TABLE I
AUC VALUE OF 29 PAIRS WPDP TASKS ON NINE METHODS

Project	Version	Traditional	DBN	DPCNN	Node2defect	DTL-DP	CodeBERT	GCN2defect	UDA-DP	MVHR-DP
ant	1.5	78.4	66.2	66.5	77.3	61.7	62.4	71.8	70.7	82.5
	1.6	80.1	68.0	70.8	79.2	81.0	72.8	73.3	73.3	82.5
	1.7	80.2	68.7	67.5	81.2	70.1	77.8	71.6	75.5	84.5
camel	1.2	65.0	63.4	61.5	77.2	56.4	67.0	78.6	67.2	82.1
	1.4	68.9	70.3	60.6	81.1	64.0	65.6	78.0	80.7	83.9
	1.6	68.4	62.1	57.2	80.4	62.5	66.2	76.4	74.4	84.9
ivy	1.4	65.8	58.7	64.7	70.0	91.1	65.9	70.5	75.2	80.5
	2.0	71.7	64.5	61.9	77.8	83.5	58.8	78.4	79.6	88.2
jEdit	3.2.1	84.4	70.1	71.8	88.3	71.8	66.5	84.7	81.3	93.1
	4	78.4	68.3	64.0	77.2	73.0	68.1	79.1	80.9	83.9
	4.1	81.0	68.7	68.9	80.9	72.4	73.3	75.2	77.7	86.3
log4j	1.0	81.1	67.8	69.9	77.3	67.5	69.9	58.6	65.8	84.3
	1.1	82.1	70.0	72.3	77.7	61.7	70.1	71.2	71.0	80.1
	1.2	68.6	70.1	59.7	65.8	73.0	62.2	81.2	65.6	76.3
lucene	2.0	76.9	63.8	64.4	73.5	65.8	67.5	71.1	69.1	80.1
	2.2	62.6	56.1	55.9	69.2	67.3	60.6	69.1	60.8	72.9
	2.4	76.6	71.6	65.9	79.2	75.4	57.0	71.9	66.5	82.8
poi	2.0	66.4	76.5	59.4	63.3	57.9	59.7	66.8	80.7	79.5
	2.5	82.1	73.1	73.7	81.6	64.0	82.6	91.3	80.0	91.7
	3.0	80.8	74.6	74.7	89.2	60.0	64.7	83.6	61.2	87.7
velocity	1.4	75.1	72.1	66.4	91.0	39.5	57.8	89.6	76.0	95.2
	1.5	74.8	70.9	68.8	86.0	76.4	61.3	83.3	81.4	89.2
	1.6	78.2	71.2	68.7	81.2	67.3	64.5	74.7	78.8	84.1
xalan	2.4	76.5	62.8	65.3	77.1	50.4	74.9	69.2	76.2	79.2
	2.5	67.6	59.1	61.1	78.0	50.0	54.0	76.8	65.1	82.4
	2.6	80.3	72.8	73.3	85.3	74.1	75.0	82.1	59.9	87.6
xerces	1.2	64.3	82.3	85.4	90.4	59.8	86.8	93.0	70.9	93.8
	1.3	79.0	80.1	77.4	83.6	66.7	83.2	88.0	84.7	88.7
	1.4	97.9	91.1	92.3	86.0	74.7	90.1	94.0	90.9	98.2
AVG	-	75.6	69.5	67.9	79.5	66.9	68.5	77.7	73.8	85.0

TABLE II
F-MEASURE VALUE OF 29 PAIRS WPDP TASKS ON NINE METHODS

Project	Version	Traditional	DBN	DPCNN	Node2defect	DTL-DP	CodeBERT	GCN2defect	UDA-DP	MVHNR-DP
ant	1.5	32.1	29.3	31.2	34.0	30.4	35.2	30.2	28.6	44.6
	1.6	58.1	54.8	57.9	59.2	70.3	56.4	53.0	72.7	61.5
	1.7	50.8	49.4	47.6	57.8	50.0	48.0	45.6	62.9	61.7
camel	1.2	56.0	57.7	54.9	64.2	49.4	63.3	64.2	45.3	66.5
	1.4	34.3	44.8	44.7	48.0	38.2	48.2	46.8	62.3	55.9
	1.6	39.3	39.2	42.9	52.1	32.6	36.4	47.2	39.2	59.7
ivy	1.4	13.7	15.8	21.6	30.0	53.3	21.5	24.3	46.2	37.0
	2.0	32.6	28.5	36.1	40.3	53.3	28.4	34.9	30.0	44.3
jEdit	3.2.1	65.8	61.5	62.6	75.6	50.9	73.1	71.4	66.7	82.4
	4	51.8	48.6	47.3	54.3	62.5	55.2	55.9	66.7	61.7
	4.1	56.3	59.1	59.5	55.4	66.7	49.3	53.1	69.0	62.2
log4j	1.0	54.7	51.1	50.0	49.4	51.4	55.1	35.8	51.6	59.6
	1.1	66.2	70.9	71.4	63.1	63.2	62.6	54.5	67.8	70.3
	1.2	96.0	77.2	90.9	94.8	81.3	86.8	95.5	78.9	96.3
lucene	2.0	67.7	62.2	64.1	64.2	75.6	63.8	66.4	73.5	72.0
	2.2	73.6	67.6	60.3	74.4	78.1	71.1	75.5	66.7	78.6
	2.4	76.7	72.0	66.7	77.6	78.0	75.2	76.8	75.6	82.9
poi	2.0	28.2	38.7	26.3	27.2	20.3	21.5	29.0	43.5	32.1
	2.5	82.3	80.4	82.9	87.6	84.0	82.0	88.4	88.2	88.7
	3.0	80.6	82.6	81.2	86.7	80.0	73.9	82.5	77.1	84.6
velocity	1.4	91.6	88.4	66.1	92.6	86.6	91.1	92.0	84.6	94.7
	1.5	81.2	82.3	82.1	86.1	87.3	79.1	84.7	80.8	88.0
	1.6	64.7	62.1	61.4	66.0	60.6	78.5	59.8	58.1	67.2
xalan	2.4	38.0	36.6	39.2	44.0	47.6	44.1	35.5	48.3	43.9
	2.5	66.4	68.3	65.8	72.6	65.3	69.3	71.0	57.1	75.4
	2.6	71.2	70.3	70.5	76.4	73.1	80.2	73.2	67.8	77.7
xerces	1.2	30.4	32.2	32.0	69.7	30.3	57.2	68.3	25.8	71.2
	1.3	42.9	41.8	45.5	49.3	37.2	44.1	54.3	34.3	55.7
	1.4	94.7	87.9	81.9	94.2	84.8	89.1	89.5	89.2	95.4
AVG	-	58.5	57.3	56.7	63.7	60.1	60.0	60.7	60.6	68.0

TABLE III
MCC VALUE OF 29 PAIRS WPDP TASKS ON NINE METHODS

Project	Version	Traditional	DBN	DPCNN	Node2defect	DTL-DP	CodeBERT	GCN2defect	UDA-DP	MVHR-DP
ant	1.5	25.4	20.6	21.6	25.9	22.1	21.0	21.5	17.9	38.7
	1.6	41.2	32.8	37.9	42.3	20.4	32.2	32.5	44.4	46.2
	1.7	34.4	32.0	29.1	44.4	39.4	38.2	25.7	42.7	50.2
camel	1.2	16.5	26.2	22.3	38.1	13.6	20.2	38.3	25.0	44.0
	1.4	15.4	31.5	16.3	38.9	10.9	22.6	34.6	44.9	46.0
	1.6	20.0	19.5	11.9	38.6	15.3	22.6	31.6	29.1	48.0
ivy	1.4	11.0	8.9	12.2	19.0	52.4	16.2	21.1	39.8	33.3
	2.0	19.5	18.4	15.0	30.5	47.8	16.0	27.6	23.1	37.5
jEdit	3.2.1	51.6	39.0	41.1	63.0	48.2	48.1	56.7	52.4	72.8
	4	35.5	30.9	24.5	36.1	51.0	27.5	39.6	57.1	47.7
	4.1	38.9	36.1	36.2	39.7	47.0	36.6	34.3	58.7	47.5
log4j	1.1	39.2	20.9	40.1	30.8	33.0	0.8	12.3	38.7	46.4
	1.2	46.1	33.6	32.0	43.6	38.4	32.1	30.6	47.9	55.3
	1.2	-1.0	10.5	21.0	-1.5	20.4	12.3	4.3	35.6	41.7
lucene	2.0	38.3	27.4	28.7	37.0	36.8	25.0	29.6	47.9	42.1
	2.2	17.0	12.5	11.4	26.6	37.0	25.9	30.3	44.0	35.9
	2.4	30.4	40.8	31.0	35.4	52.3	10.8	30.5	35.6	49.9
poi	2.0	16.2	34.4	13.2	16.3	17.3	11.3	17.8	46.2	21.5
	2.5	44.2	45.9	45.7	65.6	35.0	35.3	65.6	64.6	65.1
	3.0	38.8	47.2	47.9	61.6	36.0	34.1	44.1	49.6	51.4
velocity	1.4	59.0	40.4	29.1	66.5	39.6	11.1	62.9	54.3	76.7
	1.5	27.2	40.9	36.9	55.9	55.8	39.5	49.3	54.6	63.8
	1.6	45.2	39.6	35.5	49.1	34.0	29.4	34.2	38.7	49.6
xalan	2.4	26.6	19.7	21.6	32.3	37.6	25.6	21.4	40.6	32.4
	2.5	20.1	18.2	22.3	41.5	9.6	27.4	37.6	31.0	48.7
	2.6	42.2	45.6	46.5	53.4	48.6	35.7	47.2	36.1	56.8
xerces	1.2	12.1	32.3	45.2	64.9	14.2	42.1	63.5	48.6	66.2
	1.3	33.4	35.2	40.1	40.6	24.8	32.1	46.8	42.7	48.5
	1.4	90.8	60.2	66.1	83.8	58.1	42.4	70.2	55.6	86.9
AVG	-	32.2	31.1	30.4	42.1	34.4	26.7	36.6	43.0	50.0