

Evolution in the Interface of “Snake” game

Report 1st Draft

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Course: Human-Computer Interaction: Advanced Visual Interfaces, 5c

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1. Introduction:

Snake is a classic video game [1] where the player use basic inputs of up,down,left and right(navigation controls) to collect dots and form a line which grows in length, with the line itself being a primary obstacle. The Snake design dates back to the arcade game developed and published by Gremlin in 1976 [1]. With several versions over the years, sometimes it's even called worm. The transition of the game went from first generation 8-bit to fifth generation of 3D games of 32-bit or 64-bit. The development of the interface is remarkable to its original concept which will be studied. Later on it was developed by Taneli Armanto of Nokia for their phones [2].

The objective for this study was to determine if there is a significant difference in the time taken to complete the tasks in all three versions of the game, to determine which application has a more effective interface and how a user's experience be enhanced. For this purpose, quantitative data was gathered through a controlled laboratory experiment in which the participants' performed same tasks in three versions of snake. This data was observed in order to determine the start and finish time for each task, which was then used to calculate the actual task completion time. Error rates were also calculated.

The intention behind this test was to give the users a look and feel of the application, because most of them had played the game but in different time in the past. By playing the game now they could refresh their memories and give a better response to the questionnaire. Statistical tests were used to analyse the data. From these results, some conclusions were hinted at but they present a low statistical significance.

Research Question:

Gameplay experience in different generation of Phone Interface.



Figure on left is from color version of the game and on the right it's the 3D version of the game.



2. Method

The study required test subjects with previous experience of playing games on any platform. For this purpose, students were fitting the role since most students regularly use computers and have played this games when they were kids. The sampling method used was convenient sampling, since the time frame required was readily available and had cost effective samples.

The data was gathered from 20 users out of which just the ones who wanted to get the bonus points wished to be named rest thought of it as a competition so their data cannot be revealed, To my surprise everyone had played all the three games at some point of their life.

No users were categorized as outliers and all of the users data was used in the analysis, although some users could not complete the task. Results for tasks that were uncompleted were considered null and included in the data analysis.

Description

After the users played the game for 5 minutes on the following versions of the game in KEmulator which runs old java games of .jar format.

1. *Snake* - for nokia monochrome phones.
2. *Snake EX* – for nokia colour phones.
3. *Snakes* – A 3D version designed for the nokia N-Gage in 2005 [5]

Collection of data on the factors using questionnaire was possible with the time limiting them from overlong playing and forgetting about it being a test.

1. Color: The color scheme of the game
2. Layout: how the design looks like
3. Simplicity: understanding of the design
4. Input Controls: how are the controls? If they follow the same pattern.
5. Consistency: if the versions are similar and follow any criteria.
6. Texture: texture in terms of the bits and not on what hardware was used.
7. Defaults: default settings of the game.
8. Feedback: if the user was able to understand what was happening in the game.

The scoring was on a basis of 10 point system with 0 being most unlikely and 10 most likely. Analysis of the data with average mean was performed to understand the user experience.

Results:

After doing the tests, the major finding was that i didn't take much time for the users to collect the desired points in the first two versions of the game but the 3d version takes more time as the game's default speed is low but all the users loved to play the game as a part of a nostalgic experience.

The results of the studies were as follows on a scale of 0 to 10.

For the snake classic version the average rating for the mentioned

Color	Layout	Simplicity	Input Controls	Consistency	texture	Defaults	feedback
5.75	6.35	9.1	7.95	6.35	5.6	9.1	7.45

For the snake color version the average rating for the mentioned

Color	Layout	Simplicity	Input Controls	Consistency	texture	Defaults	feedback
4.3	4.45	5.4	5.05	5.3	4.75	5.45	5.3

For the snake 3D version the average rating for the mentioned

Color	Layout	Simplicity	Input Controls	Consistency	texture	Defaults	feedback
2.75	2.45	2.45	2.85	2.7	2.25	2.6	2.7

After calculating the average of all the 3 version of the game.

Color	Layout	Simplicity	Input Controls	Consistency	texture	Defaults	feedback
4.266666 667	4.416666 667	5.65	5.283333333	4.783333333	4.2	5.716666666 7	5.15

Note: The max-min values are added to the appendix with rest of the charts

User Satisfaction or Apdex Score for the snake classic was 0.85 in a range of 0-1, being the highest followed by 0.60 for the color version and lastly snake 3D with a score of just 0.40.

After the tests, it was very prominent that everyone like the monochromatic or snake classic version for its simplicity. Users wanted to play a game which is as simple as it sounds to kill time or boredom. It's not necessary to have a big complicated game to give users a better experience. The simple visuals of the game work just fine.

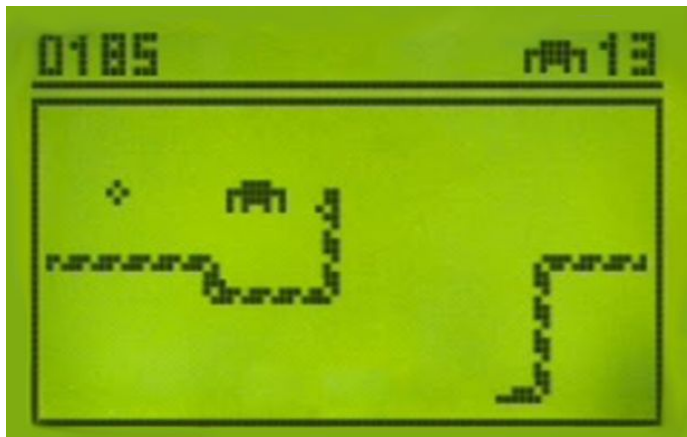


figure shows snake classic.

Discussion:

Games have been evolving since a long time, there are certain outlines and basics to it [3]. Further, mobile games have evolved a lot during the ages. From arcade games to current versions of android games of high configurations and richness to it. The development is significant and the designers have to work hard to keep it up to the trends[4]. With this project it was found that despite of enhancements in the games in different versions, all the test users liked the classic one the most because of its simple design, decent color scheme, following the game is easy, texture, layout and default settings. User enjoyed the interface despite of being not so advanced, new age kind of interface but they suggested it would be fun to play the game in AR or VR modes too. Only if there existed a technology such small and versatile that the people could use the system with ease in real time.

In future it would be amazing to see if the game is developed more and appreciated using AR or VR or something new, which might prove it even better. An interesting topic to study with a referential game which has all the aspects of being a simple one player game to kill time or boredom.

Appendix:

Test plan.

20 people(Course mates and other students from uppsala university)

age group 20-25

3 versions of the game

Collection of data on the factors using questionnaire with 10-point scale

1. Color
2. Layout
3. Simplicity
4. Input Controls
5. Consistency
6. Texture
7. Defaults
8. Feedback

Note: Emulator will be used. All the above factors based on emulator

Test Tasks:

The test was of 20 minutes, where each version got 5 minutes for gameplay, with 2 minutes for consent form sign and 3 minutes for the questionnaire.

Play the game and try to score 15 points or collecting 15 dots.

The start time and task completion time was noted, including the errors.

Considering failed tasks value as zero, as to that of infinity for simplified calculations

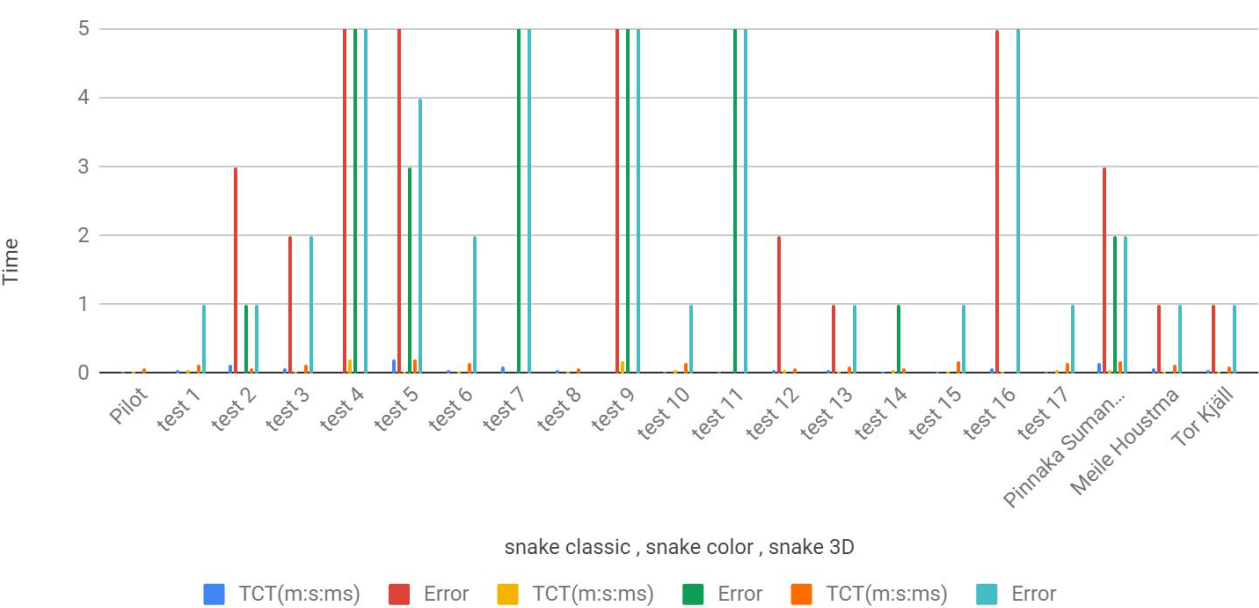
Errors were in terms of how many times the player died, and not considering the shortest path towards the dot.

Results charts:

Chart below depicts task completion time and error. I.e number of times a user died.

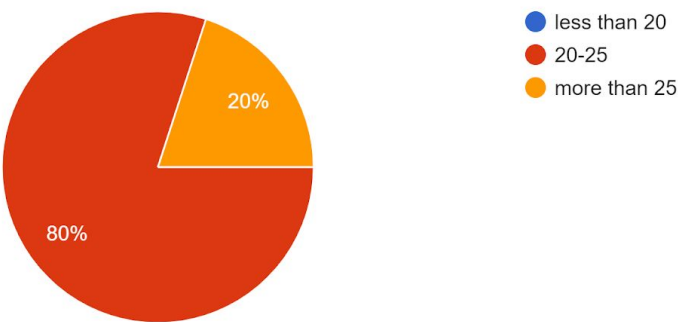
Test Details

task completion time with errors



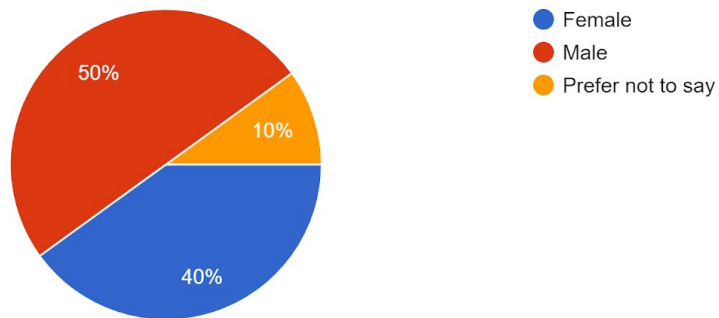
Age

20 responses



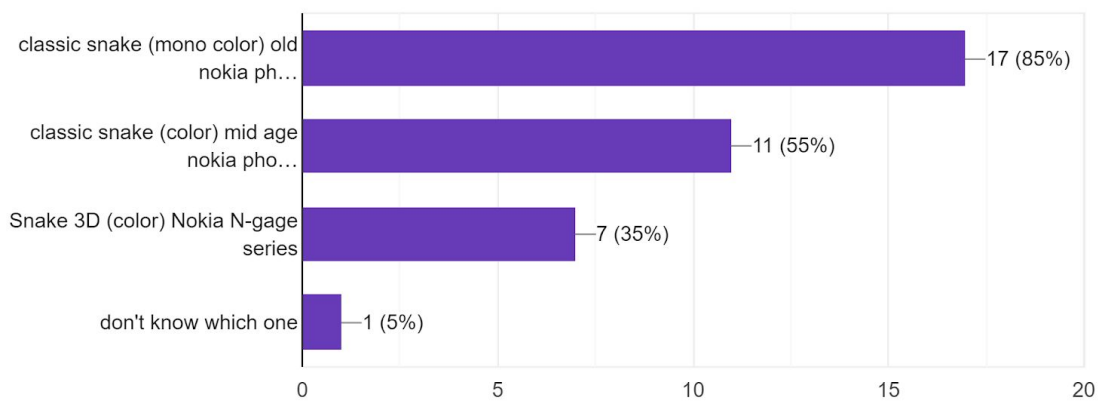
Gender

20 responses



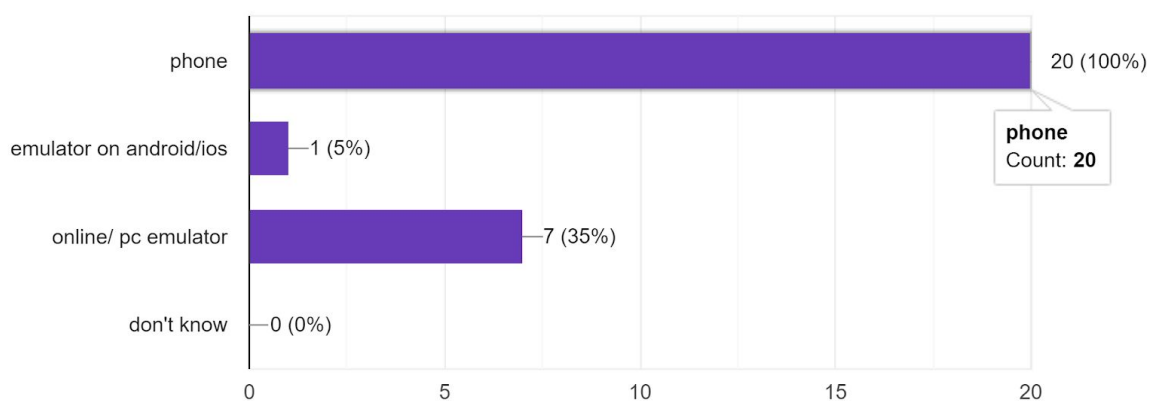
Have you played any of the following versions

20 responses

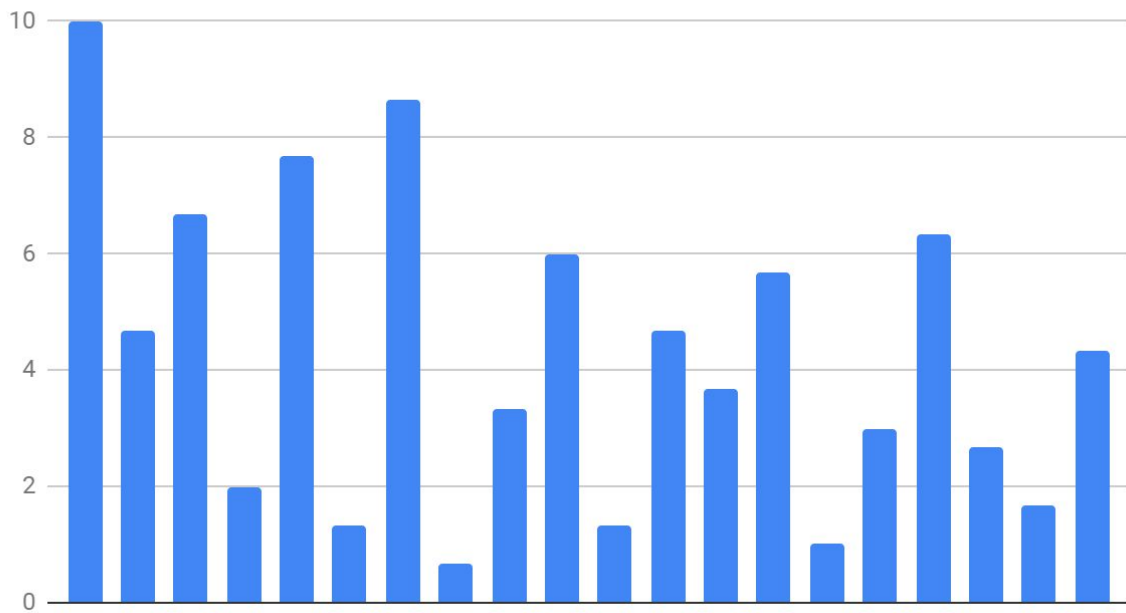


played the game on

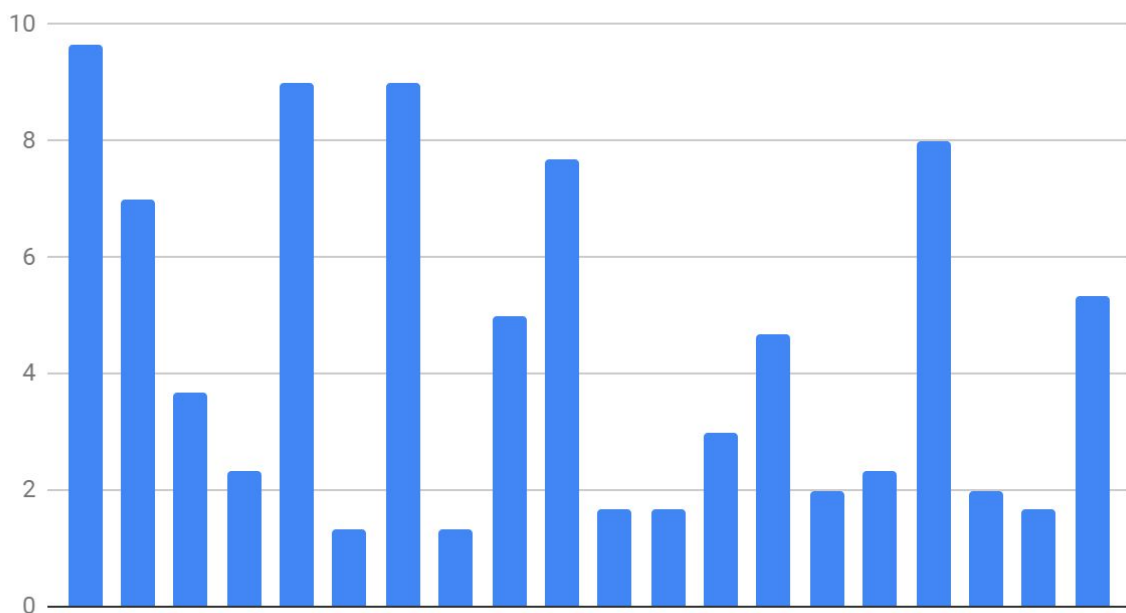
20 responses



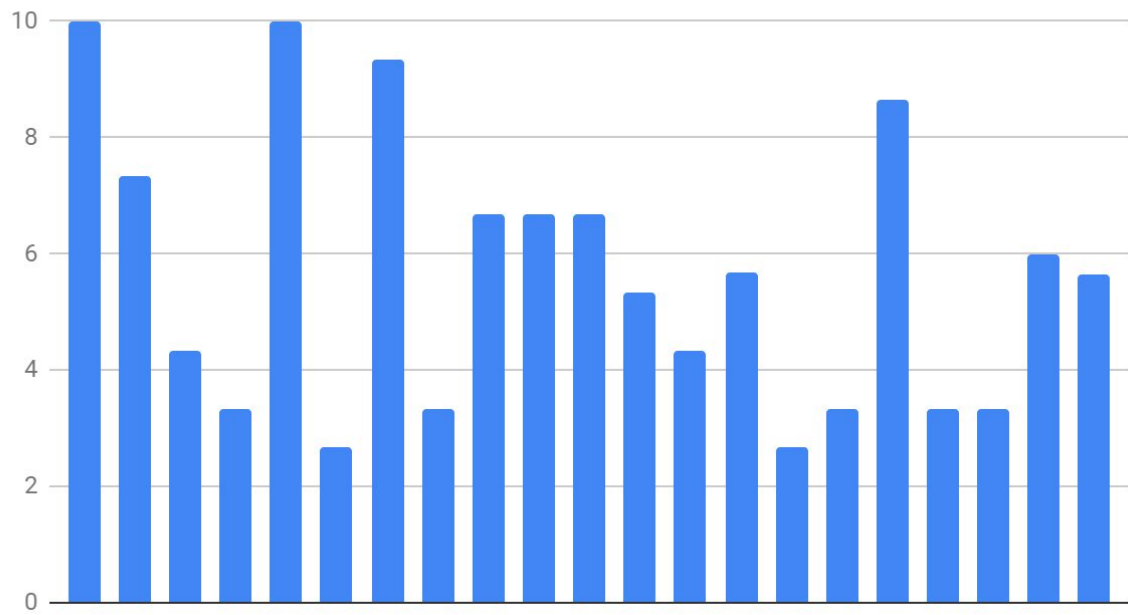
Average color rating for all three version



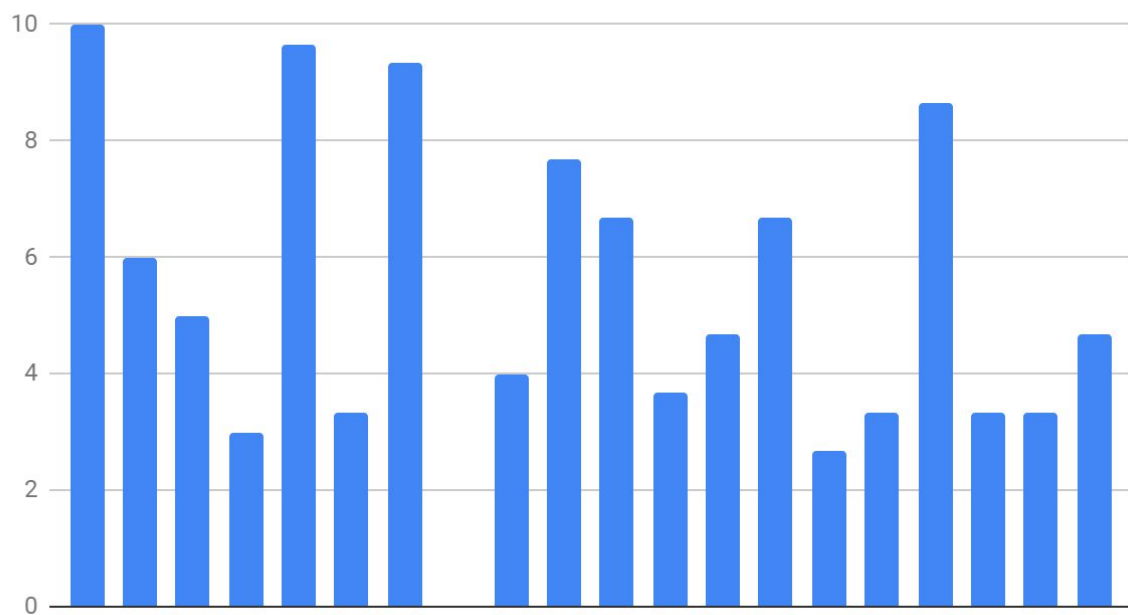
average layout of all three versions



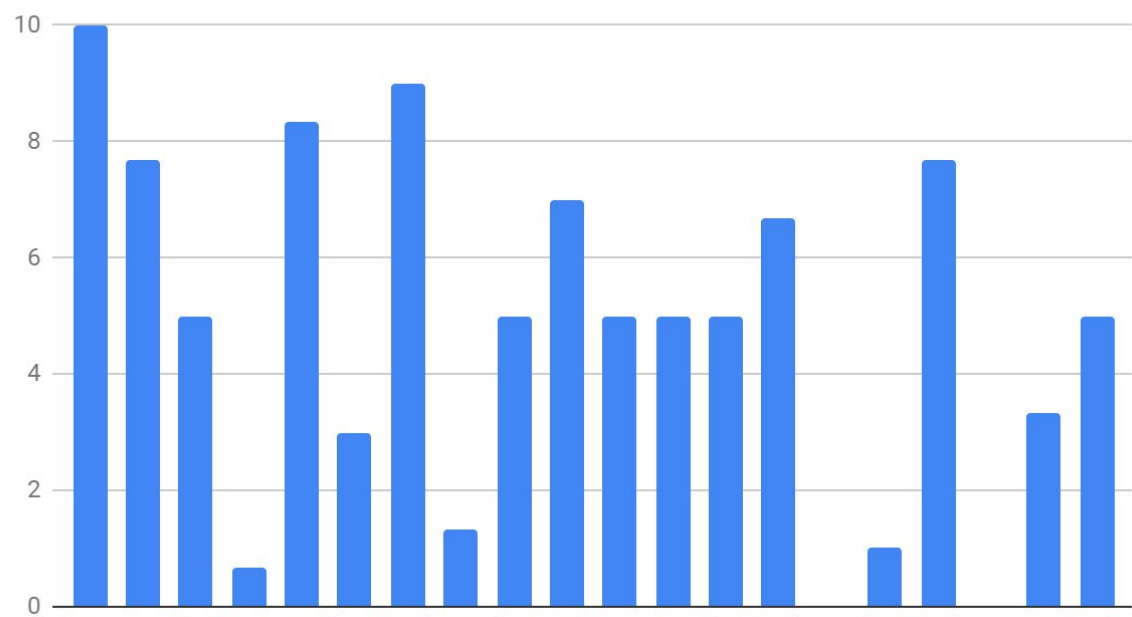
average simplicity for all versions



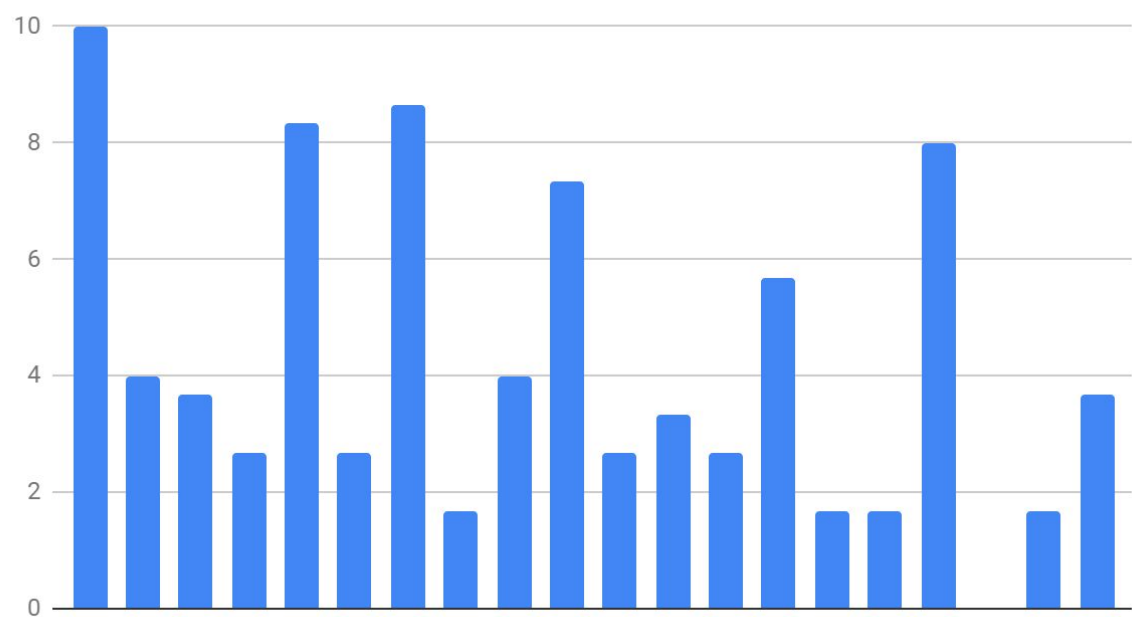
average input control



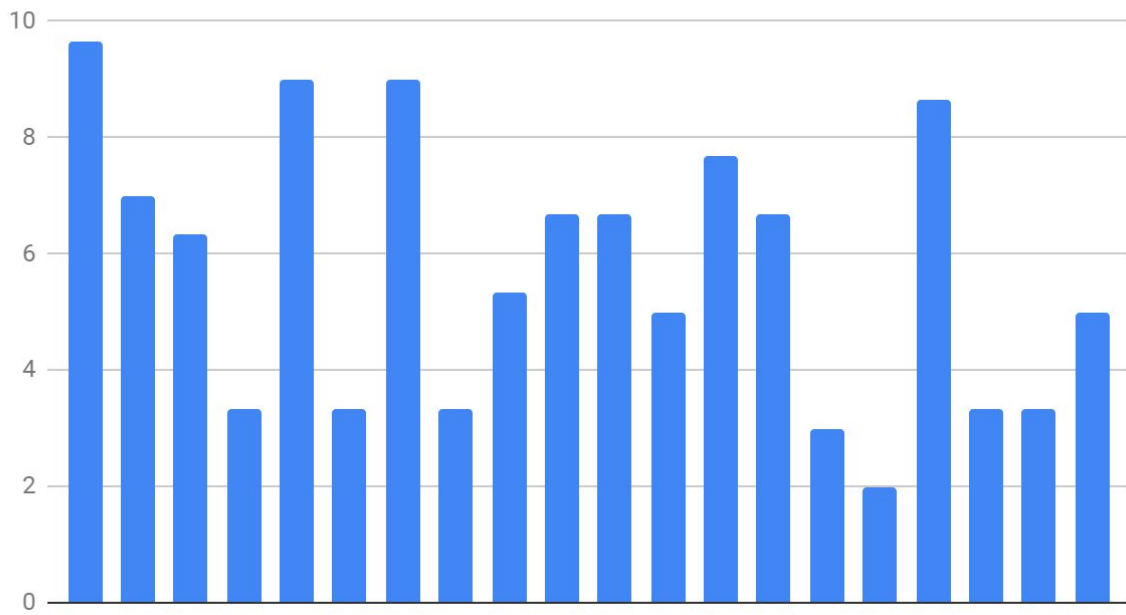
average consistency for all versions



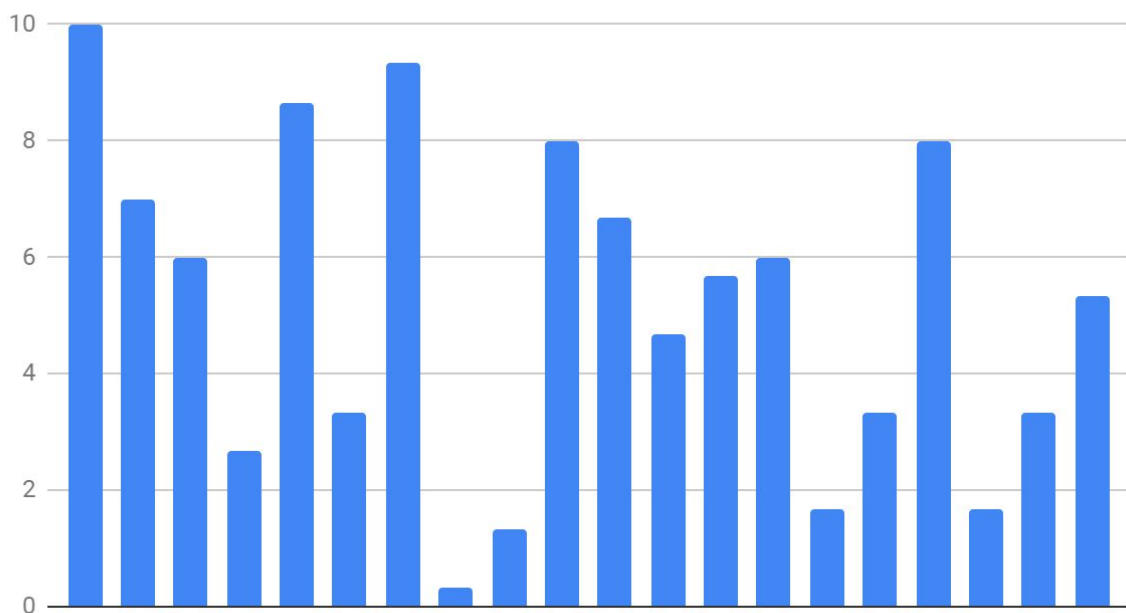
average texture of all versions



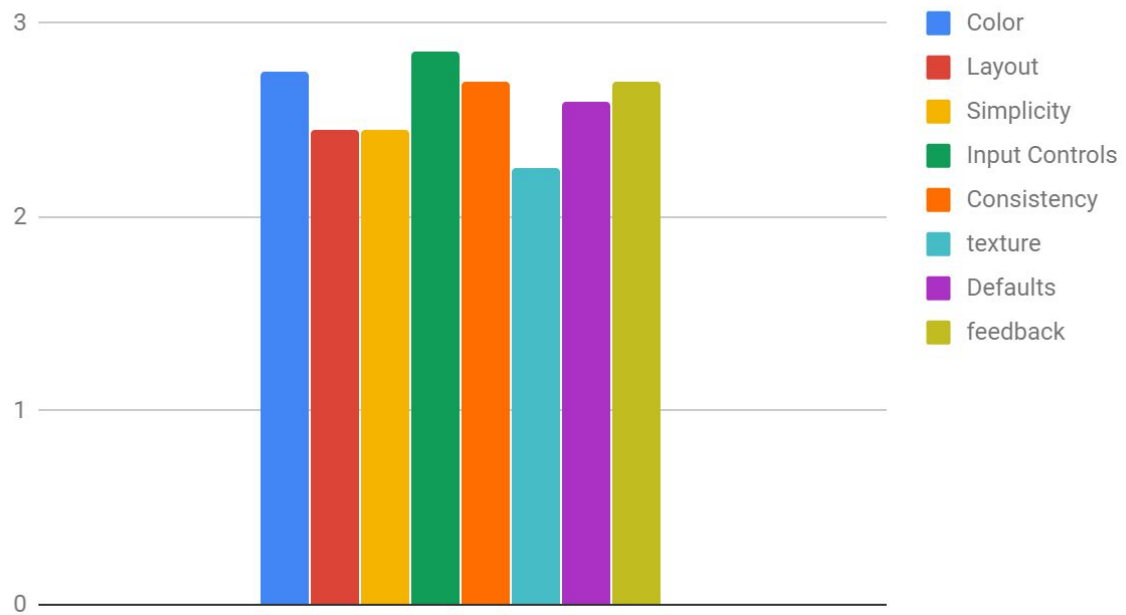
average defaults for all versions



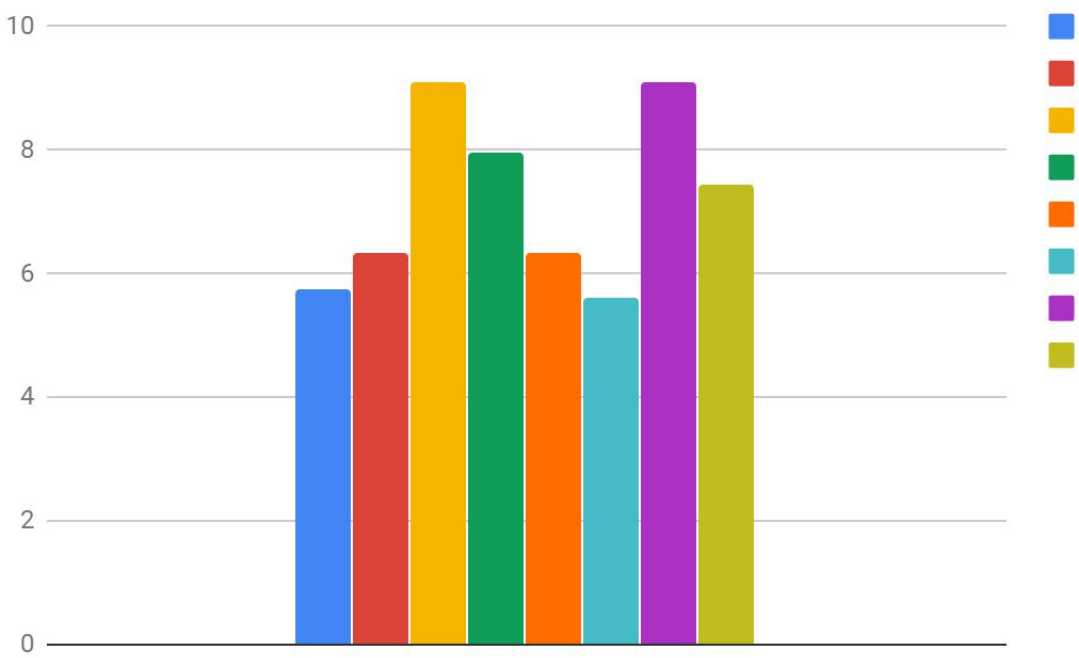
average feedback for all versions



average min



average max



References:

- [1] "Blockade video game, Gremlin Ind, inc. (1976)". Arcade-history.com. April 4, 2008. Archived from the original on June 11, 2011. Retrieved November 4, 2011.
- [2] "History of Nokia part 2: Snake | Nokia Conversations - The official Nokia Blog". Conversations.nokia.com. Archived from the original on July 23, 2011. Retrieved November 4, 2011.
- [3] Jeannie Novak , "GAME DEVELOPMENT ESSENTIALS" (2011)
- [4] D. Gavalas and D. Economou, "Development Platforms for Mobile Applications: Status and Trends," (2011)
<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5654492&isnumber=5672507>
- [5] Nokia Corporation (2019) retrieved from <https://www.nokia.com/>