

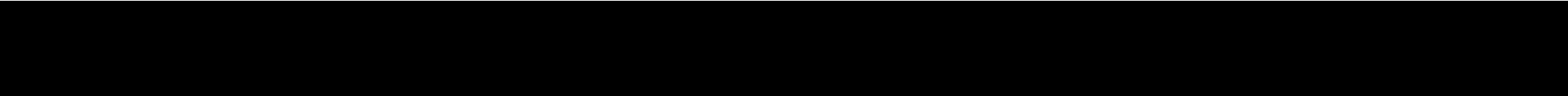
CS 598 AK

Notes on Homework 1

CS 598 AK HW 1

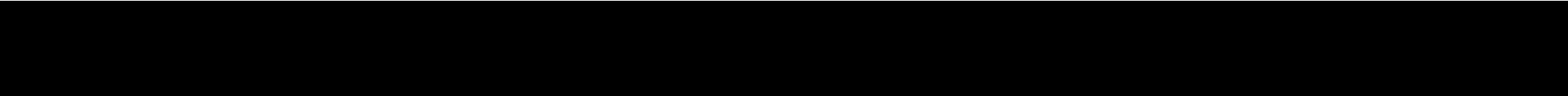
First 25 (of) 100 rows of dataset

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	A	B	C	D	E	F	G	H	I	J	K	L	M
	Participant ID	Condition	Score 1	Score 2	Time	Error		Participant ID	Condition	Score 1	Score 2	Time	Error
1	1	FeatureOn	67	83	28.64	0.28		101	FeatureOff	57	60	28.19	0.24
2	2	FeatureOn	71	82	29.87	0.2		102	FeatureOff	56	59	25.43	0.37
3	3	FeatureOn	62	72	29.33	0.35		103	FeatureOff	53	61	24.14	0.21
4	4	FeatureOn	65	72	27.48	0.34		104	FeatureOff	58	64	30.7	0.2
5	5	FeatureOn	68	82	26.23	0.08		105	FeatureOff	58	69	27.89	0.31
6	6	FeatureOn	72	73	34.56	0.26		106	FeatureOff	61	56	26.48	0.15
7	7	FeatureOn	56	82	31.34	0.35		107	FeatureOff	64	49	26.96	0.35
8	8	FeatureOn	72	74	31.15	0.15		108	FeatureOff	51	55	28.97	0.29
9	9	FeatureOn	62	73	34.85	0.31		109	FeatureOff	63	61	25.88	0.1
10	10	FeatureOn	64	82	31.82	0.3		110	FeatureOff	60	57	20.23	0.3
11	11	FeatureOn	69	72	32.13	0.27		111	FeatureOff	53	63	25.3	0.27
12	12	FeatureOn	68	85	28.33	0.32		112	FeatureOff	67	60	26.53	0.12
13	13	FeatureOn	61	76	31.12	0.19		113	FeatureOff	62	47	27.91	0.4
14	14	FeatureOn	56	83	30.53	0.31		114	FeatureOff	69	55	27.91	0.11
15	15	FeatureOn	61	77	31.17	0.14		115	FeatureOff	68	56	25.51	0.14
16	16	FeatureOn	64	75	34.64	0.29		116	FeatureOff	65	67	27.86	0.19
17	17	FeatureOn	62	78	32.11	0.12		117	FeatureOff	67	65	30.01	0.27
18	18	FeatureOn	67	85	30.15	0.18		118	FeatureOff	56	65	27.46	0.22
19	19	FeatureOn	66	78	26.05	0.1		119	FeatureOff	54	59	25.87	0.4
20	20	FeatureOn	67	75	32.63	0.1		120	FeatureOff	55	52	28.27	0.25
21	21	FeatureOn	66	79	30.05	0.12		121	FeatureOff	50	57	24.04	0.22
22	22	FeatureOn	62	81	30.9	0.24		122	FeatureOff	63	65	27.46	0.39
23	23	FeatureOn	65	74	30.38	0.33		123	FeatureOff	62	61	30.71	0.13
24	24	FeatureOn	70	76	30.63	0.15		124	FeatureOff	61	63	27.19	0.29
25	25	FeatureOn	60	79	33.47	0.24		125	FeatureOff	66	61	27.72	0.32

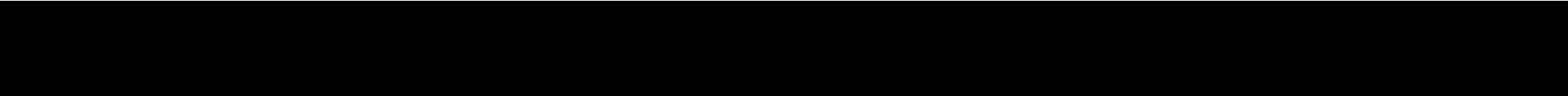


Statistical analysis of within-participants data in HCI experimentation is called repeated measures analysis, and statistical analysis of between-participants data in HCI experimentation is called independent measures analysis.

For Homework 1, what are the within-participants measurement data in your data set? Data that was created by each participant performing all (or multiple) conditions. It is important to know that data exists from subjects performing multiple conditions because some of the systematic variance in the data may be due to the differences among the subjects themselves, and not due to any of the independent variables manipulated in the experiment.



The within-participant measurement in this experiment is the spatial reasoning score. Why? Because the SAME experimental participant is responsible for both his or her Score 1 and his or her Score 2 values. They are both measures taken of the same person's performance. Thus, for homework Question 3, because you are to "Perform repeated two-tailed t-tests on these measures with $p=.05$ " then you are to compare (perform a repeated measures t-test for a difference between) the 100 data points in your data set for the dependent variable Score 1 in the FeatureOn condition, and a second repeated measures t-test comparison of the 100 points in your data set for the dependent variable Score 2 in the FeatureOff condition. That is, for Question 3, two t-tests are required.



In contrast, two between-subject measurements are present in this experiment and therefore require independent measures analysis: response Time and Error Rate. No repeated measures of these variables are available because each participant, while performing solely within either the FeatureOn versus FeatureOFF condition, generated just a single Time measure (data point) and a single Error Rate measure.

Thus, for homework Question 4, because you are to “Perform independent measure two-tailed t-tests on these measure(s) with $p=0.05$ ” then you are to compare (perform an independent measures t-test for a difference between) the 200 data points in your data set for the dependent variable Time comparing the FeatureOn versus FeatureOff conditions, and a second independent measures t-test comparison of the 200 points in your data set for the dependent variable Error Rate comparing the FeatureOn versus FeatureOff conditions. That is, for Question 4, two t-tests are required.