SUPPLEMENTARY INFORMATION

Remote computing based Point-of-care colorimetric detection system with smartphone in complex ambient light conditions

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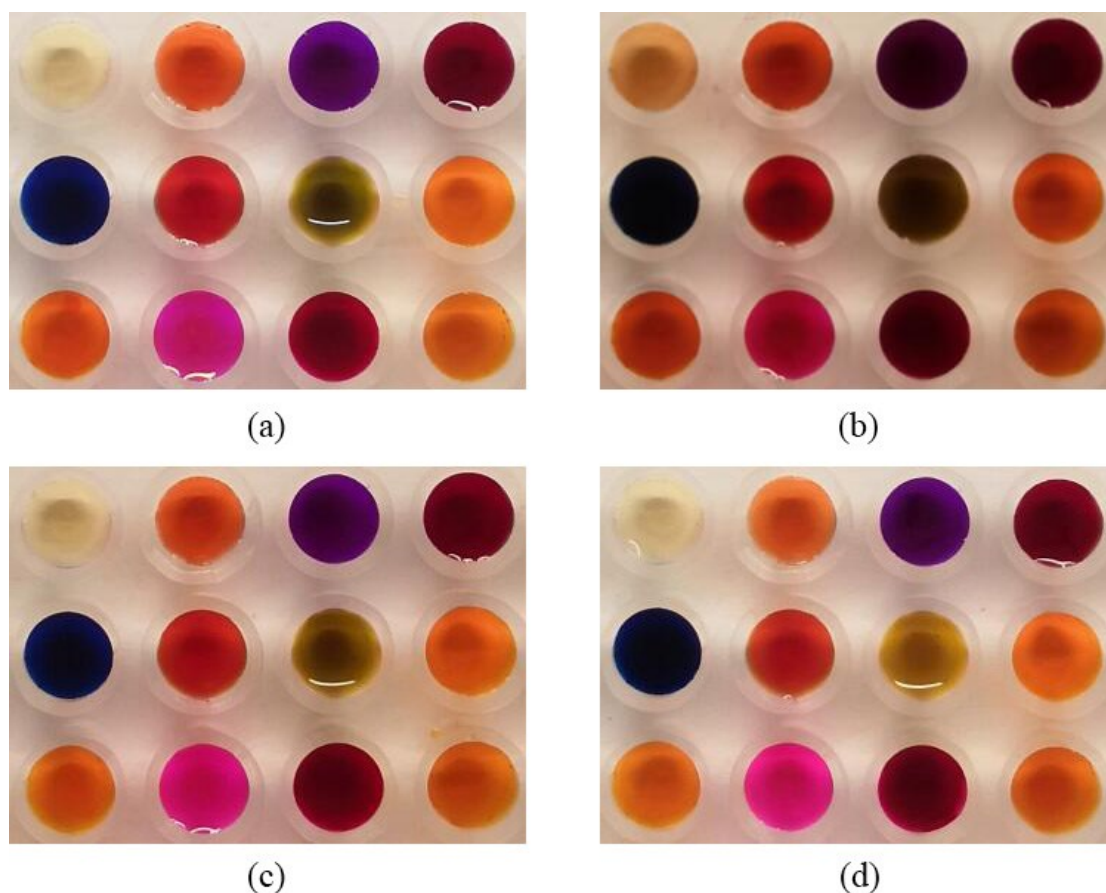c. School of Food and Biological Engineering, Jiangsu University, Zhenjiang 212013, PR China.

Fig. S1 Images after reaction of 4 different catechols (25mM): (a) 4-methylcatechol (b) 1,2,4-benzenetriol (c) Catechol (d) Dopamine hydrochloride.
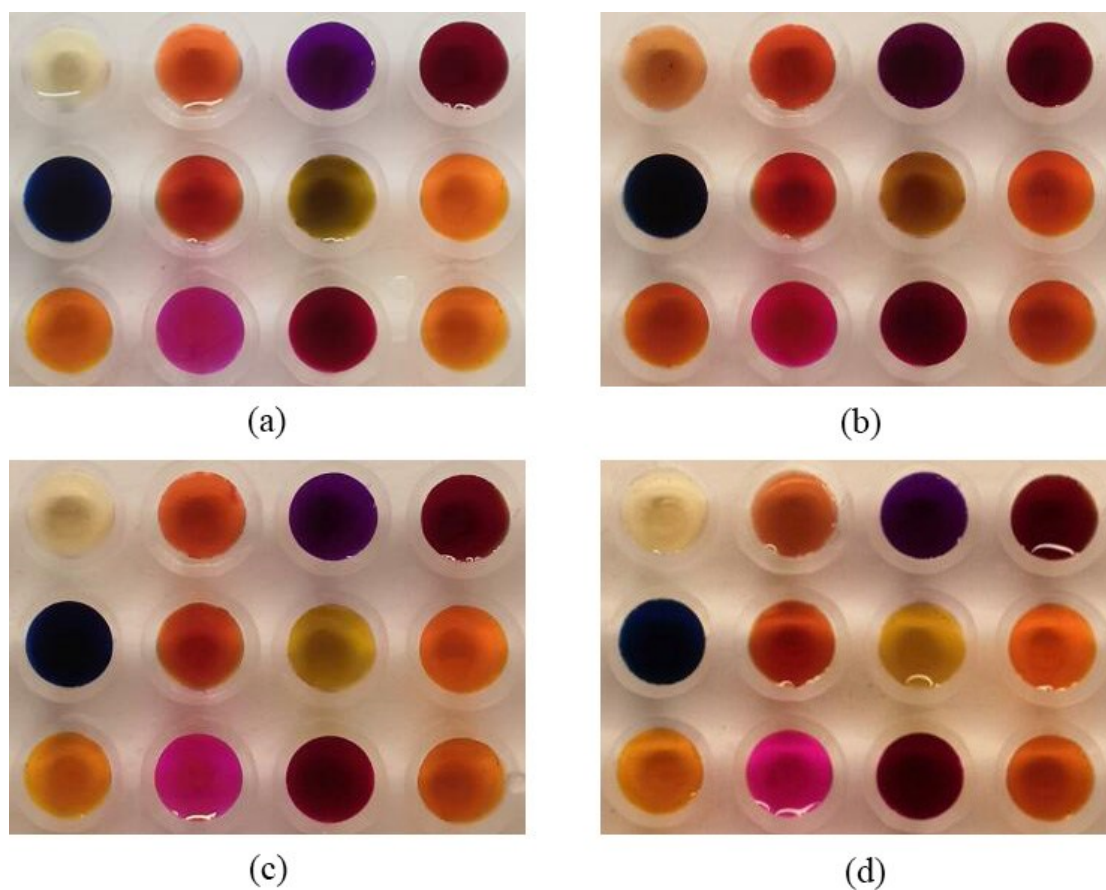
Fig. S2 Images after reaction of 4 different catechols (50mM): (a) 4-methylcatechol (b) 1,2,4-benzenetriol (c) Catechol (d) Dopamine hydrochloride.

Table S1 Calibration formulas of probe color calibration (25mM)

Serial number of the probe	Calibration formula	R^2
1	y=1.263x-31.297	0.921
2	y=0.956x+2.187	0.949
3	y=0.783x+3.645	0.819
4	y=0.818x-2.388	0.899
5	y=0.69x+5.898	0.615
6	y=0.967x-7.686	0.937
7	y=0.911x-4.092	0.908
8	y=0.992x-1.524	0.962
9	y=0.966x-4.609	0.951
10	y=0.887x-4.104	0.937
11	y=0.74x-1.19	0.895
12	y=0.979x-2.861	0.964

Table S2 Calibration formulas of probe color calibration (50mM)

Serial number of the probe	Calibration formula	R^2
1	y=0.952x+5.971	0.861
2	y=0.83x+2.048	0.952
3	y=0.421x+5.068	0.714
4	y=0.587x-0.658	0.838
5	y=0.669x+2.681	0.738
6	y=0.812x-4.806	0.973
7	y=0.788x+4.412	0.969
8	y=0.896x+4.297	0.975
9	y=0.843x+2.959	0.982
10	y=0.738x-2.084	0.966
11	y=0.514x+0.269	0.865
12	y=0.861x+1.054	0.958

Table S3 Classification accuracies after probe color calibration (25mM)

Analyte combination	Accuracy
4-methylcatechol 1,2,4-benzenetriol Catechol Dopamine hydrochloride	63.75%
4-methylcatechol 1,2,4-benzenetriol Catechol	68.3%
4-methylcatechol 1,2,4-benzenetriol Dopamine hydrochloride	91.7%
4-methylcatechol Catechol Dopamine hydrochloride	66.7%
1,2,4-benzenetriol Catechol Dopamine hydrochloride	68.3%

Table S4 Classification accuracies after probe color calibration (50mM)

Analyte combination	Accuracy
4-methylcatechol 1,2,4-benzenetriol Catechol Dopamine hydrochloride	66.7%
4-methylcatechol 1,2,4-benzenetriol Catechol	63.3%
4-methylcatechol 1,2,4-benzenetriol Dopamine hydrochloride	100%
4-methylcatechol Catechol Dopamine hydrochloride	66.7%
1,2,4-benzenetriol Catechol Dopamine hydrochloride	76.7%

Table S5 Classification accuracies in complex ambient light condition and after probe color calibration in terms of different probes combinations of 4-methylcatechol, 1,2,4-benzenetriol, Catechol and Dopamine hydrochloride (100mM, combination a).

Classification accuracies in complex ambient light condition	Classification accuracies after probe color calibration	Sequence number of probes combination
30%	43.5%	2
63%	74%	2,6
70.5%	73%	2,6,11
70.5%	77%	2,6,11,3*
72%	76.5%	2,6,11,3,10
74%	75.5%	2,6,11,3,10,9
66.5%	75.5%	2,6,11,3,10,9,1
65.5%	74.5%	2,6,11,3,10,9,1,4
66%	72%	2,6,11,3,10,9,1,4,7
65%	71.5%	2,6,11,3,10,9,1,4,7,12
65.5%	73.5%	2,6,11,3,10,9,1,4,7,12,8
60%	74.5%	2,6,11,3,10,9,1,4,7,12,8,5

Table S6 Classification accuracies in complex ambient light condition and after probe color calibration in terms of different probes combinations of 1,2,4-benzenetriol, Catechol and Dopamine hydrochloride (100mM, combination b).

Classification accuracies in complex ambient light condition	Classification accuracies after probe color calibration	Sequence number of probes combination
78.6%	92.7%	2
86.7%	96.7%	2,6*
87.3%	93.3%	2,6,11
86.7%	93.3%	2,6,11,3
86.7%	91.3%	2,6,11,3,10
90.7%	92.7%	2,6,11,3,10,9
83.3%	87.3%	2,6,11,3,10,9,1
82.7%	87.3%	2,6,11,3,10,9,1,4
82.7%	88%	2,6,11,3,10,9,1,4,7
81.3%	84.7%	2,6,11,3,10,9,1,4,7,12
81.3%	84.7%	2,6,11,3,10,9,1,4,7,12,8
82.7%	84.7%	2,6,11,3,10,9,1,4,7,12,8,5

Table S7 Classification accuracies in complex ambient light condition and after probe color calibration in terms of different probes combinations of 4-methylcatechol, Catechol and Dopamine hydrochloride (100mM, combination c).

Classification accuracies in complex ambient light condition	Classification accuracies after probe color calibration	Sequence number of probes combination
33%	35.3%	2
70%	72.6%	2,6
70.7%	68%	2,6,11
70.7%	74%	2,6,11,3
72%	77.3%	2,6,11,3,10*
72.7%	76%	2,6,11,3,10,9
62.7%	76.7%	2,6,11,3,10,9,1
62%	75.3%	2,6,11,3,10,9,1,4
61.3%	72%	2,6,11,3,10,9,1,4,7
59.3%	70%	2,6,11,3,10,9,1,4,7,12
60%	72%	2,6,11,3,10,9,1,4,7,12,8
60%	73.3%	2,6,11,3,10,9,1,4,7,12,8,5

Table S8 Classification accuracies in complex ambient light condition and after probe color calibration in terms of different probes combinations of 4-methylcatechol, 1,2,4-benzenetriol and Dopamine hydrochloride (100mM, combination d).

Classification accuracies in complex ambient light condition	Classification accuracies after probe color calibration	Sequence number of probes combination
78%	92.7%	2
79.3%	91.3%	2,6
87.3%	94%	2,6,11*
86.7%	93.3%	2,6,11,3
90.7%	89.3%	2,6,11,3,10
88.7%	90.7%	2,6,11,3,10,9
81.3%	90%	2,6,11,3,10,9,1
80.7%	90%	2,6,11,3,10,9,1,4
82%	90%	2,6,11,3,10,9,1,4,7
82.7%	91.3%	2,6,11,3,10,9,1,4,7,12
83.3%	90.7%	2,6,11,3,10,9,1,4,7,12,8
83.3%	90.7%	2,6,11,3,10,9,1,4,7,12,8,5

Table S9 Classification accuracies in complex ambient light condition and after probe color calibration in terms of different probes combinations of 4-methylcatechol, 1,2,4-benzenetriol and Catechol (100mM, combination e).

Classification accuracies in complex ambient light condition	Classification accuracies after probe color calibration	Sequence number of probes combination
39.3%	55.3%	2
56%	66.7%	2,6
66%	68.7%	2,6,11
66%	74%	2,6,11,3
67.3%	75.3%	2,6,11,3,10
70.7%	74%	2,6,11,3,10,9
68%	74%	2,6,11,3,10,9,1
67.3%	72.7%	2,6,11,3,10,9,1,4
66.7%	69.3%	2,6,11,3,10,9,1,4,7
66.7%	72.7%	2,6,11,3,10,9,1,4,7,12
66.7%	75.3%	2,6,11,3,10,9,1,4,7,12,8
67.3%	76.7%	2,6,11,3,10,9,1,4,7,12,8,5*

Table S10 Compression ratio of probes array number of different analytes combinations

Combination	Original number of probes array	Optimal number of probes array	Compression ratio of probes array number
a	12	4	66.7%
b	12	2	83.3%
c	12	5	58.3
d	12	3	75%
e	12	12	0%