**Table 3: Characterization of 194 experiments with DNNs** 

Step	Aspect	Full	Partial	Missing
Hypotheses formulation	Research hypotheses	76%	0%	24%
Variables identification	Model hyperparameters	7%	85%	8%
	Model parameters	2%	0%	98%
	DL algorithm	26%	<b>72</b> %	2%
	Training hyperparameters	19%	73%	8%
	Training data	69%	27%	4%
Operationalization	Factors and treatments	14%	82%	4%
	Response variables	76%	18%	6%
Design	Choice of design	0%	70%	30%
	Instrumentation	2%	97%	1%
Objects selection	Test set characteristics	59%	19%	22%
Analysis & interpretation	Descriptive statistics	10%	34%	56%
	Inferential statistics	12%	1%	87%
Validity evaluation	Validity threats	2%	79%	19%

## Characterization criteria

Step	Aspect	Fully addressed	Partially addressed	Missing
Hypotheses formulation	Research hypotheses	Present	-	Missing
Variables identification	Model hyperparameters	All described/linked to artefact	Some described/linked to artefact	All missing
	Model parameters	Described/linked to artefact	-	Missing
	DL algorithm	All described/linked to artefact	Some described/linked to artefact	All missing
	Training hyperparameters	All described/linked to artefact	Some described/linked to artefact	All missing
	Training data	All datasets linked to artefact	Some linked to artefact/others described	None linked and/or desribed
Operationalization	Factors and treatments	Both described	Factors described only	None described
	Response variables	Formula/units (e.g. percentage of test cases passed)	Metric (e.g. effectiveness, reliability)	Aspect measured (e.g. quality)
Design	Choice of design	All sources of randomness taken into consideration	Classical sources of randomness considered	No sources of randomness considered
	Instrumentation	All elements described (test set, measuring	Elements partially described or some of them not	All missing
		instruments, measurement procedure and	described	
		technological infrastructure)		
Objects selection	Datasets characteristics	Specific characteristics of the elements in the dataset	General description of the dataset (not elements) is	Only reference to dataset
		are provided	given	
Analysis & interpretation	Descriptive statistics	Centrality and dispersion for all variables	Centrality and/or dispersion for all/some variables	None
	Inferential statistics	All variables are analyzed	Some variables analyzed	No variables analyzed
Validity evaluation	conclusion/internal/construct/external	All categories covered	Some categories covered or	No validity threats
			listing of threats that cannot be mapped to	
			category	

# Summary of characterization: All papers

Training hyperparameters	Training data	Factors and treatments	Response variables	Choice of design	Instrumentation	Test dataset	Descriptive statistics	Inferential statistics	Validity evaluation
-1	data	treatments	variables	design		dataset	statistics		Cvaractori
5 16	7	T. T							
16	7								
5 16	7								
, 10	/	8	12	58	2	42	109	169	38
142	52	158	34	136	189	38	66	1	153
36	135	28	148	0	3	114	19	24	3
8%	4%	4%	6%	30%	1%	22%	56%	87%	20%
73%	27%	81%	18%	70%	97%	20%	34%	1%	79%
19%	70%	14%	76%	0%	2%	59%	10%	12%	2%
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
6	142 36 8% 73% 19%	36 135   8% 4%   73% 27%   19% 70%	142     52     158       36     135     28       8%     4%     4%       73%     27%     81%       19%     70%     14%	142     52     158     34       36     135     28     148       8%     4%     4%     6%       73%     27%     81%     18%       19%     70%     14%     76%	142     52     158     34     136       36     135     28     148     0       8%     4%     4%     6%     30%       73%     27%     81%     18%     70%       19%     70%     14%     76%     0%	142     52     158     34     136     189       36     135     28     148     0     3       8%     4%     4%     6%     30%     1%       73%     27%     81%     18%     70%     97%       19%     70%     14%     76%     0%     2%	142     52     158     34     136     189     38       36     135     28     148     0     3     114       8%     4%     4%     6%     30%     1%     22%       73%     27%     81%     18%     70%     97%     20%       19%     70%     14%     76%     0%     2%     59%	142     52     158     34     136     189     38     66       36     135     28     148     0     3     114     19       8%     4%     4%     6%     30%     1%     22%     56%       73%     27%     81%     18%     70%     97%     20%     34%       19%     70%     14%     76%     0%     2%     59%     10%	142     52     158     34     136     189     38     66     1       36     135     28     148     0     3     114     19     24       8%     4%     4%     6%     30%     1%     22%     56%     87%       73%     27%     81%     18%     70%     97%     20%     34%     1%       19%     70%     14%     76%     0%     2%     59%     10%     12%

# Characterization of ICSE papers

			Hypotheses		Varia	bles identific	ation		Operation	nalization		Design	Population	Ana	lysis	Validity	Arti	fact
				Model	Model	DL	Training	Training	Factors and	Response	Choice of	Instrumentation	Test	Descriptive	Inferential	evaluation	Availability	Badge
Venue	Paper #	Experiment	Research	hyperparameters	parameters	algorithm	hyperparameters	data	treatments	variables	design		dataset	statistics	statistics		Availability	
		E1	М	PA	M	PA	PA	FA	M	M	M	PA	PA	М	M	М		
ICSE'18	AP1	E2	M	PA	M	PA	PA	FA	PA	FA	PA	PA DA	PA	M	M	M	Yes	No
		E3 E4	M M	PA PA	M M	PA PA	PA PA	FA FA	M PA	FA FA	M PA	PA PA	PA PA	PA PA	M FA	M M		
ICSE'18	AP2	E1	M	PA	M	PA	PA	FA	PA	FA	M	PA	FA	PA	PA	PA	Yes	No
ICSL 18	AFZ	E1	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA	163	INO
ICSE'19	AP3	E2	FA	PA	М	PA	PA	FA	PA	FA	PA	PA	FA	М	М	PA	Yes	No
		E3	FA	PA	М	PA	PA	FA	PA	FA	М	PA	FA	М	М	PA		
ICSE'19	AP4	E1	M	PA	M	PA	PA	FA	FA	PA	M	PA	FA	М	М	PA	Yes	No
.002 23		E2	FA	PA	M	PA	PA	FA	PA	FA	M	PA	FA	M	M	PA	103	.,,
		E1	FA	PA	M	PA	PA	PA	PA	FA	M	PA	М	М	M	М		
ICSE'19	AP5	E2	FA	PA	M	PA	PA	PA	PA	FA	PA	PA	M	M	M	M	Yes	Available Reusable
		E3 E4	FA FA	PA PA	M M	PA PA	PA PA	PA PA	PA M	FA FA	PA PA	PA PA	M M	M M	M M	M M		Reusable
		E1	FA	PA	M	PA	PA	FA	FA	FA	PA	PA	FA	PA	M	M		
		E2	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	FA	M	M		
ICSE'19	AP6	E3	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	FA	M	M	No	No
		E4	FA	PA	М	PA	PA	FA	PA	FA	PA	PA	FA	FA	М	М		
		E5	FA	M	M	M	M	M	PA	PA	M	PA	M	M	M	М		
		E1	M	PA	M	PA	PA	PA	FA	M	M	PA	М	М	М	PA		
ICSE'19	AP7	E2	FA	PA	M	PA	PA	PA	PA	PA	PA	PA	М	M	М	PA	Yes	No
		E3	FA	PA	М	PA	PA	PA	PA	FA	PA	PA	М	М	М	PA		
		E1	FA	PA	FA	PA	FA	FA	PA	FA	М	PA	PA	М	M	PA		
ICSE'19	AP8	E2	FA	PA	FA	PA	FA	FA	PA	FA	M	PA	PA	M	M	PA	Yes	Available
		E3 E4	FA	PA	FA FA	PA	FA FA	FA FA	PA	FA	M	PA PA	PA PA	M	M	PA		
		E4 E1	FA FA	PA PA	M	PA PA	PA	FA	PA PA	FA PA	M	PA	PA	M M	M M	PA PA		
ICSE'19	AP9	E2	FA	PA PA	M	PA PA	PA PA	FA	PA	PA	M	PA	PA PA	M	M	PA	Yes	No
		E1	M	PA	M	PA	PA	FA	PA	M	PA	PA	PA	M	M	PA		
1005140		E2	FA	PA	М	PA	PA	FA	PA	FA	PA	PA	PA	FA	FA	PA	.,	
ICSE'19	AP10	E3	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	PA	FA	M	PA	Yes	Available
		E4	FA	PA	M	PA	PA	FA	FA	FA	PA	PA	PA	FA	M	PA		
ICSE'20	AP11	E1	M	PA	M	PA	PA	FA	PA	PA	M	PA	FA	M	FA	М	Yes	No
ICSE 20	71.11	E2	M	PA	М	PA	PA	FA	PA	FA	M	PA	FA	FA	FA	М	103	110
		E1	М	PA	M	PA	M	PA	PA	FA	PA	PA	M	M	M	PA		
ICSE'20	AP12	E2	M	PA	M	PA	M	PA	PA	FA	PA	PA	FA	M	M	PA	Yes	No
		E3 E4	M M	PA PA	M M	PA PA	M M	PA PA	PA PA	FA FA	PA PA	PA PA	FA FA	M M	M M	PA PA		
		E1	M	PA	M	PA	PA	FA	FA	FA	PA	PA	FA	PA	M	PA		
		E2	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	PA	M	PA		
ICSE'20	AP13	E3	FA	PA	М	PA	PA	FA	PA	FA	PA	PA	FA	PA	М	PA	Yes	No
		E4	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	PA	M	PA		
		E5	FA	PA	М	PA	PA	FA	PA	FA	PA	PA	FA	PA	М	PA		
		E1	М	M	M	PA	PA	FA	FA	FA	PA	PA	М	М	M	PA		
ICSE'20	AP14	E2	FA	M	M	PA	PA	FA	PA	FA	PA	PA	M	M	M	PA	Yes	No
		E3	FA	M	M	PA	PA	FA	PA	FA	M	PA	M	M	M	PA		
ICSE'20	AP15	E1	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	М	PA	M	PA	Yes	Available
ICSE 20	APIS	E2 E3	FA FA	PA PA	M M	PA PA	PA PA	FA FA	PA PA	FA FA	PA PA	PA PA	M M	PA PA	M M	PA PA	162	Available
		E1	M	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA		
		E2	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA		
ICSE'20	AP16	E3	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA	Yes	No
	-	E4	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA		
		E5	М	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	PA	FA	PA		1
		E1	FA	PA	М	FA	PA	FA	FA	FA	M	PA	PA	М	М	PA		
ICSE'20	AP17	E2	FA	PA	М	FA	PA	FA	PA	PA	PA	PA	PA	М	М	PA	Yes	No
		E3	FA	PA	М	FA	PA	FA	PA	FA	PA	PA	PA	М	M	PA		
ICSE'21	AP18	E1	FA	PA	М	FA	PA	FA	PA	FA	PA	PA	FA	PA	М	PA	Yes	No
ICSE'21	AP19	E1	FA	M	M	PA	M	M	PA	FA	PA	PA	FA	PA	M	PA	Yes	No

### Characterization of ICSE papers

			Hypotheses		Varia	bles identific	ation		Operation	nalization		Design	Population	Ana	lysis	Validity	Arti	fact
				Model	Model	DL	Training	Training	Factors and	Response	Choice of	Instrumentation	Test	Descriptive	Inferential		Availability	Badge
Venue	Paper #	Experiment	Research	hyperparameters	parameters	algorithm	hyperparameters	data	treatments	variables	design		dataset	statistics	statistics	evaluation	Availability	
		E1	M	PA	M	FA	FA	PA	FA	M	M	PA	M	M	M	PA		
ICSE'21	AP20	E2	FA	PA	M	FA	FA	PA	PA	FA	PA	PA	M	PA	M	PA	Yes	No
		E3	FA	PA	M	FA	FA	PA	PA	FA	PA	PA	M	PA	М	PA		
ICSE'21	AP21	E1	FA	PA	M	PA	FA	PA	PA	FA	M	PA	M	M	М	M	Yes	No
		E1	M	PA	M	PA	FA	FA	FA	M	PA	PA	FA	M	M	PA		
		E2	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA		
ICSE'21	AP22	E3	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA	Yes	No
		E4	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA		
		E5	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA		
		E1	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA		
		E2	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA		
ICSE'21	AP24	E3	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA	Yes	No
ICSE 21	Arza	E4	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA	163	NO
		E5	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA		
		E6	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	М	PA		
		E1	FA	PA	M	PA	PA	PA	PA	FA	PA	PA	M	PA	M	PA		
ICSE'21	AP23	E2	FA	PA	M	PA	PA	PA	PA	FA	PA	PA	M	PA	M	PA	Yes	No
ICSE 21	Ar'23	E3	FA	PA	M	PA	PA	PA	PA	FA	PA	PA	M	PA	M	PA	163	INO
		E4	M	PA	M	PA	PA	PA	PA	PA	PA	PA	M	PA	M	PA		

EXPERIMENTS:

78

COUNT M:	21	5	74	1	6	2	3	5	21	0	23	50	72	16
COUNT PA:	0	73	0	70	63	19	66	8	57	78	17	21	1	62
COUNT FA	57	0	4	7	9	57	9	65	0	0	38	7	5	0
	•				<u> </u>	•			•		•			
% M	27%	6%	95%	1%	8%	3%	4%	6%	27%	0%	29%	64%	92%	21%
% PA	0%	94%	0%	90%	81%	24%	85%	10%	73%	100%	22%	27%	1%	79%
% FA	73%	0%	5%	9%	12%	73%	12%	83%	0%	0%	49%	9%	6%	0%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

### Characterization of ESEC/FSE papers

			Hypot	theses		Var	riables identificat	ion		Operatio	nalization	1	Design	Population	Ana	lysis		Artif	act
					Model	Model		Training	Training	Factors and	Response	Choice of		Test	Descriptive	Inferential	Validity	Availability	Badge
Venue	Paper #	Experiment	Research	Statistical	hyperparameters	parameters	DL algorithm	hyperparameters	data	treatments	variables	design	Instrumentation	dataset	statistics	statistics	evaluation	Availability	
505140		E1	M	M	PA	M	FA	PA	FA	M	PA	PA	PA	FA	M	M	M	.,	
FSE'18	AP25	E2	M	M	PA	M	FA	PA	FA	PA	PA	PA PA	PA PA	FA	PA	M	M M	Yes	No
		E3 E1	M M	M M	PA PA	M M	FA FA	PA PA	FA PA	PA M	PA PA	M	PA	FA PA	PA M	M M	M		
		E2	M	M	PA PA	M	FA FA	PA PA	PA PA	PA	FA	M	PA PA	PA PA	M	M	M		
FSE'18	AP26	E3	M	M	PA	M	FA	PA	PA	PA	FA	M	PA	PA	M	M	M	Yes	No
		E4	M	M	PA	M	FA	PA	PA	PA	PA	M	PA	PA	M	M	M		
FSE'18	AP27	E1	FA	М	PA	М	PA	PA	PA	PA	PA	М	PA	М	М	М	PA	No	No
		E1	FA	М	PA	M	PA	PA	PA	PA	FA	М	PA	PA	М	М	PA		
FSE'18	AP28	E2	FA	M	PA	M	PA	PA	PA	PA	FA	M	PA	PA	PA	М	PA	No	No
		E3	FA	M	PA	M	PA	PA	PA	PA	FA	М	PA	PA	М	М	PA		
FSE'19	AP29	E1	FA	М	PA	M	PA	PA	FA	PA	PA	PA	PA	PA	PA	М	PA	Yes	Yes
		E1	M	M	PA	M	PA	М	PA	PA	M	M	PA	M	M	М	PA		
FSE'19	AP30	E2	FA	M	PA	M	PA	М	PA	PA	FA	PA	PA	М	FA	М	PA	No	No
		E3	FA	M	PA	М	PA	М	М	PA	FA	PA	PA	M	PA	М	PA		
FSE'19	AP31	E1 E2	FA FA	M M	PA PA	M M	FA FA	PA PA	PA PA	PA	FA FA	PA PA	PA PA	FA FA	M M	M M	PA PA	No	No
		E1	FA	M	PA PA	M	M	M	FA	PA PA	PA PA	PA PA	PA PA	FA FA	PA	FA	PA PA		
FSE'19	AP32	E2	FA	M	PA PA	M	M	M	FA	PA	PA	PA PA	PA	FA	PA	FA	PA PA	Yes	No
		E3	FA	M	PA	M	M	M	FA	PA	PA	PA	PA	FA	PA	FA	PA		
		E1	FA	М	PA	М	PA	PA	PA	PA	FA	PA	PA	PA	М	М	М		
FSE'20	AP33	E2	FA	М	PA	М	PA	PA	PA	PA	FA	PA	PA	PA	М	М	М	Yes	No
		E3	FA	M	PA	М	PA	PA	М	PA	FA	M	PA	М	M	М	М		
FSE'20	AP34	E1	M	M	PA	M	PA	PA	М	PA	PA	PA	PA	PA	M	М	М	No	No
1 32 20	7.1.3-1	E2	М	М	PA	M	PA	PA	M	PA	PA	М	PA	PA	М	М	М	110	140
FSE'20	AP35	E1	M	M	PA	M	PA	PA	FA	M	M	M	PA	М	M	М	PA	Yes	No
		E2	М	М	PA	М	PA	PA	FA	PA	FA	PA	PA	FA	PA	FA	PA		
		E1	FA	M	PA	М	PA	PA	FA	PA	FA	PA	FA	PA	PA	М	PA		
FSE'20	AP36	E2 E3	FA	M	PA	M	PA	PA	FA	PA	FA	M	FA	PA	M	M	PA	Yes	Yes
		E4	FA	M	PA PA	M	PA PA	PA	FA FA	FA	M	M	FA PA	PA PA	M M	M	PA PA		
		E1	FA M	M M	M M	M M	FA	PA M	FA FA	PA M	FA M	PA M	PA PA	FA	M	M M	M		
		E2	FA	M	M	M	FA	PA	FA	PA	PA	PA	PA PA	FA	PA	M	M		
FSE'20	AP37	E3	FA	M	M	M	FA	M	FA	PA	PA	M	PA	FA	M	M	M	Yes	No
		E4	FA	М	М	M	FA	М	FA	FA	PA	М	PA	FA	М	М	М		
		E1	M	M	М	М	PA	PA	PA	М	М	M	М	М	М	М	М		
		E2	FA	M	М	M	PA	PA	PA	PA	FA	PA	PA	PA	PA	М	M		
FSE'20	AP38	E3	FA	M	М	M	PA	PA	PA	PA	FA	PA	PA	PA	PA	М	М	Yes	No
		E4	FA	M	М	M	PA	PA	PA	PA	FA	PA	PA	PA	PA	М	M		
		E5	FA	M	М	M	PA	PA	PA	PA	FA	PA	PA	PA	PA	М	М		
		E6 E1	M FA	M	M	M M	M FA	M	PA FA	PA PA	FA	M	PA PA	PA FA	M M	M M	M		
FSE'21	AP42	E1 E2	FA FA	M M	PA PA	M M	FA FA	FA FA	FA FA	PA PA	FA FA	PA PA	PA PA	FA FA	M	M	PA PA	Yes	No
		E3	FA	M	PA	M	FA	FA	FA	PA	FA	PA	PA	FA	M	M	PA	103	
		E1	FA	M	PA	M	PA	PA	PA	PA	FA	PA	PA	FA	M	M	PA		
FSE'21	AP43	E2	FA	М	PA	М	PA	PA	PA	FA	FA	M	PA	FA	M	М	PA	Yes	No
. JL 21	AFTS	E3	FA	M	PA	М	PA	PA	PA	PA	FA	M	PA	FA	M	М	PA	163	140
		E4	FA	М	PA	M	PA	PA	PA	FA	FA	M	PA	FA	M	М	PA		
		E1	FA	M	PA DA	M	FA	PA	PA	PA	FA	PA	PA	M	M	M	PA		
FSE'21	AP40	E2 E3	FA FA	M M	PA PA	M M	FA FA	PA PA	PA PA	PA PA	FA FA	PA PA	PA PA	M M	M M	M M	PA PA	Yes	Yes
. 51 21	71.70	E4	FA FA	M	PA PA	M	FA	PA PA	PA PA	PA PA	FA FA	PA PA	PA	M	M	M	PA PA	103	103
		E5	M	M	PA	M	FA	PA	PA	FA	FA	PA	PA	M	FA	M	PA		

### Characterization of ESEC/FSE papers

			Hypot	heses		Var	iables identificati	ion		Operation	nalization		Design	Population	Anal	lysis		Artifa	act
					Model	Model		Training	Training	Factors and	Response	Choice of		Test	Descriptive	Inferential	Validity	Availability	Badge
Venue	Paper #	Experiment	Research	Statistical	hyperparameters	parameters	DL algorithm	hyperparameters	data	treatments	variables	design	Instrumentation	dataset	statistics	statistics	evaluation	Availability	
		E1	M	M	PA	M	PA	PA	M	FA	M	М	M	M	M	M	PA		
		E2	FA	М	PA	M	PA	PA	FA	PA	FA	PA	PA	M	M	M	PA		
		E3	FA	M	PA	M	PA	PA	FA	PA	FA	M	PA	M	M	M	PA		
FSE'21	AP41	E4	FA	М	PA	M	PA	PA	FA	PA	FA	PA	PA	M	M	M	PA	Yes	Yes
		E5	FA	M	PA	M	PA	PA	FA	PA	FA	M	PA	M	M	M	PA		
		E6	M	M	PA	M	PA	PA	FA	PA	FA	М	PA	M	M	M	PA		
		E7	M	M	PA	M	PA	PA	FA	FA	FA	PA	PA	M	M	M	PA		
FSE'21	AP44	E1	FA	M	FA	M	FA	FA	FA	PA	PA	PA	PA	FA	PA	M	PA	Yes	No
		E1	FA	M	PA	М	PA	FA	FA	PA	FA	PA	PA	FA	PA	FA	PA		
FSE'21	AP45	E2	FA	M	PA	M	PA	FA	FA	FA	FA	PA	PA	FA	PA	M	PA	Yes	No
		E3	FA	M	PA	М	PA	FA	FA	PA	FA	PA	PA	FA	PA	FA	PA		
		E4	FA	M	PA	M	PA	FA	FA	PA	FA	PA	PA	FA	PA	M	PA		
		E1	FA	M	FA	M	FA	FA	FA	PA	FA	PA	PA	FA	М	M	PA		
		E2	FA	M	FA	M	FA	FA	FA	PA	FA	PA	PA	FA	PA	M	PA		
		E3	FA	M	FA	M	FA	FA	FA	PA	FA	PA	PA	FA	PA	M	PA		
FSE'21	AP39	E4	FA	M	FA	M	FA	FA	FA	PA	FA	PA	PA	FA	PA	M	PA	Yes	Yes
	•	E5	FA	M	FA	M	FA	FA	FA	PA	FA	PA	PA	FA	PA	М	PA		
		E6	FA	M	FA	M	FA	FA	FA	FA	FA	М	PA	FA	М	M	PA		
		E7	FA	M	FA	M	FA	FA	FA	PA	FA	М	PA	FA	М	M	PA		
		E8	FA	M	FA	M	FA	FA	FA	PA	FA	M	PA	FA	PA	M	PA		

EXPERIMENTS: 73

COUNT M:	19	73	10	73	4	10	5	5	6	29	2	19	46	67	22
COUNT PA:	0	0	54	0	39	47	29	59	16	44	68	21	25	0	51
COUNT FA	54	0	9	0	30	16	39	9	51	0	3	33	2	6	0
% M	200/														
/0 141	26%	100%	14%	100%	5%	14%	7%	7%	8%	40%	3%	26%	63%	92%	30%
% PA	26%	100% 0%	14% 74%	100% 0%	5% 53%	14% 64%	7% 40%	7% 81%	8% 22%	40% 60%	3% 93%	26% 29%	63% 34%	92% 0%	30% 70%
							/%	7% 81% 12%			3% 93% 4%				

### **Characterization of TSE papers**

			Hypotheses		Varia	ables identific	ation		Operatio	nalization		Design	Population	Ana	lysis	Validity	Artif	fact
				Model	Model	DL	Training	Training	Factors and	Response	Choice of		Test	Descriptive	Inferential		Availability	Badge
Venue	Paper #	Experiment	Research	hyperparameters	parameters	algorithm	hyperparameters	data	treatments	variables	design	Instrumentation	dataset	statistics	statistics		Availability	
		E1	М	PA	M	FA	FA	FA	FA	FA	M	PA	FA	M	M	PA		
		E2	FA	PA	M	FA	FA	FA	PA	FA	PA	PA	FA	FA	FA	PA		
TSE'19	AP46	E3	FA	PA	M	FA	FA	FA	PA	FA	PA	PA	FA	FA	FA	PA	Yes	No
.02.25		E4	FA	PA	M	FA	FA	FA	PA	FA	PA	PA	FA	FA	FA	PA	103	
		E5	FA	PA	M	FA	FA	FA	PA	FA	PA	PA	FA	FA	FA	PA		
		E6	FA	PA	М	FA	FA	FA	PA	FA	PA	PA	FA	FA	FA	PA		
		E1	М	PA	M	PA	PA	FA	FA	FA	M	PA	FA	M	M	PA		
TSE'20	AP47	E2	FA	PA	М	PA	PA	FA	PA	FA	PA	PA	FA	PA	M	PA	Yes	No
		E3	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	PA	M	PA		
		E4	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	PA	М	PA		
		E1	М	PA	M	PA	PA	FA	FA	FA	M	PA	FA	M	M	PA		
		E2	M	PA	M	PA	PA	FA	FA	FA	M	PA	FA	M	M	PA		
TSE'20	AP48	E3	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	FA	FA	PA	Yes	No
		E4	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	FA	FA	PA		
		E5	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	FA	FA	PA		
-		E6	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	FA	FA	PA		
		E1	M	FA	M	FA	PA	FA	FA	FA	M	PA	FA	M	M	PA		
TSE'20	AP49	E2	FA	FA	M	FA	PA	FA	PA	FA	PA	PA	FA	M	M	PA	Yes	No
		E3	FA	FA	M	FA	PA	FA	PA	FA	PA	PA	FA	M	M	PA		
-		E4	FA	FA	M	FA	PA	FA	PA	FA	PA	PA	FA	FA	FA	PA		
		E1 E2	FA FA	PA PA	M M	PA PA	FA FA	FA FA	PA PA	FA PA	PA PA	PA PA	FA FA	PA PA	M M	PA PA		
TSE'21	AP50	E3	FA	PA PA	M	PA PA	FA	FA	FA	PA PA	PA	PA	FA	PA	M	PA PA	Yes	No
.0111	7.1.50	E4	FA	PA	M	PA	FA	FA	PA	FA	M	PA	FA	M	M	PA		
		E5	M	PA	M	PA	FA	FA	FA	FA	M	PA	FA	PA	M	PA		
		E1	M	PA	М	PA	PA	FA	FA	М	PA	PA	FA	M	М	PA		
TSE'21	AP51	E2	FA	PA	M	PA	PA	FA	PA	FA	PA	PA	FA	M	M	PA	Yes	No
		E3	FA	PA	М	PA	PA	FA	PA	FA	PA	PA	FA	M	М	PA		
		E1	FA	PA	M	PA	PA	FA	PA	PA	PA	PA	FA	PA	M	PA		
		E2	FA	PA	M	PA	PA	FA	PA	PA	PA	PA	FA	PA	M	PA		
TSE'21	AP52	E3	FA	PA	М	PA	PA	FA	PA	PA	PA	PA	FA	PA	М	PA	Yes	No
		E4	FA	PA	M	PA	PA	FA	PA	PA	PA	PA	FA	PA	FA	PA		
		E5 E6	FA FA	PA PA	M M	PA PA	PA PA	FA FA	PA PA	PA PA	PA PA	PA PA	FA FA	PA PA	M M	PA PA		
+		E1	FA	PA PA	M	FA	PA PA	FA	PA	FA	PA PA	PA	FA	PA PA	M	FA		
TSE'21	AP55	E2	FA	PA PA	M	FA	PA PA	FA	PA	FA	PA	PA	FA	PA	M	FA	Yes	No
.02.22	7.1.33	E3	FA	PA	M	FA	PA	FA	PA	FA	PA	PA	FA	PA	M	FA		
=0.5104		E1	FA	PA	M	PA	PA	FA	PA	PA	PA	PA	FA	M	M	PA	, I	
TSE'21	AP54	E2	FA	PA	M	PA	PA	FA	PA	PA	М	PA	FA	M	M	PA	Yes	No
		E1	FA	PA	M	PA	PA	PA	PA	FA	PA	PA	FA	PA	FA	PA		
TSE'21	AP53	E2	FA	PA	M	PA	PA	PA	PA	FA	PA	PA	FA	PA	FA	PA	No	No
136 21	AF33	E3	FA	PA	M	PA	PA	PA	FA	FA	PA	PA	FA	PA	M	PA	INU	NU
		E4	FA	PA	М	PA	PA	PA	FA	FA	PA	PA	FA	PA	M	PA		

### **Characterization of TSE papers**

			Hypotheses		Varia	bles identific	ation		Operation	nalization		Design	Population	Anal	ysis	Validity	Arti	fact
				Model	Model	DL	Training	Training	Factors and	Response	Choice of		Test	Descriptive	Inferential	•	Availability	Badge
Venue	Paper #	Experiment	Research	hyperparameters	parameters	algorithm	hyperparameters	data	treatments	variables	design	Instrumentation	dataset	statistics	statistics	evaluation	Availability	
	EXPERIMENTS:	43																
		_		•									•				•	
		COUNT M:	7	0	43	0	0	0	0	1	8	0	0	13	30	0		
		COUNT PA:	0	39	0	30	32	4	33	10	35	43	0	20	0	40		
		COUNT FA	36	4	0	13	11	39	10	32	0	0	43	10	13	3		
																	-	
		% M	16%	0%	100%	0%	0%	0%	0%	2%	19%	0%	0%	30%	70%	0%		
		% PA	0%	91%	0%	70%	74%	9%	77%	23%	81%	100%	0%	47%	0%	93%		
		% FA	84%	9%	0%	30%	26%	91%	23%	74%	0%	0%	100%	23%	30%	7%		
		TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		