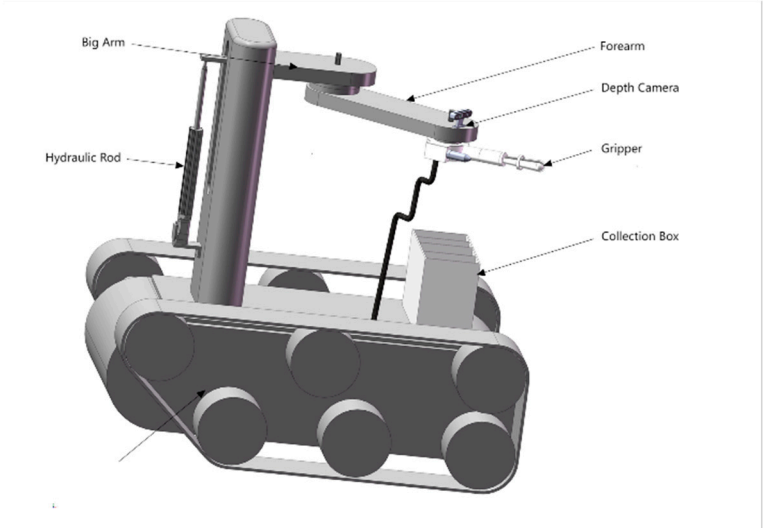
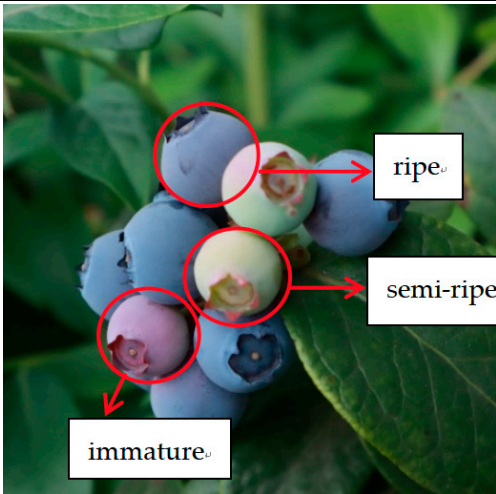
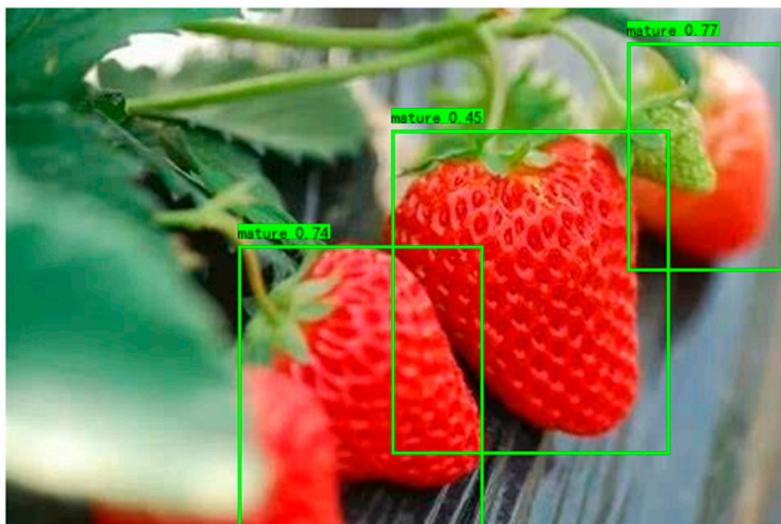
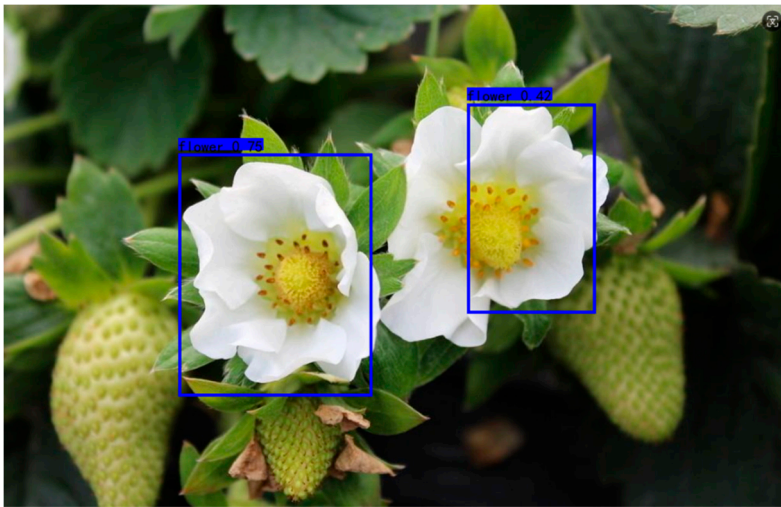
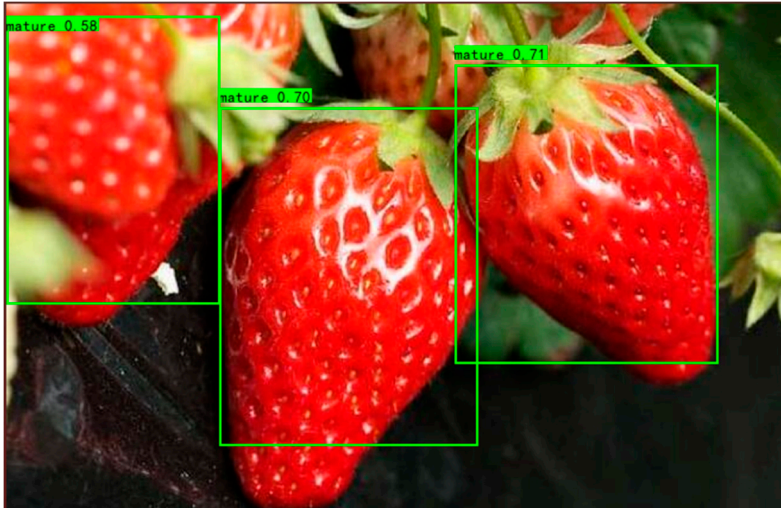


# The Identification, Separation, and Clamp Function of an Intelligent Flexible Blueberry Picking Robot

Xiaohong Liu <sup>1,2</sup>, Peifu Li <sup>2,\*</sup>, Bo Hu <sup>3</sup>, Hao Yin <sup>2</sup>, Zexian Wang <sup>2</sup>, Wenxin Li <sup>2</sup>, Yanxia Xu <sup>2</sup> and Baogang Li <sup>1,2</sup>

Supplemental Table

Drawing		Description
 <p>Figure S1. Blueberry picking robot structure diagram.</p>		
 <p>Figure S2. Schematic diagram of blueberry maturity grade.</p>		



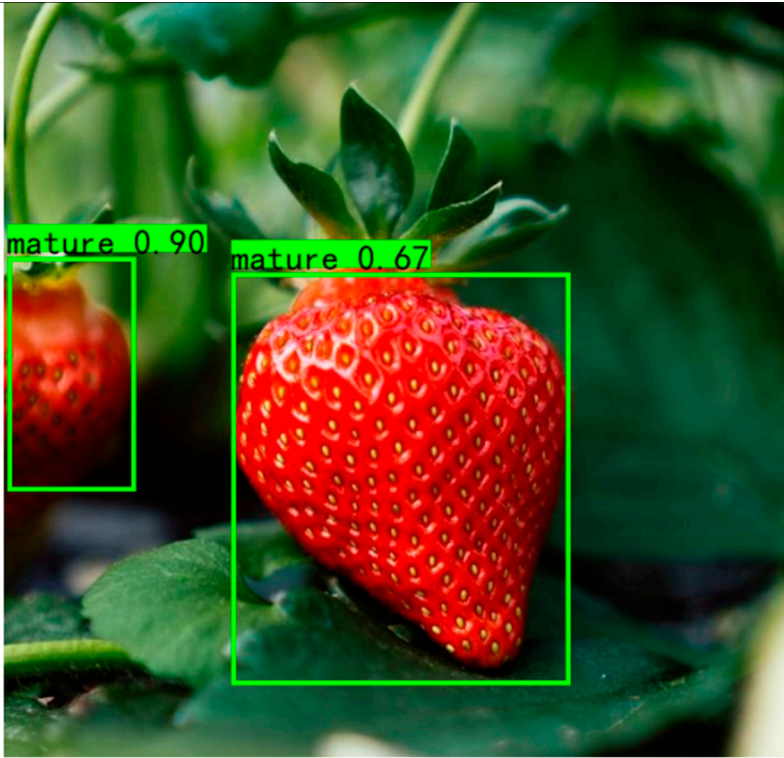


Figure S3. Strawberry data set labeling diagram.

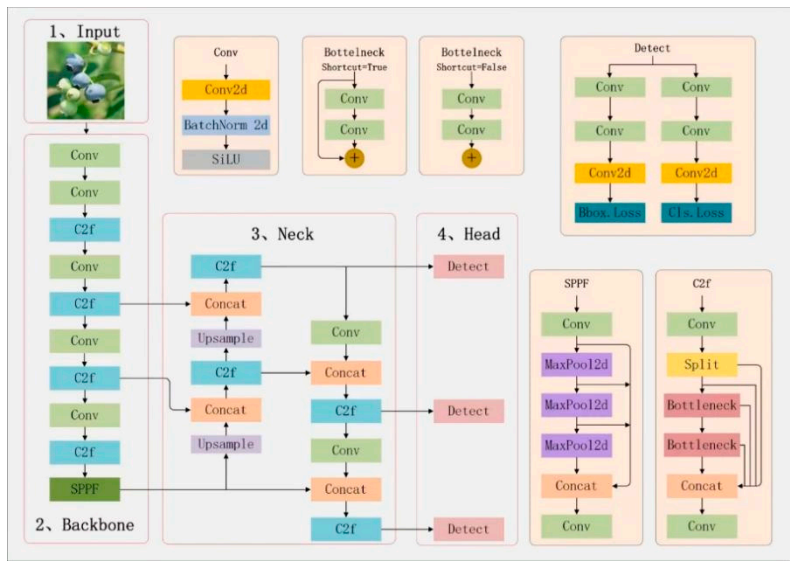


Figure S4. YOLOv8 model structure.

The input images are first enhanced by mosaic data at the input end to increase the data complexity. Then, features are gradually extracted by the Backbone to obtain feature maps of different scales and then fused by the Neck module. Finally, the Head module adjusts the size of the feature map according to the task requirements and outputs the pre-diction results.

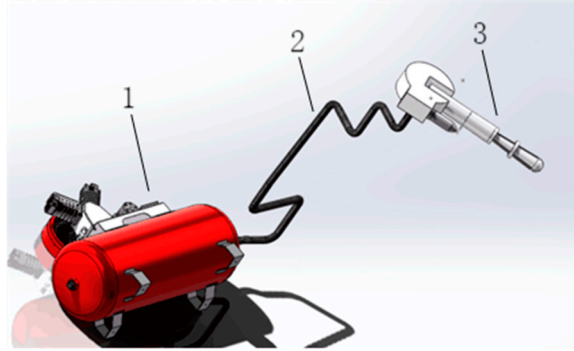


Figure S5. Air injection device.

- 1- air compressor;
- 2- connecting pipe;
- 3- nozzle.



Figure S6. Part of the nozzle prototype.

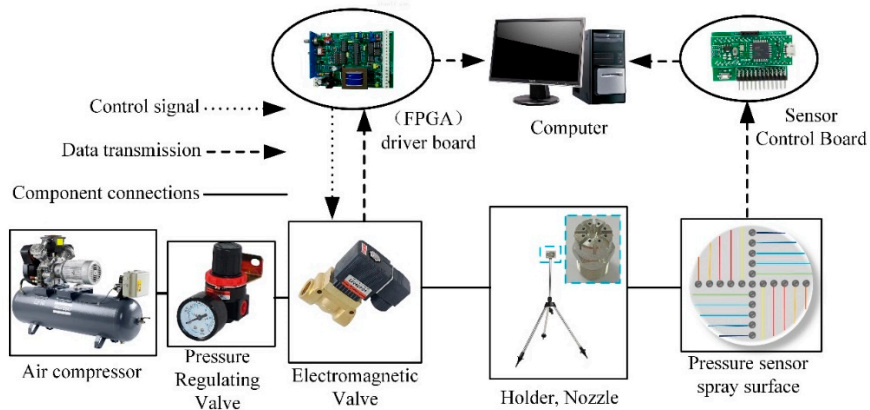


Figure S7. Test bench diagram.

	Interference type	Initial spacing (mm)	Blowing interval (mm)	mature fruit type I; red fruit type II; green fruit type III.
1	II	0.34	5.67	
2	II,III	1.40	6.11	
3	I,III	0.21	5.42	
4	II,III	1.32	5.95	
5	II,III	0.38	5.78	
6	I	0.00	5.08	
7	II	1.68	6.24	
8	II	0.71	6.01	
9	II,III	1.61	6.53	
10	II	0.15	5.88	
11	I	0.00	5.34	
12	II	0.00	5.62	
13	II,III	1.37	6.36	
14	I	0.56	5.26	

15	II	0.00	5.73
16	I,II	0.00	5.11
17	II	0.17	5.99
18	I,II	1.53	6.89
19	II	1.34	6.42
20	I	1.00	5.81
21	II,III	0.98	6.17
22	I	0.82	5.65
23	III	0.00	4.96
24	II	0.56	6.06
25	I	0.00	5.21
26	II,III	1.21	6.12
27	II	0.43	5.89
28	III	0.00	4.76
29	III	0.28	5.43
30	I	0.00	5.55
Mean value		0.60	5.766
Figure S8. Part of the nozzle prototype.			