

# A Low-Cost Feature Interaction Fault Localization Approach for Software Product Lines

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## **S-1 RQ4: Ablation analysis**

The average number of 1-7way feature interaction examined for the three variants of CRFL across the seven systems is given as follows.

Table S-1: The average number of 1~7way feature interactions examined by three variants of CRFL on seven systems

Systems	Variants	1-way	2-way	3-way	4-way	5-way	6-way	7-way
BankAccountTP	CRFL-wSU	11.2	48.5	102.5	113.9	66.6	21.4	2.8
	CRFL-wTF	58.5	168.9	264.4	248.9	140.9	44.4	6.0
	CRFL-wCR	11.0	51.6	116.8	139.4	87.3	29.5	4.1
Email	CRFL-wSU	11.5	50.6	111.7	141.6	109.4	51.3	13.5
	CRFL-wTF	48.9	155.9	287.7	335.0	251.4	118.5	32.1
	CRFL-wCR	12.0	57.3	143.9	206.7	171.2	87.0	24.3
ExamDB	CRFL-wSU	4.9	10.9	15.3	14.3	8.4	2.8	0.4
	CRFL-wTF	5.5	12.0	15.9	14.4	8.4	2.8	0.4
	CRFL-wCR	6.6	19.5	31.9	31.4	18.7	6.2	0.9
Elevator	CRFL-wSU	6.4	13.5	12.4	5.4	1.0	0.0	0.0
	CRFL-wTF	16.3	35.4	32.6	13.9	2.3	0.0	0.0
	CRFL-wCR	5.0	13.2	14.2	7.1	1.4	0.0	0.0
GPL	CRFL-wSU	39.6	654.3	6079.1	36702.4	155845.4	508752.8	1309810.0
	CRFL-wTF	506.9	5605.2	39413.7	198731.6	764757.2	2334145.0	5797138.0
	CRFL-wCR	39.7	692.2	7135.2	49604.1	232785.6	886359.6	2664523.0
TankWar	CRFL-wSU	34.0	460.2	3119.2	12733.6	36019.8	78212.2	135126.4
	CRFL-wTF	145.8	1058.4	4985.0	17078.8	45202.6	95757.8	165930.4
	CRFL-wCR	36.0	550.8	4642.8	24572.0	88378.0	240064.6	502449.8
ZipMe	CRFL-wSU	11.5	52.6	131.5	214.1	248.5	214.2	136.6
	CRFL-wTF	53.2	203.4	488.0	823.4	1026.6	956.4	656.8
	CRFL-wCR	11.9	62.2	184.6	362.9	494.7	493.7	352.1

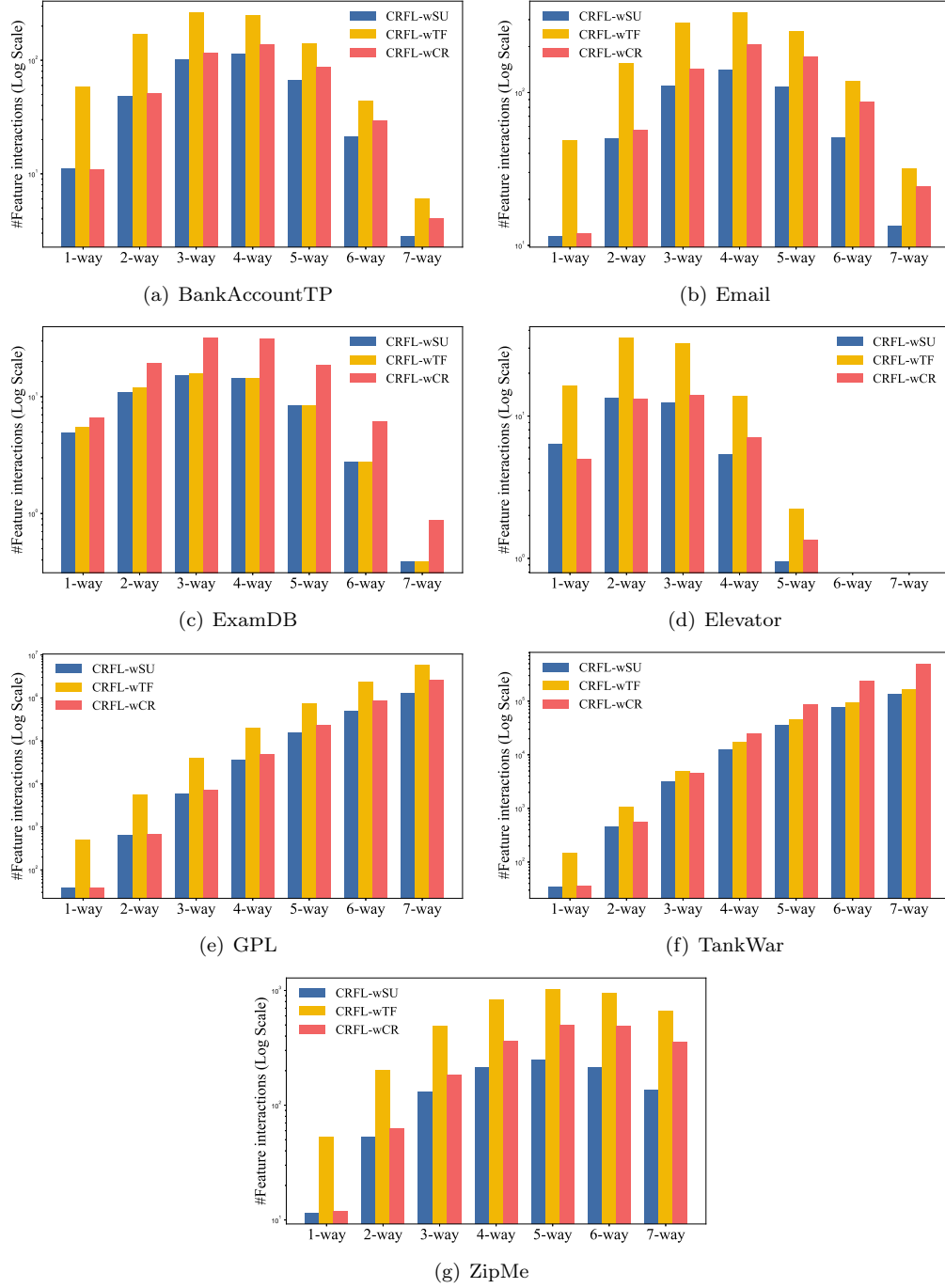


Figure S-1: The average number of 1~7way feature interactions examined by three variants of CRFL

## References