



# International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

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## Tilt or Touch? An Evaluation of Steering Control of Racing Game on Tablet or Smartphone



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**ABSTRACT:** Racing Games are most popular in every group of age, This Study is conduct for comparing steering control of racing game on Smartphones or Tablet, which one is better Tilt or Touch?,in this study we select case study as steering control of racing game, we recruit two students of graduate school, first student is responsible for playing game 15 times with TILT control and Second student will play the same game with TOUCH control 15 times, T-Test Is used for analyse the data.

**KEYWORDS:** Tilt vs Touch, Steering Control, Racing Game, Table vs Smartphone.

### I. INTRODUCTION

Many changes and innovations came along, Touch Screen Technology increases day by day, Specially Smartphone and Tablets usage are very higher, Racing game on tablet or smart phone is very popular. Many children use smartphone or tablet very smartly, even child too young is also able to use both devices very efficiently so there should be some experiment is required with the touch interface.

### II. OBJECTIVE

Which is Better? Since users cannot use keyboard for playing it, they can either use tilt or touch to control their car. Some users prefer to use tilt control while others feel more convenience to use touch control. Users argue that their method of control is better than another. This study was conducted to determine whether choosing steering control (tilt or touch) in playing racing game on smart phone or tablet affect the result of the game.

### III. RELATED WORK

Leila and Nippun conduct the study on Touch and Tilt[1], Balakrishnan, R. and MacKenzie, I. S conduct study on Performance differences in the fingers, wrist, and forearm in computer input control[2],Browne, K. and Anand conduct An empirical evaluation of user interfaces for a mobile video game[3], Muhammad Suhaib conduct Study playing game with keyboard control and learning curve of the Japanese keyboard on smartphone[4][5], and many other researcher conduct study with this scope, but very less study conducted related to this study.

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## IV. METHODOLOGY

1. Case type: steering control of racing game.
2. Subject: one player who responsible to do all simulation.
3. Output acquired: time required to finish a particular circuit and total fatal collisions in a single race.
4. Case 1 (Tilt): The game is played using TILT Control to race though a particular circuit. Time required to finish the circuit and the number of fatal collisions are recorded.
5. Case 2 (Touch): The game is played using Touch Control to get data of time required to finish a particular circuit and the number of fatal collisions.
6. Each case is simulated 15 times on the same circuit. Flowchart is shown next to this.
7. To analyze data, t-test was used to determine if two sets of data (case 1 and case 2) are significantly different from each other.

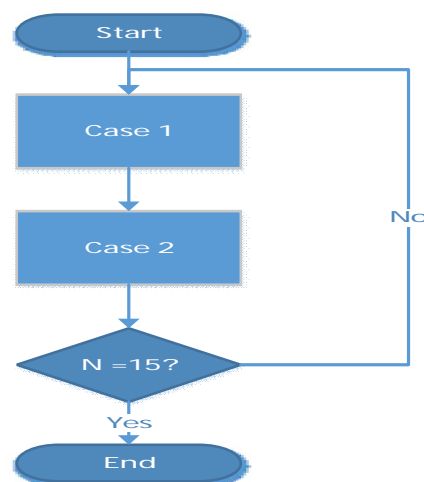


FIG1. FLOWCHART OF METHODOLOGY

### Simulation Results:

No of trial	TILT Control		TOUCH Control	
	Time required	FC*	Time required	FC*
1	00:02:33:182	5	00:02:29:667	3
2	00:02:23:484	3	00:02:34:557	2
3	00:02:28:423	2	00:02:22:968	1
4	00:02:30:891	2	00:02:29:022	1
5	00:02:25:385	1	00:02:27:501	1



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6	00:02:23:715	0	00:02:24:558	0
7	00:02:26:216	0	00:02:23:319	0
8	00:02:22:619	0	00:02:21:669	0
9	00:02:24:462	0	00:02:30:445	1
10	00:02:27:297	1	00:02:20:757	0
11	00:02:22:051	0	00:02:20:271	0
12	00:02:22:892	0	00:02:21:867	0
13	00:02:27:588	1	00:02:20:514	0
14	00:02:30:540	2	00:02:19:392	0
15	00:02:22:005	0	00:02:23:772	0

\* FC = Fatal Collisions

t-Test was used to compare Tilt steering control and Touch Steering simulation data.

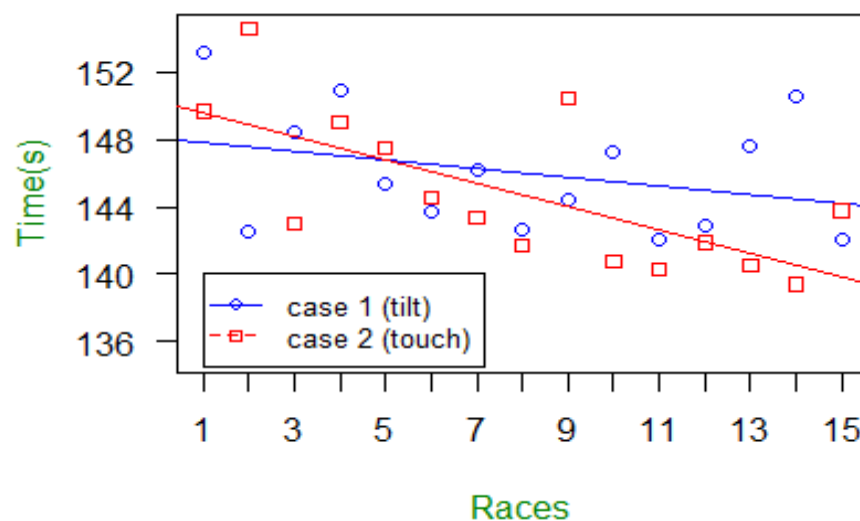


FIG: 02 T-TEST COMPARISON

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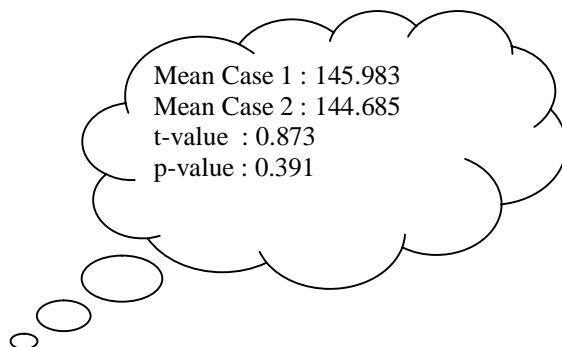


Chart 1. Time required to finish circuit

1 and mean case 2 is not convincing enough to say that the average time between case 1 and case 2 differ significantly. Furthermore, data of fatal collisions are analyzed as well.

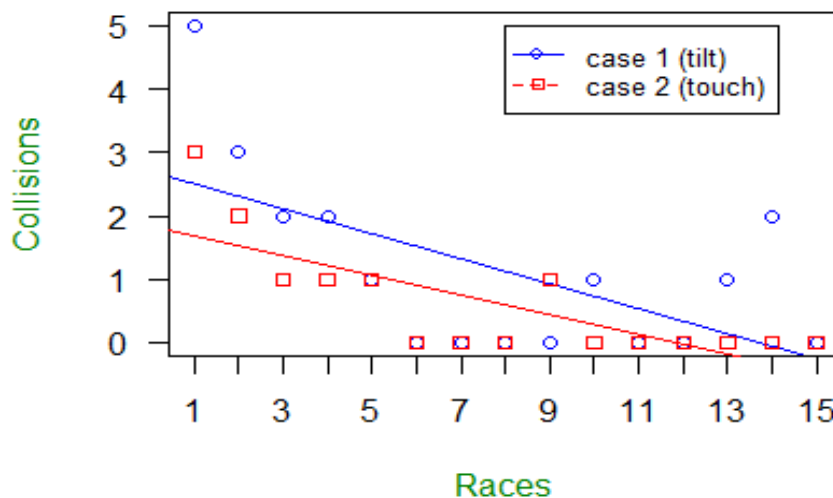


FIG:03

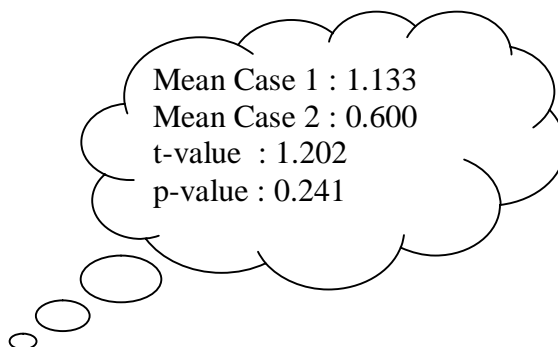


Chart 2. Fatal collisions



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The result of t-test conducted on fatal collisions data,  $t=1.202$  and  $p=0.241$ , indicates the same result that no significance difference was found (Mean of Case 1 = 1.133, Mean of Case 2 = 0.600). Although the difference of mean of case 1 and case 2 is quite remarkable for this sample, we cannot expect to get the same result if the population of the sample become bigger.

## V. CONCLUSION

Choosing steering method on racing game statistically will not affect the result of the game. If some users who usually use particular steering control complain how difficult it is to play with another method, maybe they have not try it a lot. However, since the population of sample used in this study is quite small, it is a possibility that the result could be different if bigger population of sample is used.

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## BIOGRAPHY



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