

- Alternative 1

Drone in Farming
- Alternative 2

Control Based Station
- Alternative 3

Using Robot with Computer Vision Capability
- Alternative 4

Mounting Camera with Computer Vision Technology

		Drone in Farming	Control Based Station	Using Robot with Computer Vision Capability	Mounting Camera with Computer Vision Technology
Criteria 1	Initial Acquiring Cost (lower better)	Popular model such as DJI Drone (Agras T30) cost around \$15,000	Variety (300-1500)	Around \$25000 with industrial tracker like robot (Can be finance)	DIY system with high resolution would cost \$500-\$1000
Criteria 2	Required skills (lower training hour better)	Training for operating the drone, time spend for Agriculture Application is 10-20 hours	1 months to familiarize with control and maintain	One or two months due to routinely modification of part for different need	Half hour to learn download and upload images.
Criteria 3	Availability of aftermarket parts	Yes, but OEM parts are shipped from international market such as djiemparts.com	Yes, available for Amazon Marketplace	No, Parts are limited and depend on vendors to decide to produce. Mass production only depend on recall of system	Yes, replacing may be more feasible.
Criteria 4	Capability for modifications (upgradability)	Yes, different camera set can bes mounted on the drone.	Yes, battery can be upgraded to prolong the operation and support more sensors	Unknown, propriety may prevent system modifaicao.	Yes, higher resolution of camera can improve AI decision.

	Initial Acquiring Cost (lower better)	Required skills (lower training hour better)	Availability of aftermarket parts	Capability for modifications (upgradability)	
Initial Acquiring Cost (lower better)	1.000	3.000	0.167	0.167	
Required skills (lower training hour better)	0.333	1.000	1.000	0.333	
Availability of aftermarket parts	6.000	1.000	1.000	5.000	
Capability for modifications (upgradability)	6.000	3.000	0.200	1.000	
sum	13.333	8.000	2.367	6.500	
Normalized A	0.075	0.375	0.070	0.026	0.137
	0.025	0.125	0.423	0.051	0.156
	0.450	0.125	0.423	0.769	0.442
	0.450	0.375	0.085	0.154	0.266
					1.000

Initial Acquiring Cost (lower better)	Drone in Farming	Control Based Station	Using Robot with Computer Vision Capability	Mounting Camera with Computer Vision Technology	
Drone in Farming	1	0.111111111	0.333333333	0.166666667	
Control Based Station	9	1	2	8	
Using Robot with Computer Vision Capability	3	0.5	1	0.25	
Mounting Camera with Computer Vision Technology	6	0.125	4	1	
sum	19	1.736111111	7.33333333	9.41666667	
Normalize Cost Table	0.052631579	0.064	0.045454545	0.017699115	0.04494631
	0.473684211	0.576	0.272727273	0.849557522	0.542992251
	0.157894737	0.288	0.136363636	0.026548673	0.152201761
	0.315789474	0.072	0.545454545	0.10619469	0.259859677
					1

Required skills (lower training hour better)	Drone in Farming	Control Based Station	Using Robot with Computer Vision Capability	Mounting Camera with Computer Vision Technology	
Drone in Farming	1	2	5	1	
Control Based Station	0.5	1	2	0.5	
Using Robot with Computer Vision Capability	0.2	0.5	1	0.25	
Mounting Camera with Computer Vision Technology	1	2	4	1	
sum	2.7	5.5	12	2.75	
Normalize Cost Table	0.37037037	0.363636364	0.416666667	0.363636364	0.378577441
	0.185185185	0.181818182	0.166666667	0.181818182	0.178872054
	0.074074074	0.090909091	0.083333333	0.090909091	0.084806397
	0.37037037	0.363636364	0.333333333	0.363636364	0.357744108
					1

Availability of aftermarket parts	Drone in Farming	Control Based Station	Using Robot with Computer Vision Capability	Mounting Camera with Computer Vision Technology	
Drone in Farming	1	0.25	3	0.5	
Control Based Station	4	1	3	2	
Using Robot with Computer Vision Capability	0.333333333	0.333333333	1	0.25	
Mounting Camera with Computer Vision Technology	2	2	4	1	
sum	7.33333333	3.58333333	11	3.75	
Normalize Cost Table	0.136363636	0.069767442	0.272727273	0.133333333	0.153047921
	0.545454545	0.279069767	0.272727273	0.533333333	0.40764623
	0.045454545	0.093023256	0.090909091	0.066666667	0.07401339
	0.272727273	0.558139535	0.363636364	0.266666667	0.365292459
					1

Capability for modifications (upgradability)	Drone in Farming	Control Based Station	Using Robot with Computer Vision Capability	Mounting Camera with Computer Vision Technology	
Drone in Farming	1	0.333333333	2	0.333333333	
Control Based Station	3	1	3	1	
Using Robot with Computer Vision Capability	0.5	0.333333333	1	0.333333333	
Mounting Camera with Computer Vision Technology	3	1	3	1	
sum	7.5	2.66666667	9	2.66666667	
Normalize Cost Table	0.133333333	0.125	0.222222222	0.125	0.151388889
	0.4	0.375	0.333333333	0.375	0.370833333
	0.066666667	0.125	0.111111111	0.125	0.106944444
	0.4	0.375	0.333333333	0.375	0.370833333
					1

	Initial Acquiring Cost (lower better)	Required skills (lower training hour better)	Availability of aftermarket parts	Capability for modifications (upgradability)	Alternative Selection
Weight of Criteria	0.137	0.156	0.442	0.266	
Drone in Farming	0.04494631	0.378577441	0.153047921	0.151388889	0.173021601
Control Based Station	0.542992251	0.178872054	0.40764623	0.370833333	0.380658515
Using Robot with Computer Vision Capa	0.152201761	0.084806397	0.07401339	0.106944444	0.095124897
Mounting Camera with Computer Vision	0.259859677	0.357744108	0.365292459	0.370833333	0.351194988