilify them.*

*About the only thing you can't do is ignore them. Because they change things.*

*They push the human race forward. And while some may see them as the crazy ones, we see genius.*

*Because the people who are crazy enough to think they can change the world, are the ones who do.*



**Free as in Freedom**

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## 本次设计中析出的项目

External Projects

[1] **SWUNThesis**: A LaTeX Thesis Template for Southwest University for Nationalities,  
<https://github.com/changkun/SWUNThesis>, LGPLv3.0

[2] **LeapMotionDocCN**: LeapMotion SDK Documentation Translation, Python/C++/ObjC/JS,  
<https://github.com/changkun/LeapMotion-Doc-Chinese>, CC4.0



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