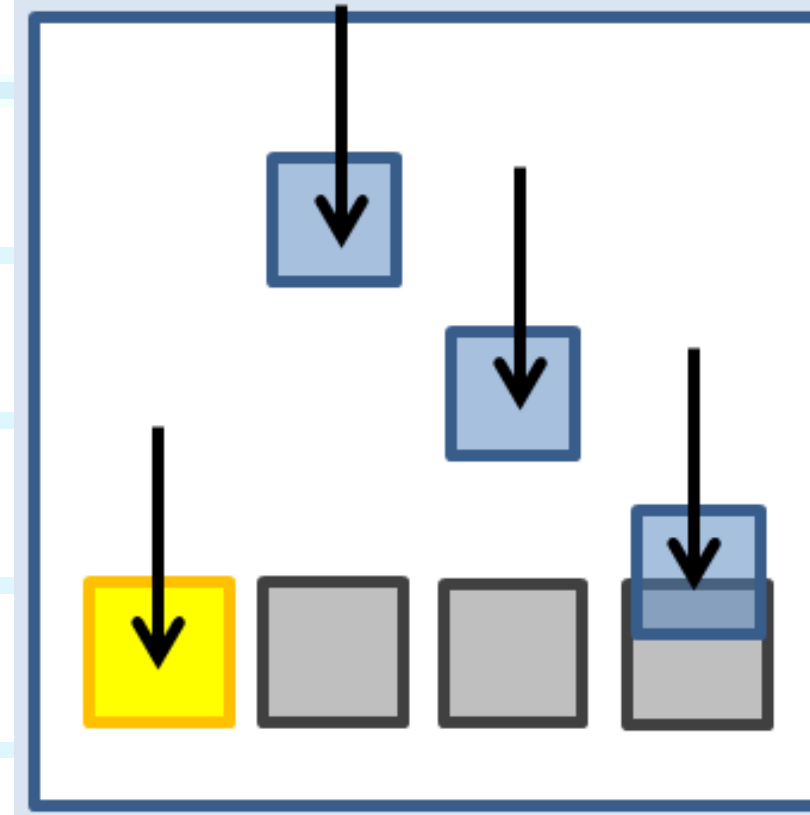


# Designing Rhythm Games for Touchscreen Devices

By Philip Peng, Faculty Advisor: Stephen H. Lane

<http://beatsportable.com>

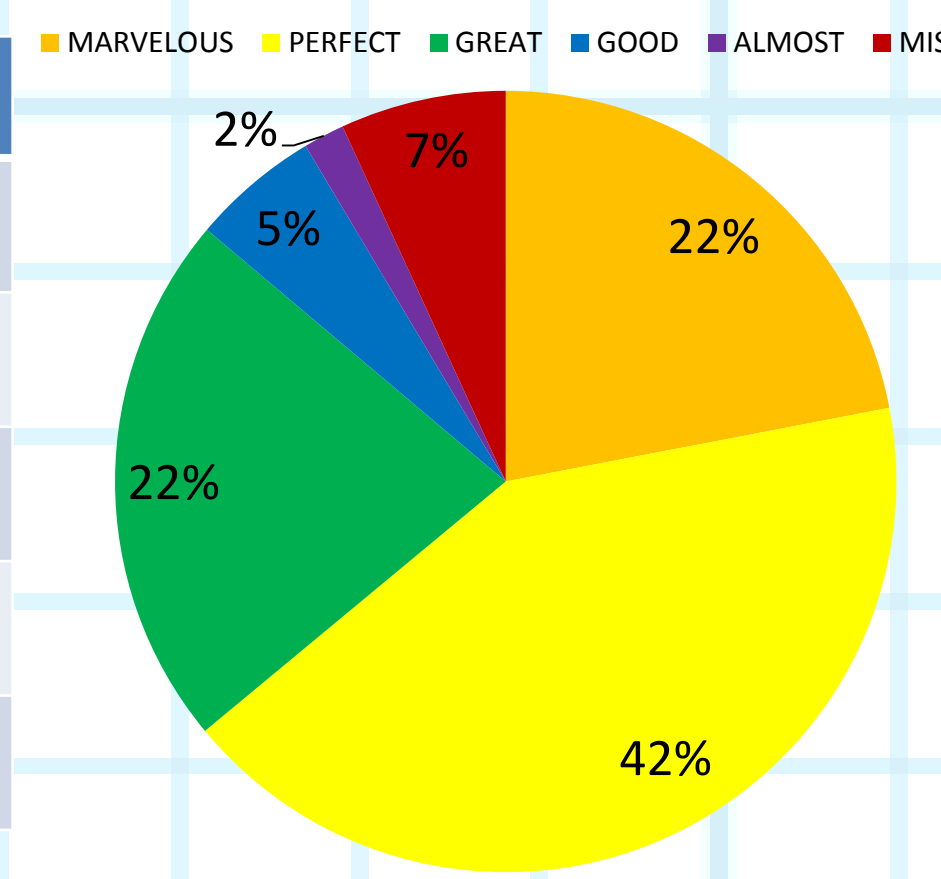
## Design 1: Fall



### Feedback:

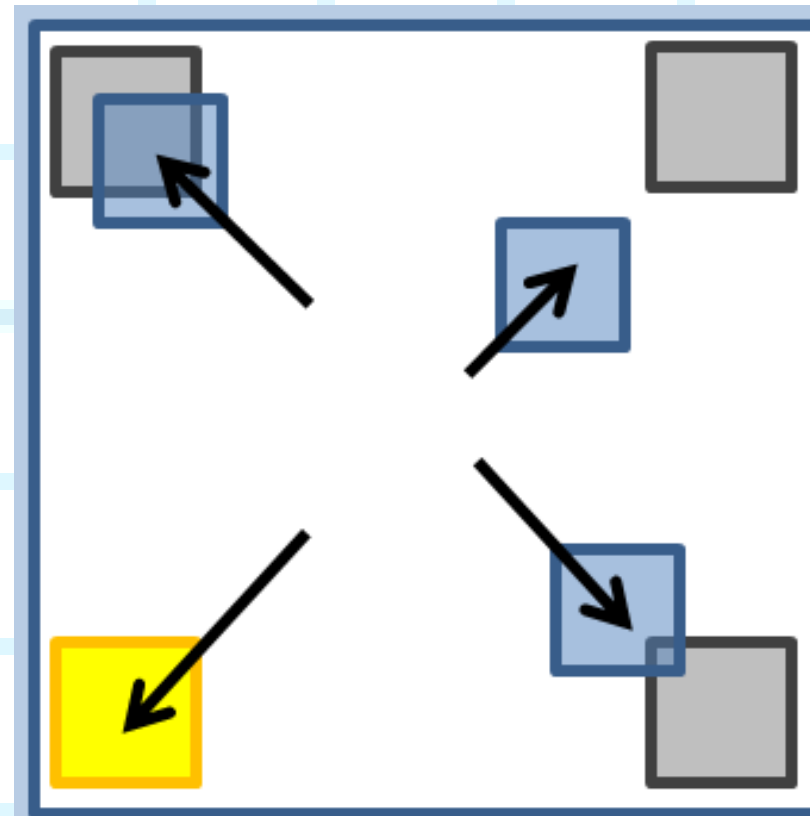
Category	Ratings	Avg
Challenge	★★★★☆	3.6
Intuitive	★★★★★	4.0
Fun	★★★★☆	3.6
Unique	★★★★☆	2.8
Overall	★★★★☆	3.7

### Accuracy Chart



**Description:** Moving notes fall toward fixed hitboxes at bottom edge  
**Rhythm Games:** *Dance Dance Revolution, Guitar Hero, Beatmania IIDX*

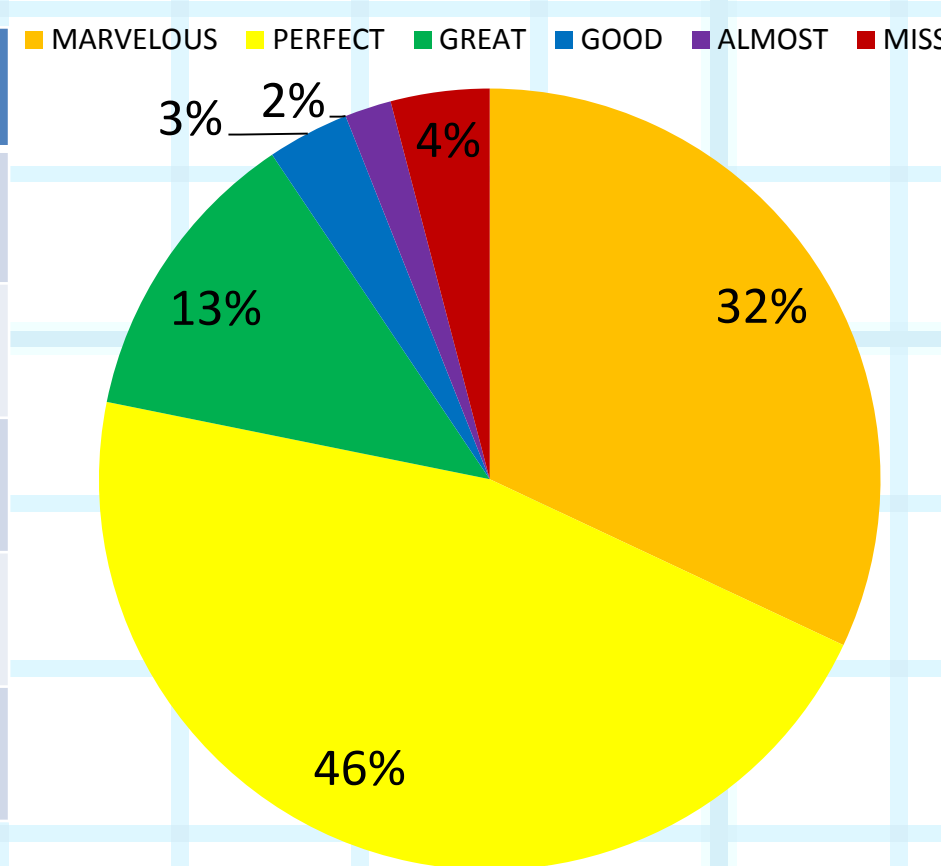
## Design 2: Spread



### Feedback:

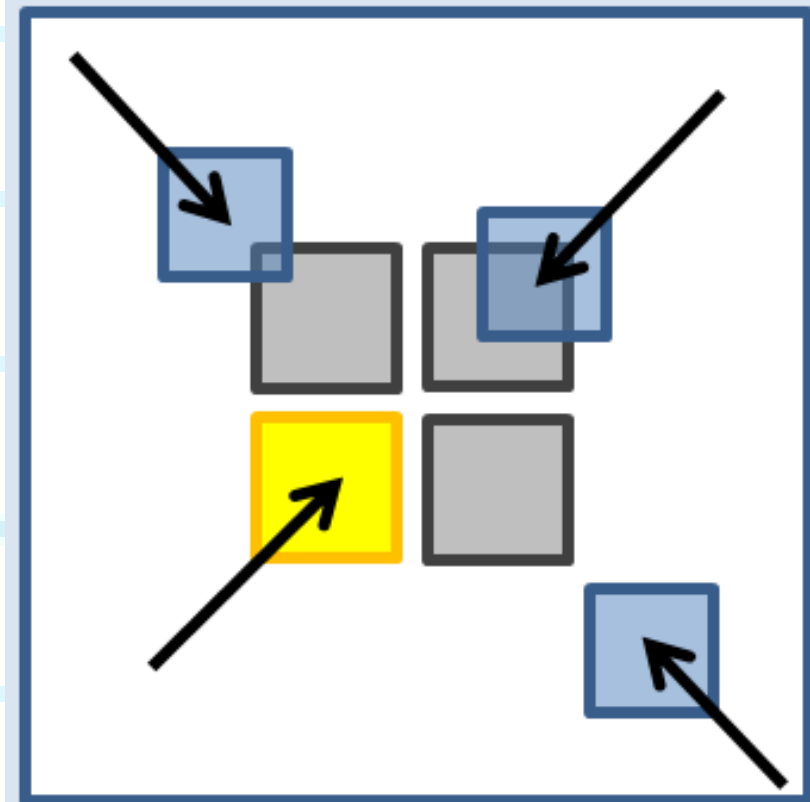
Category	Ratings	Avg
Challenge	★★★★☆	3.7
Intuitive	★★★★★	3.8
Fun	★★★★★	4.0
Unique	★★★★☆	3.7
Overall	★★★★★	4.1

### Accuracy Chart



**Description:** Moving notes slide toward fixed hitboxes at the corners  
**Rhythm Games:** *none*

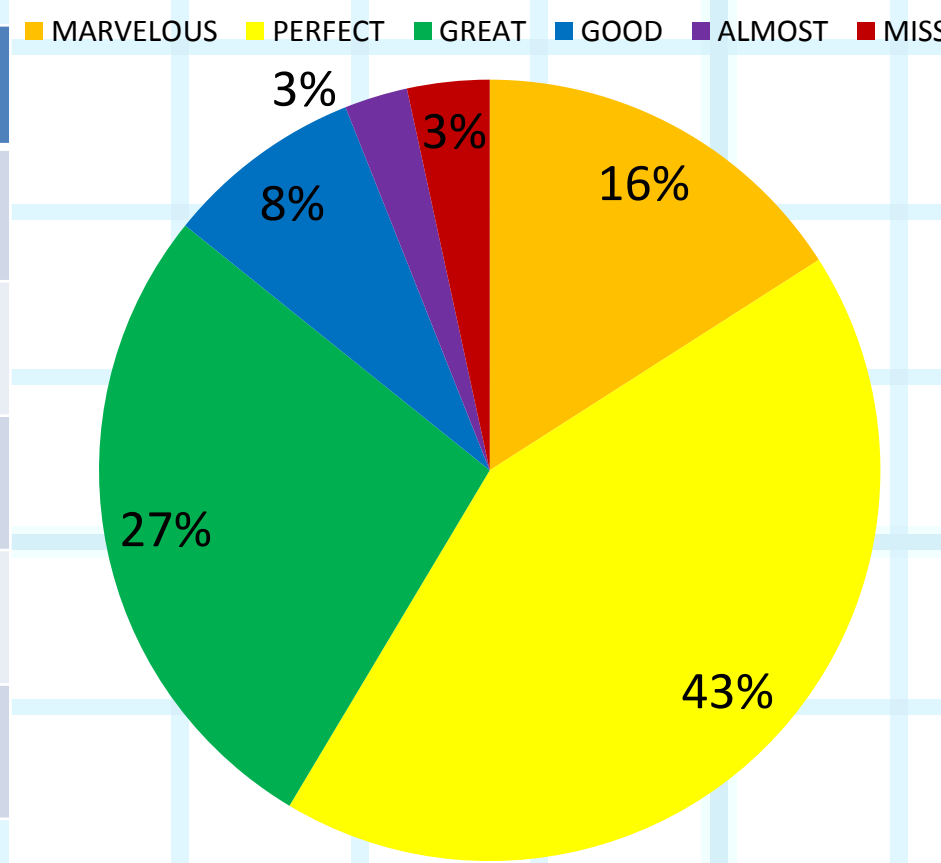
## Design 3: Focus



### Feedback:

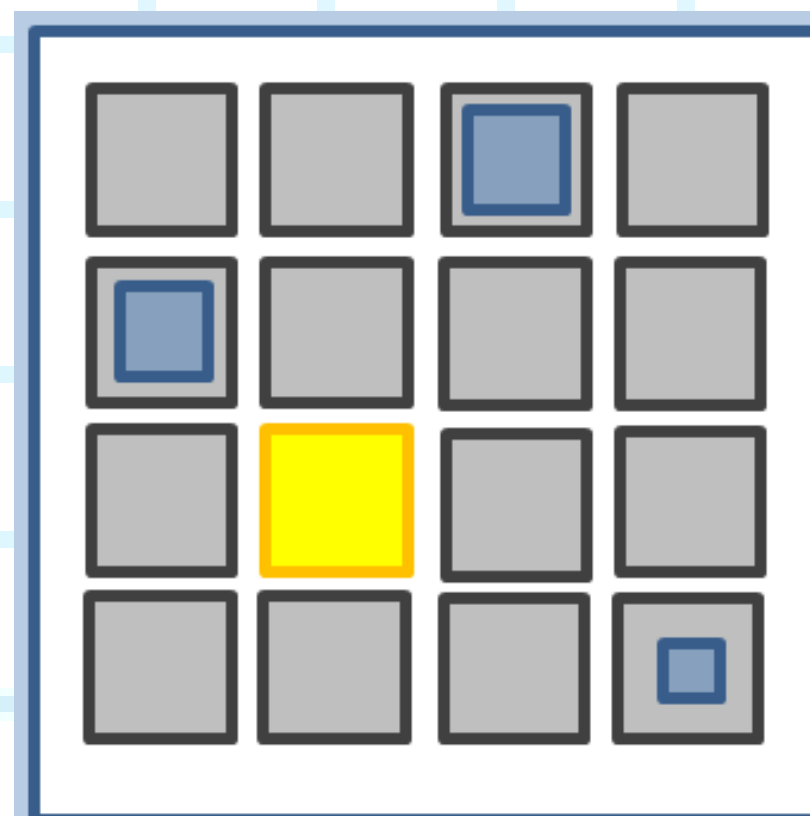
Category	Ratings	Avg
Challenge	★★★★☆	3.7
Intuitive	★★★★★	3.9
Fun	★★★★☆	3.5
Unique	★★★★☆	3.8
Overall	★★★★☆	3.4

### Accuracy Chart



**Description:** Moving notes slide toward fixed hitboxes at the centre  
**Rhythm Games:** *Gitaroo Man Lives!, Hatsune Miku: Project DIVA*

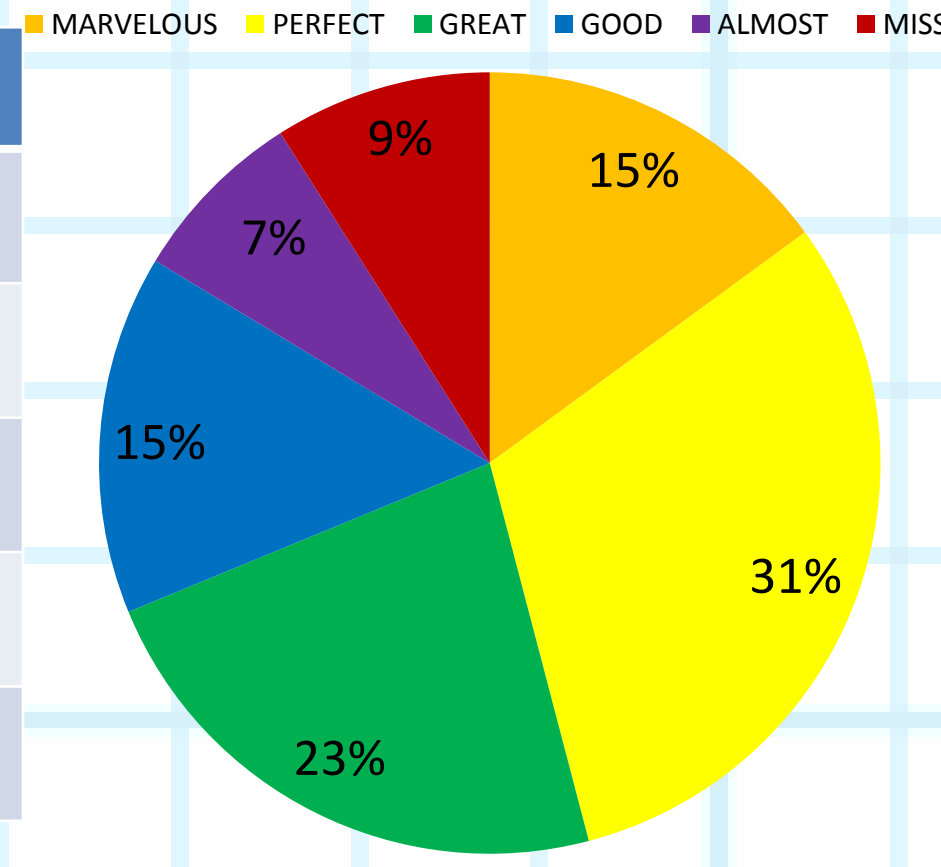
## Design 4: Grid



### Feedback:

Category	Ratings	Avg
Challenge	★★★★★	4.4
Intuitive	★★★★★	3.8
Fun	★★★★★	4.1
Unique	★★★★★	4.0
Overall	★★★★★	4.0

### Accuracy Chart



**Description:** Expanding notes grow at fixed hitboxes a grid points  
**Rhythm Games:** *jubeats*

### Abstract:

This project focuses on designing and comparing different touchscreen user interfaces for rhythm games. This is accomplished through the development of a rhythm game for Android tablets.

### Data Results:

The game, "Beats2 Prototypes", was published on Google Play. This poster presents the collected data and feedback. Note that the exact same rhythm game patterns and timing windows are used in all 8 designs ("Game Modes").

**Feedback:** Qualitative 1-5 star scale ratings.

- **Challenge:** Difficulty of the gameplay, affects timing reactivity /enjoyability
- **Intuitive:** Ease of use and learning of interface. Intuitive = more desirable
- **Fun:** Game enjoyability with this design. More fun = better game
- **Unique:** Novelty/uniqueness of design relative to other published games

**Accuracy:** Quantitatively data tracking.

Breakdown of average timing accuracies, also reflected in the percent scores. A higher percent score quantitatively measures how well the interface design aided in improving the user's sense of rhythm.

### Analysis:

Design #1 was the most commonly played mode, with the highest mode select frequency (18%). Despite this, it was not always necessarily the most effective.

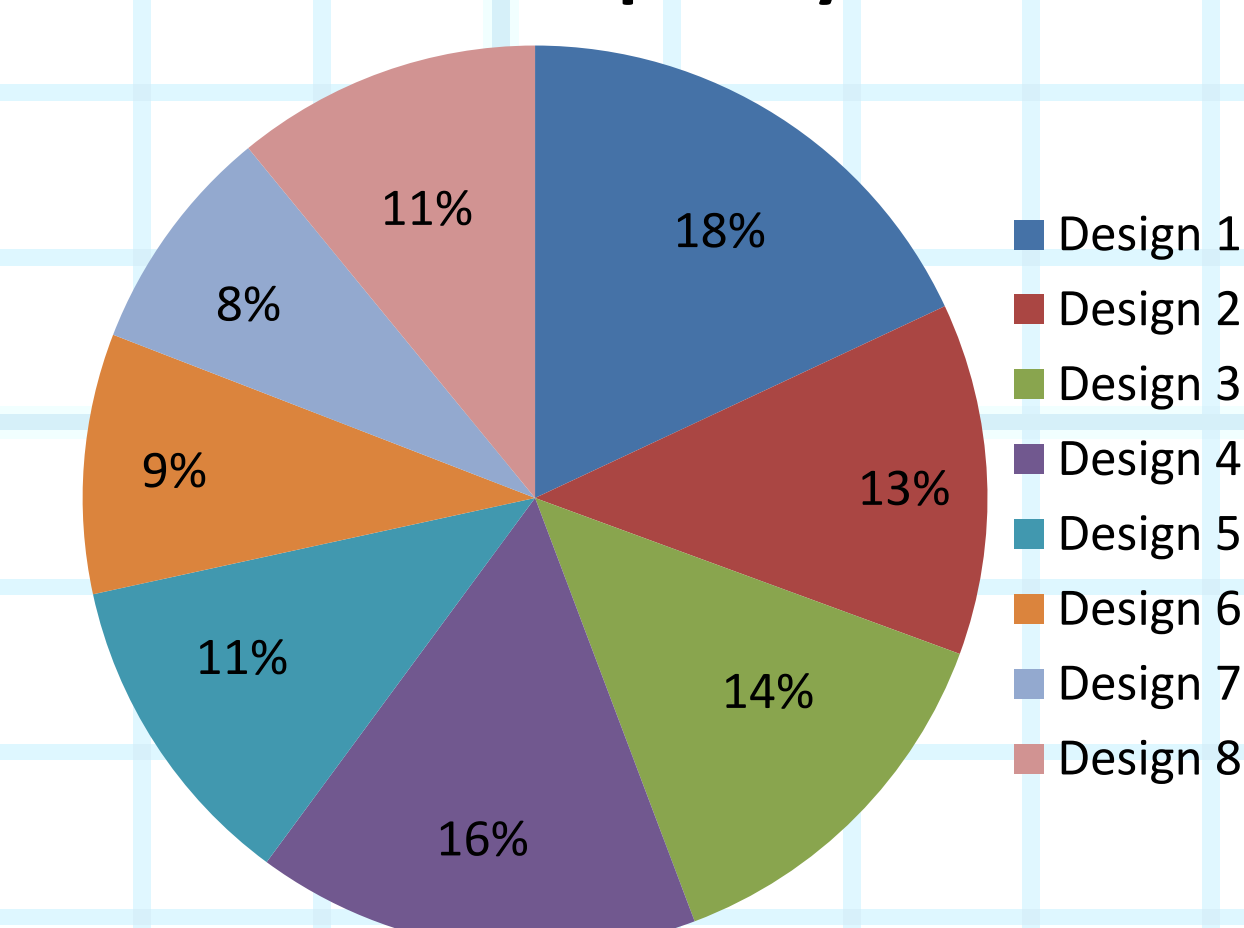
Qualitatively, Design #3 and #5 had very similar accuracy charts to #1 (~80% "GREAT" or better) whereas #2 proved to be significantly better in improving timing accuracy (91%). The overall percent score averages reflected that trend.

Qualitatively, Design #4 was the best rated, receiving 4 stars in almost all categories, followed by Design #5. Designs #6 and #7 (both changing hitbox sizes) were perceived as poor designs, received the lowest ratings in "Intuitive" (2.6/2.8) and highest in "Challenge" (4.8/4.6). Design #1 and #8 received the lowest "Unique" ratings (2.8/2.8), being similar to popular rhythm games DDR and Osu!

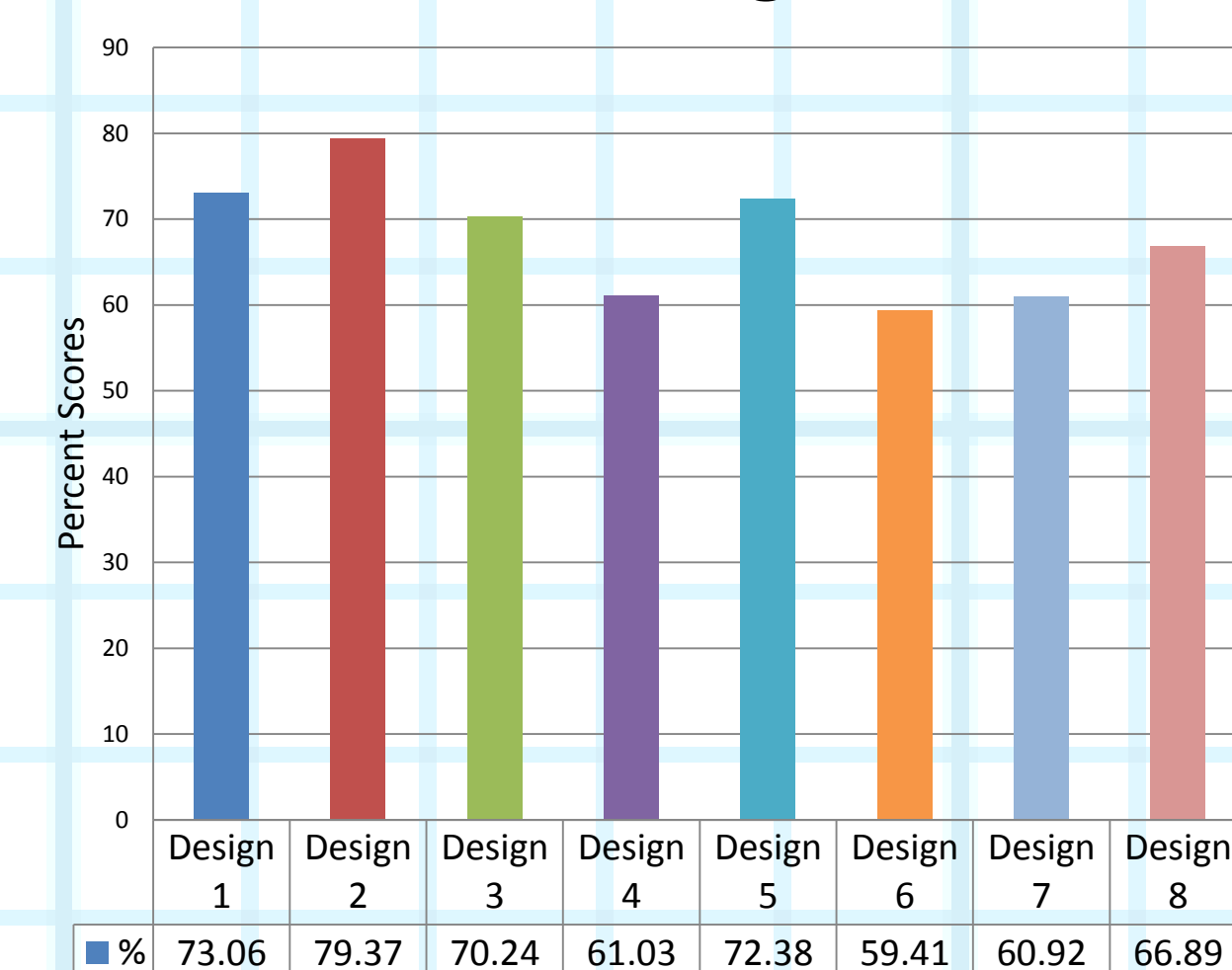
### Overall:

Recommended designs to implement in future rhythm games for touchscreen devices would be Designs #2, #3, #4, and #5. Designs #1 and #8 are fine but not unique, while #6 and #7 are poor designs for touchscreen devices.

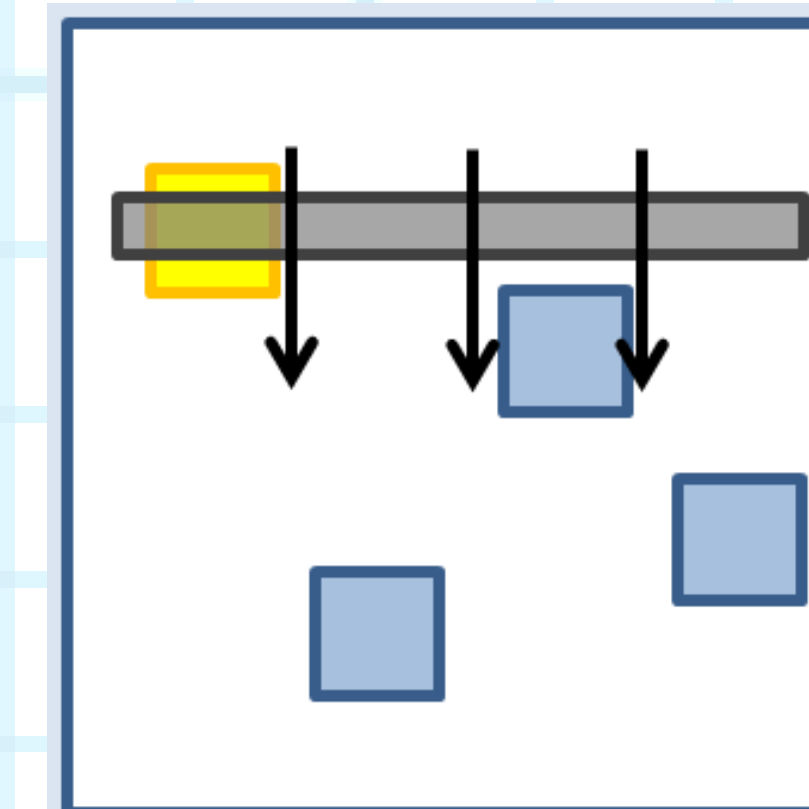
### Mode Select Frequency



### Percent Score Averages



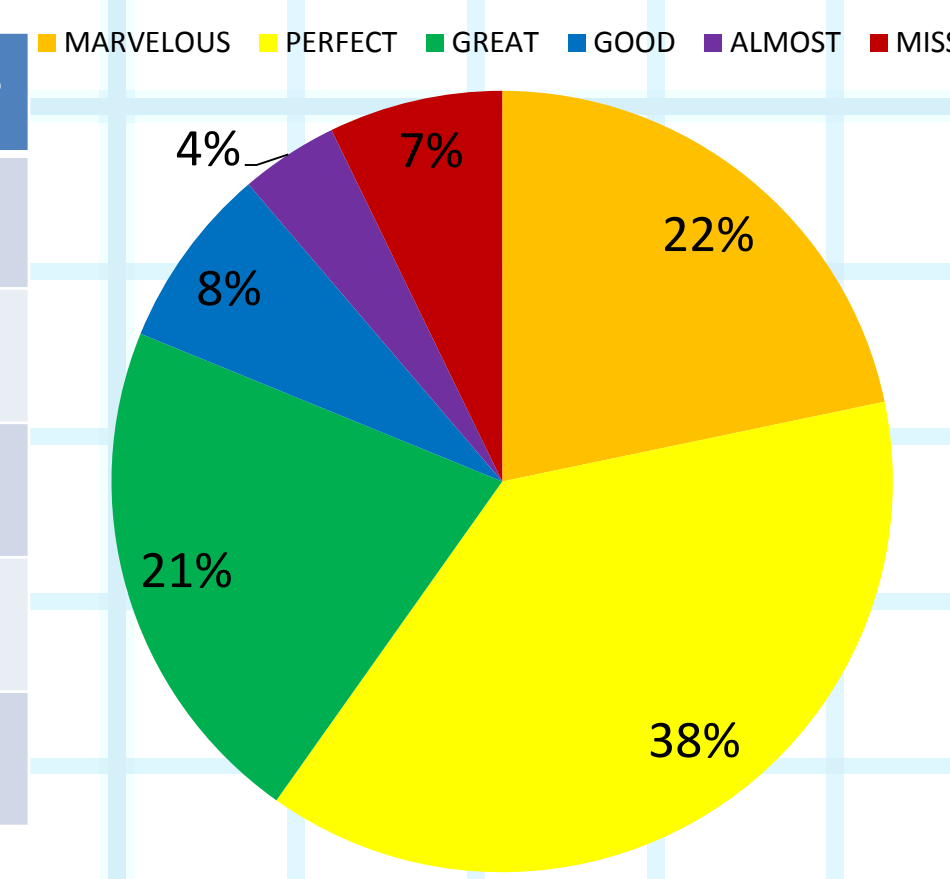
## Design 5: Slide



### Feedback:

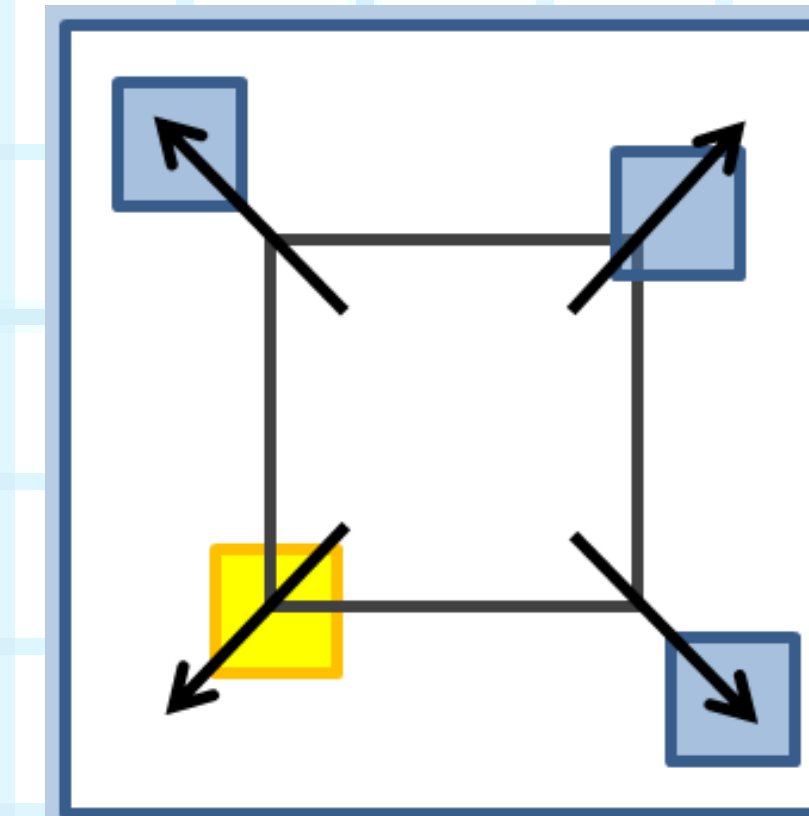
Category	Ratings	Avg
Challenge	★★★★☆	4.3
Intuitive	★★★★☆	3.1
Fun	★★★★★	3.9
Unique	★★★★☆	4.3
Overall	★★★★☆	3.7

### Accuracy Chart



**Description:** Moving hitbox fall toward fixed notes from top to bottom  
**Rhythm Games:** *DJMax Technika*

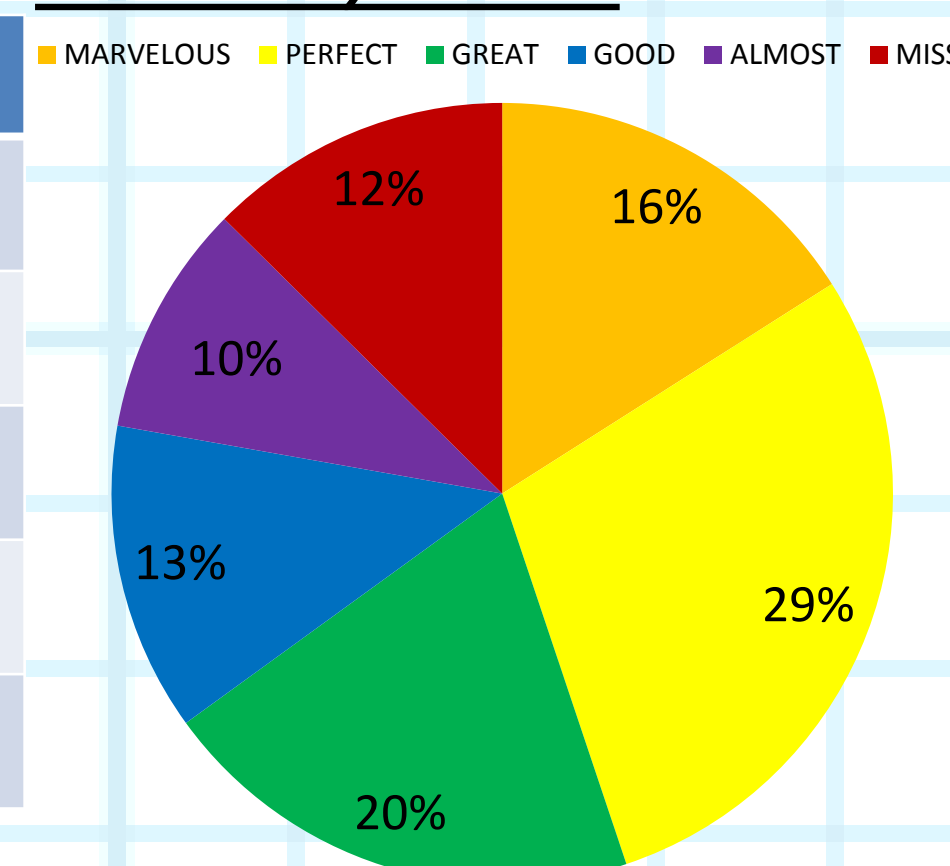
## Design 6: Expand



### Feedback:

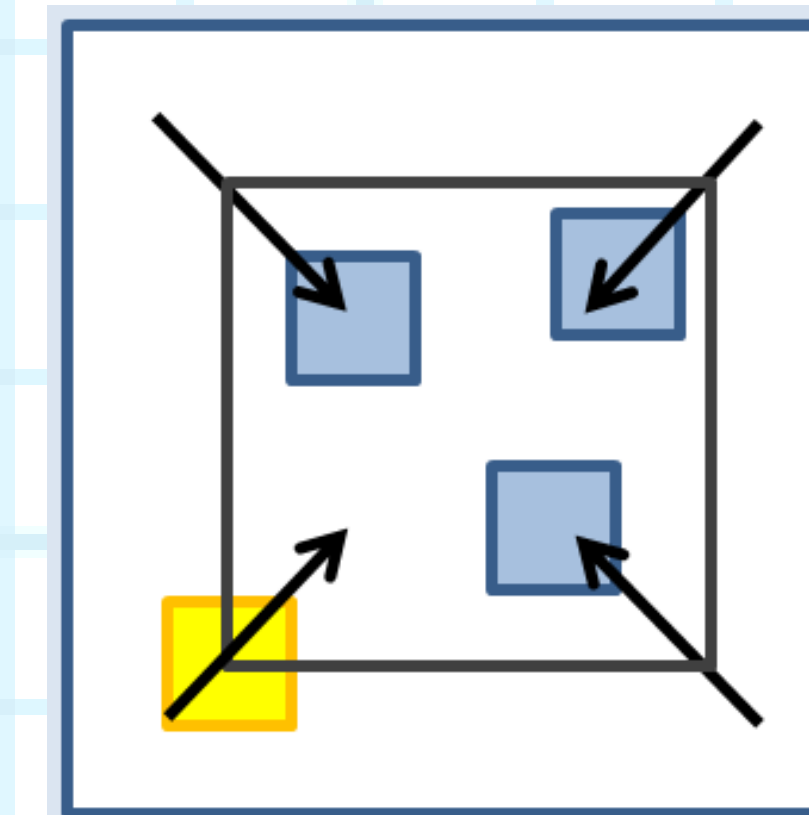
Category	Ratings	Avg
Challenge	★★★★★	4.8
Intuitive	★★★★☆	2.6
Fun	★★★★☆	3.2
Unique	★★★★★	4.7
Overall	★★★★☆	3.4

### Accuracy Chart



**Description:** Expanding hitbox grows toward fixed notes from centre  
**Rhythm Games:** *none*

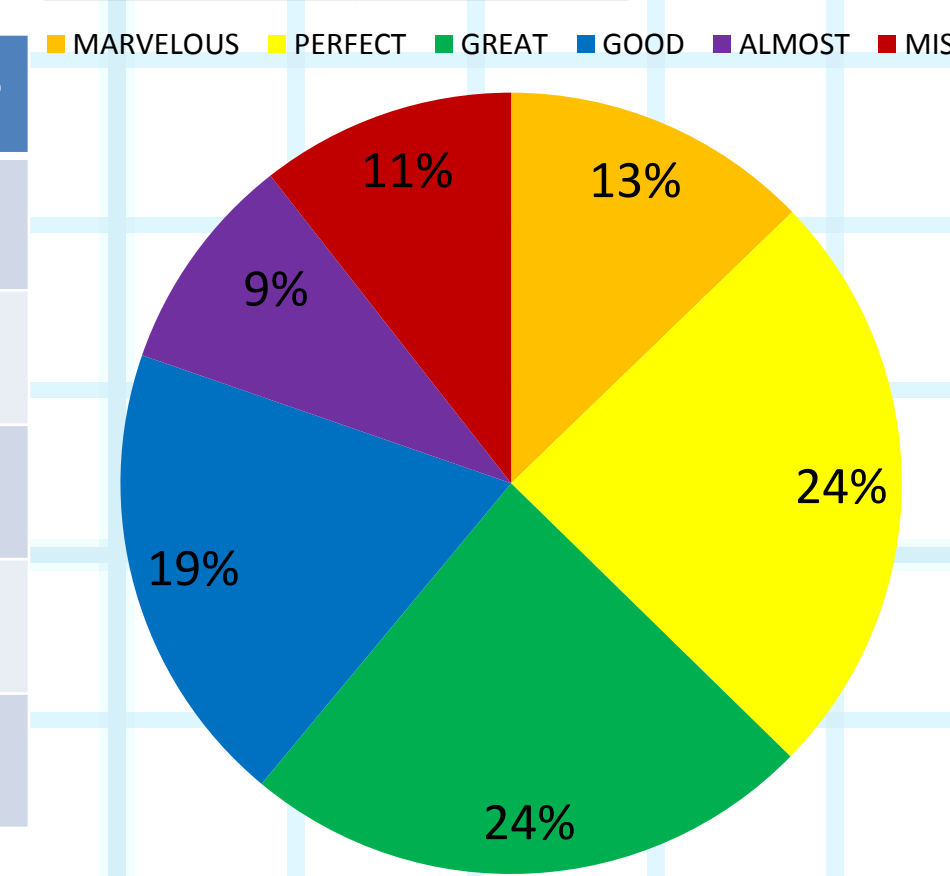
## Design 7: Collapse



### Feedback:

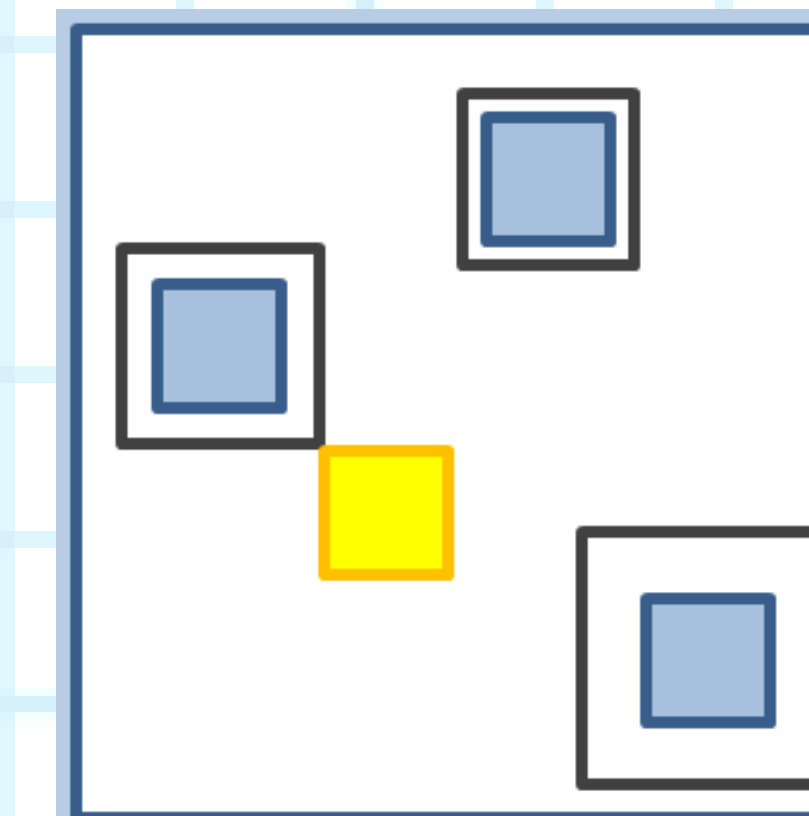
Category	Ratings	Avg
Challenge	★★★★☆	4.6
Intuitive	★★★★☆	2.8
Fun	★★★★☆	3.2
Unique	★★★★☆	4.5
Overall	★★★★☆	3.4

### Accuracy Chart



**Description:** Collapsing hitbox shrink toward fixed notes from corner  
**Rhythm Games:** *none*

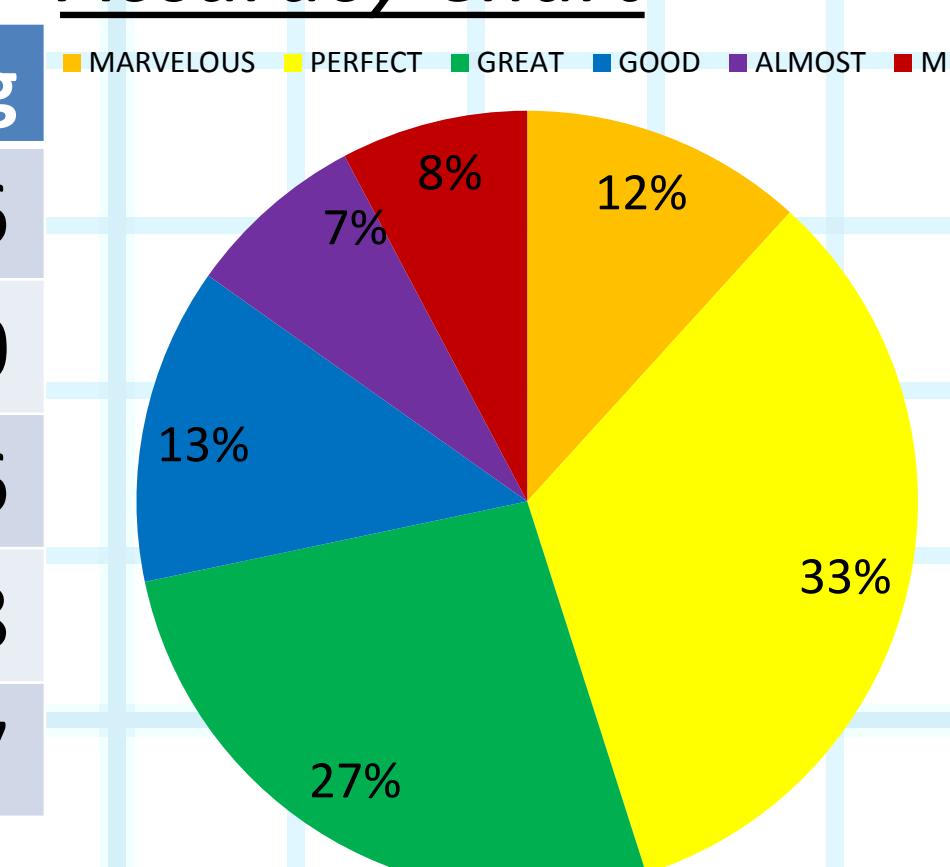
## Design 8: Appears



### Feedback:

Category	Ratings	Avg
Challenge	★★★★☆	3.6
Intuitive	★★★★★	4.0
Fun	★★★★☆	3.6
Unique	★★★★☆	2.8
Overall	★★★★☆	3.7

### Accuracy Chart



**Description:** Collapsing hitboxes around fixed notes appearing at grid points  
**Rhythm Games:** *Osu! Tatakae! Ouendan!*