

Detailed results for noninvasive detection of ethanol level dataset

Table 1: Performance metrics of CNN-KAN and simple CNN for noninvasive detection of ethanol level dataset. All results are presented as %, except for the standard deviation, which is expressed in percentage points.

Results for CNN-KAN architecture						
	Train dataset			Test dataset		
Trial no	acc.	spec.	rec.	acc.	spec.	rec.
1	93.65	97.88	93.65	73.0	91.0	72.99
2	91.67	97.22	91.67	73.0	91.0	73.0
3	91.67	97.22	91.67	69.8	89.93	69.82
4	92.86	97.62	92.86	70.0	90.0	69.99
5	89.88	96.63	89.88	74.4	91.47	74.4
6	93.85	97.95	93.85	74.2	91.4	74.22
7	94.25	98.08	94.25	68.6	89.53	68.62
8	91.67	97.22	91.67	71.6	90.54	71.63
9	91.67	97.22	91.67	72.8	90.93	72.8
10	92.66	97.55	92.66	75.0	91.67	75.0
Avg.	92.38	97.46	92.38	72.24	90.75	72.25
Std. Dev.	1.3	0.42	1.3	2.1	0.67	2.1

Results for simple CNN architecture						
	Train dataset			Test dataset		
Trial no	acc.	spec.	rec.	acc.	spec.	rec.
1	55.95	85.32	55.95	49.0	82.99	49.02
2	71.63	90.54	71.63	62.4	87.48	62.52
3	56.94	85.65	56.94	47.4	82.46	47.5
4	67.66	89.22	67.66	55.4	85.15	55.57
5	69.05	89.68	69.05	58.8	86.28	58.94
6	70.63	90.21	70.63	60.0	86.68	60.14
7	65.08	88.36	65.08	54.0	84.68	54.15
8	70.24	90.08	70.24	57.2	85.75	57.35
9	72.82	90.94	72.82	61.6	87.22	61.74
10	77.38	92.46	77.38	60.0	86.67	60.06
Avg.	67.74	89.25	67.74	56.58	85.54	56.7
Std. Dev.	6.4	2.1	6.4	4.9	1.6	4.9

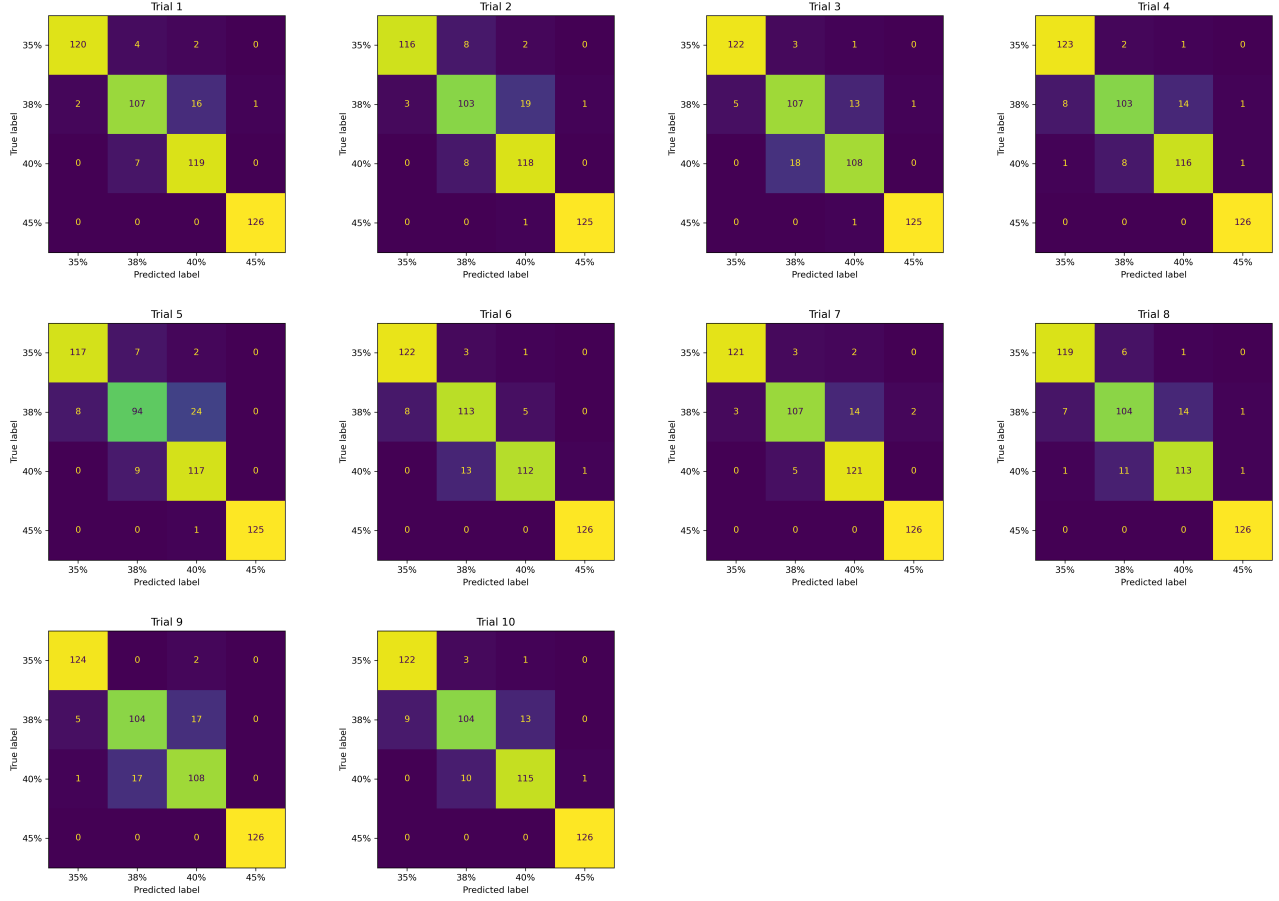


Figure 1: Confusion matrices for the CNN-KAN architecture on the training set.

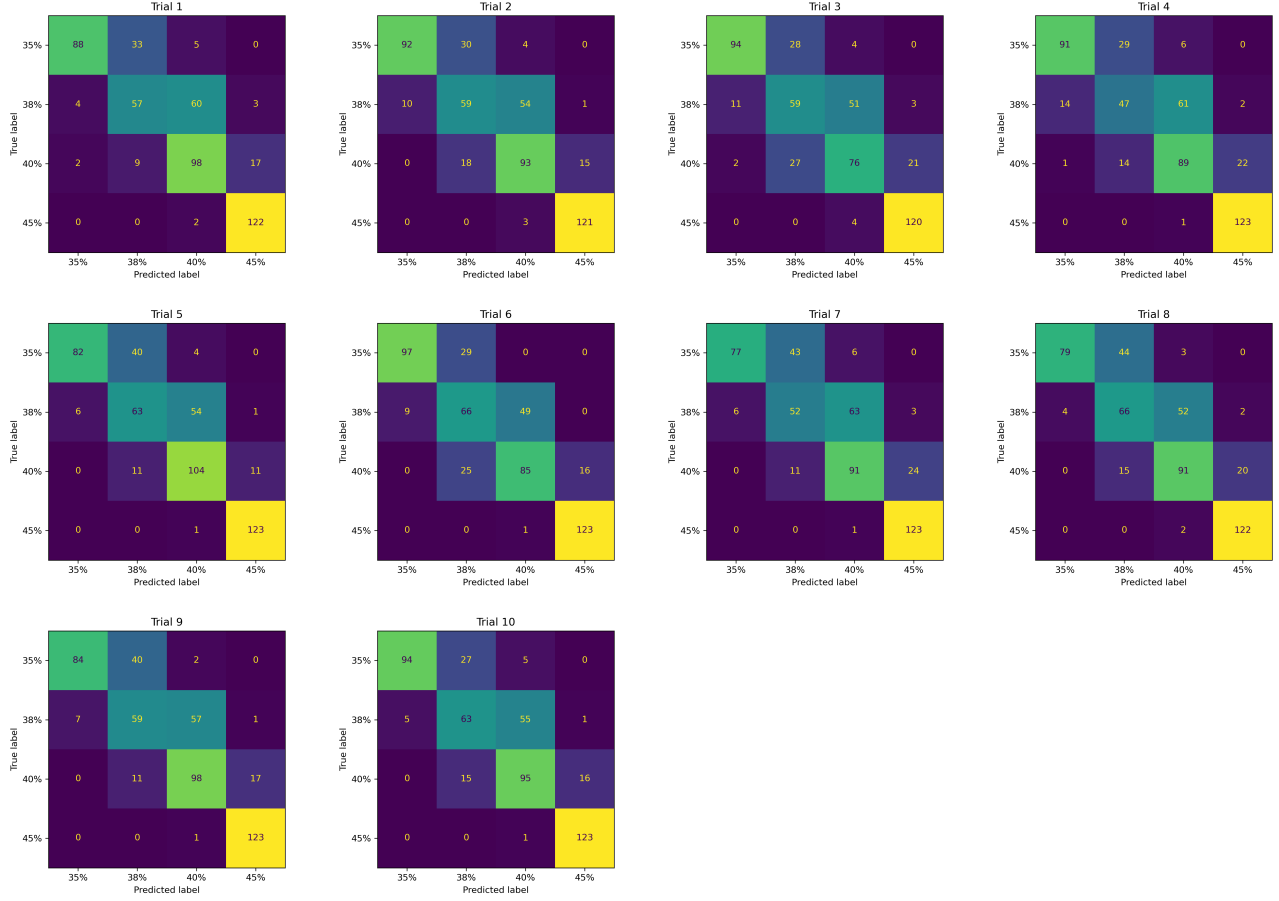


Figure 2: Confusion matrices for the CNN-KAN architecture on the test set.

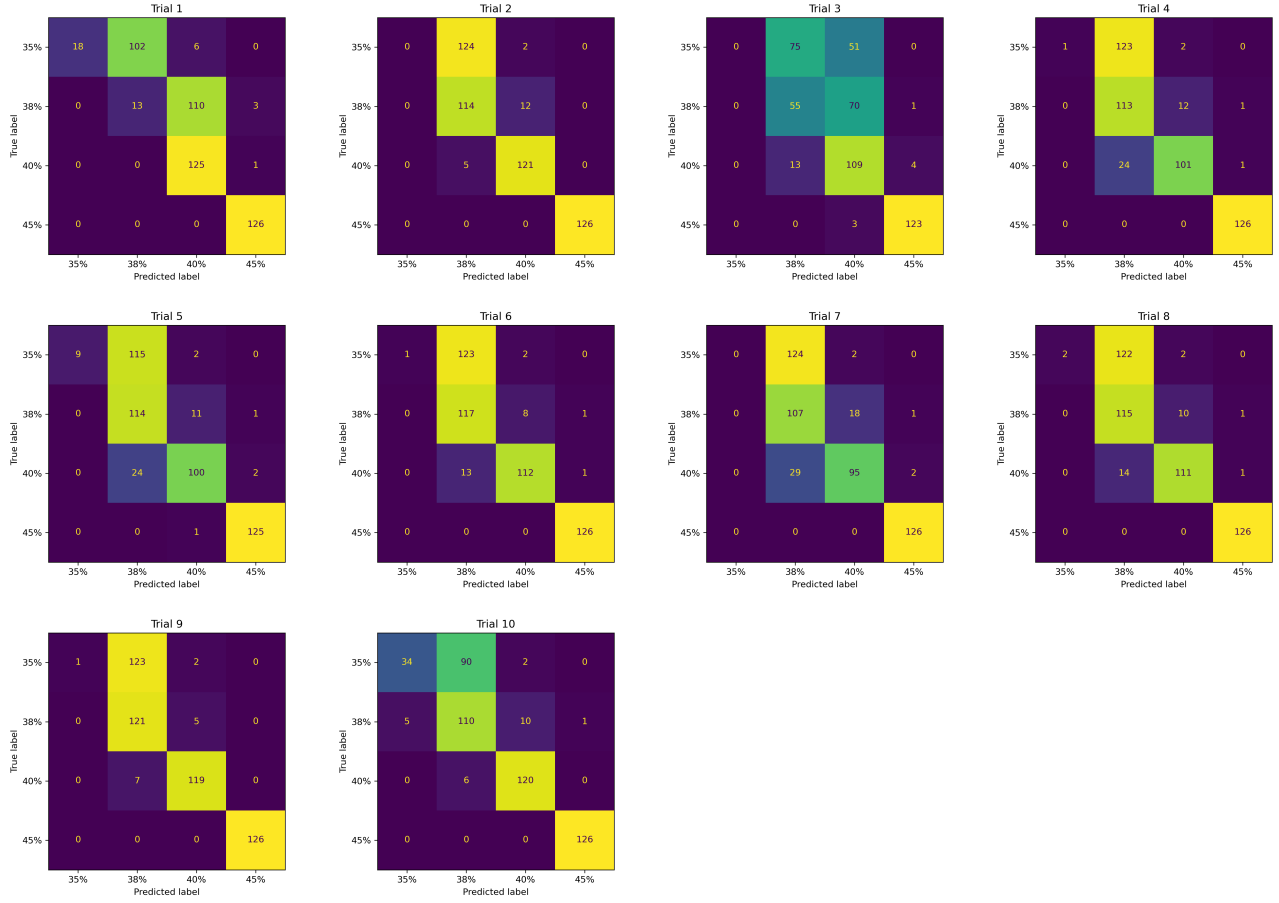


Figure 3: Confusion matrices for the simple CNN architecture on the training set.

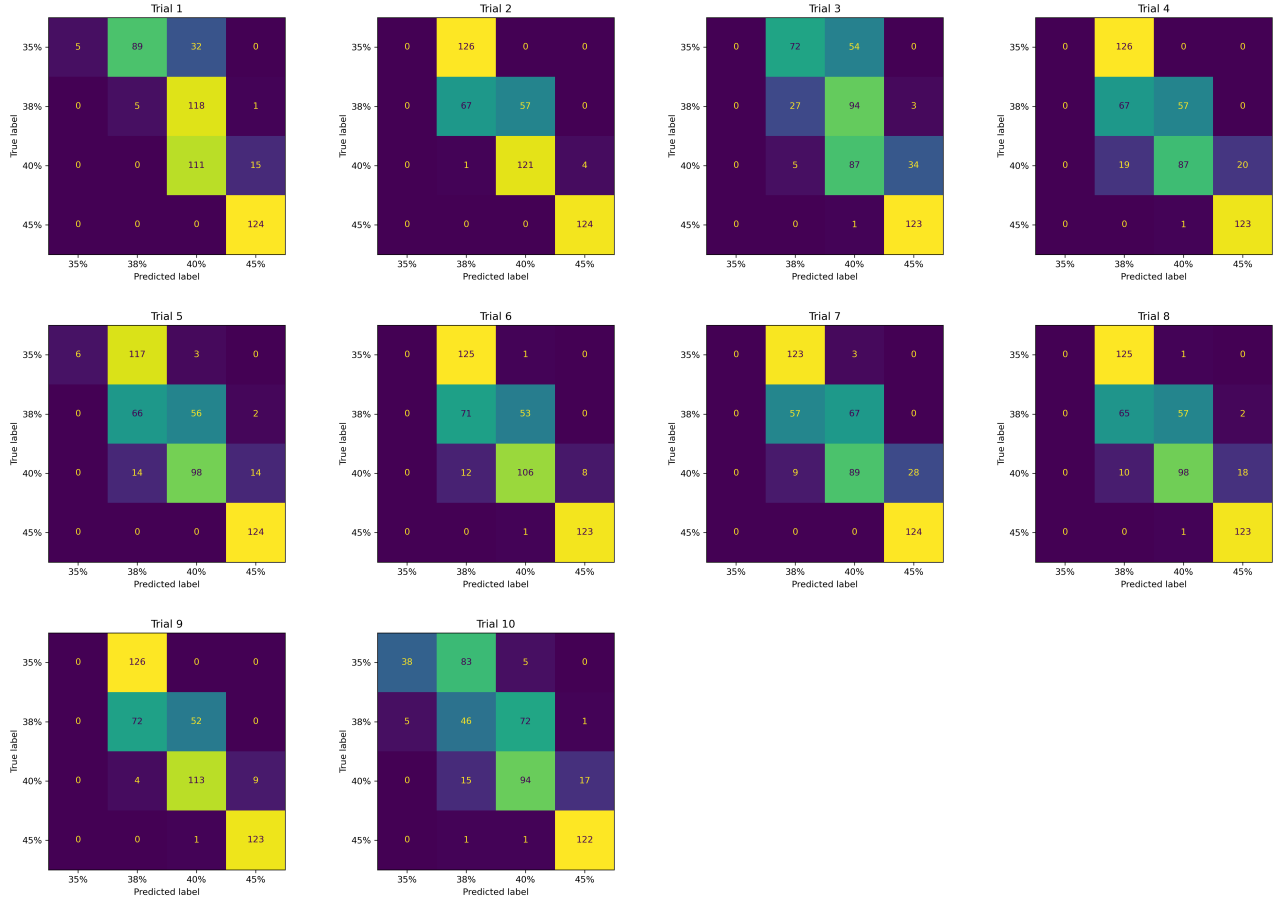


Figure 4: Confusion matrices for the simple CNN architecture on the test set.