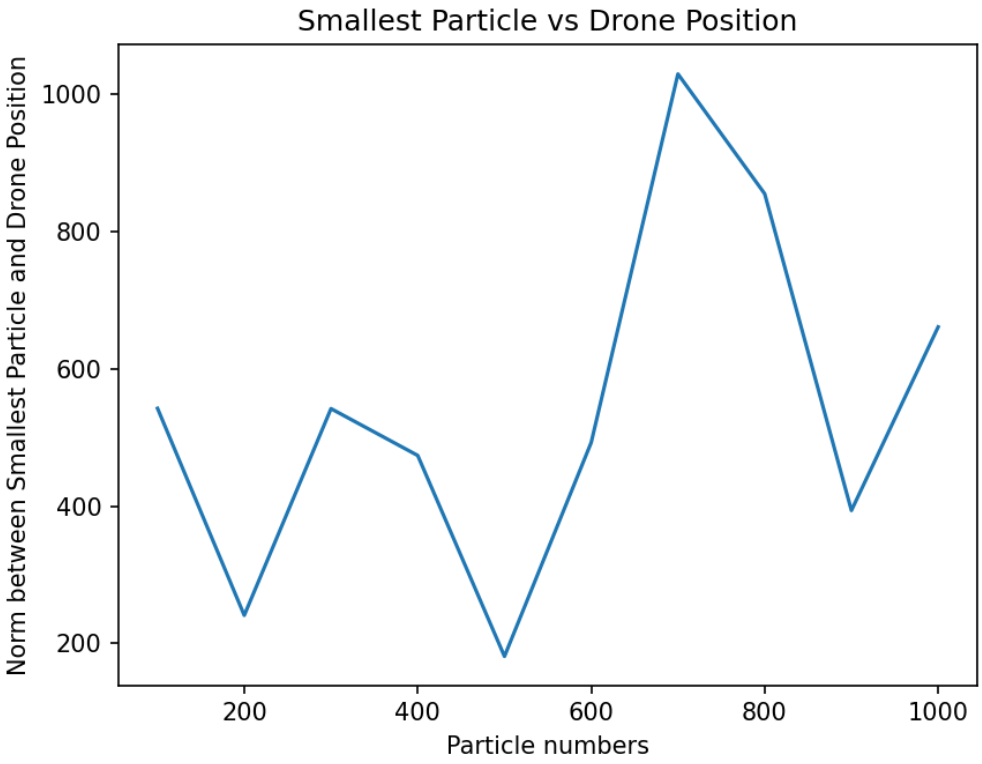
Quantitative result

The report presents the quantitative results obtained from applying the particle filter with color histograms method to a given sequence. The performance was compared under different particle numbers and crop sizes, with 500 particles and 75*75 crop size being the best choices. The color histogram approach was found to be much better, and adding noise to sensors and images resulted in a decrease in performance.

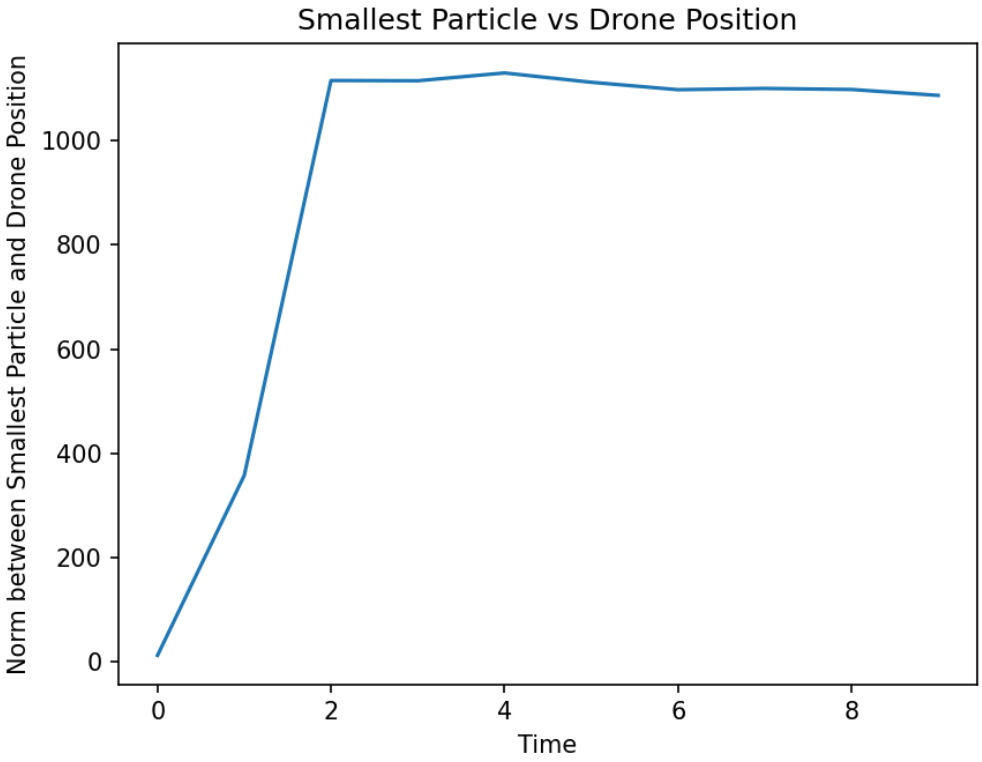
Comparing Particle Filtering Methods with Different Particle Numbers and 75 Crop Size



Method: **Normal Particle filter**, Particle size: 500, Crop size: 50x50

Comparison metric: Norm between the closest particle and the drone position

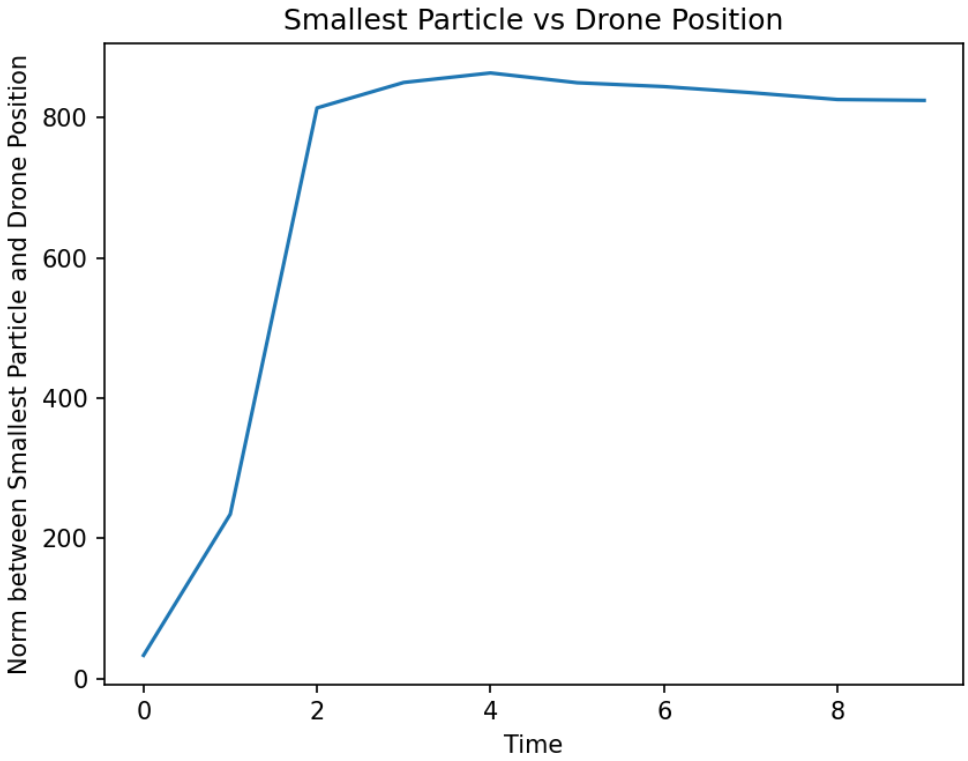
Time vs Performance



Final distance: 1086.257709366359

Method: **Normal Particle filter**, Particle size: 500, Crop size: 75x75

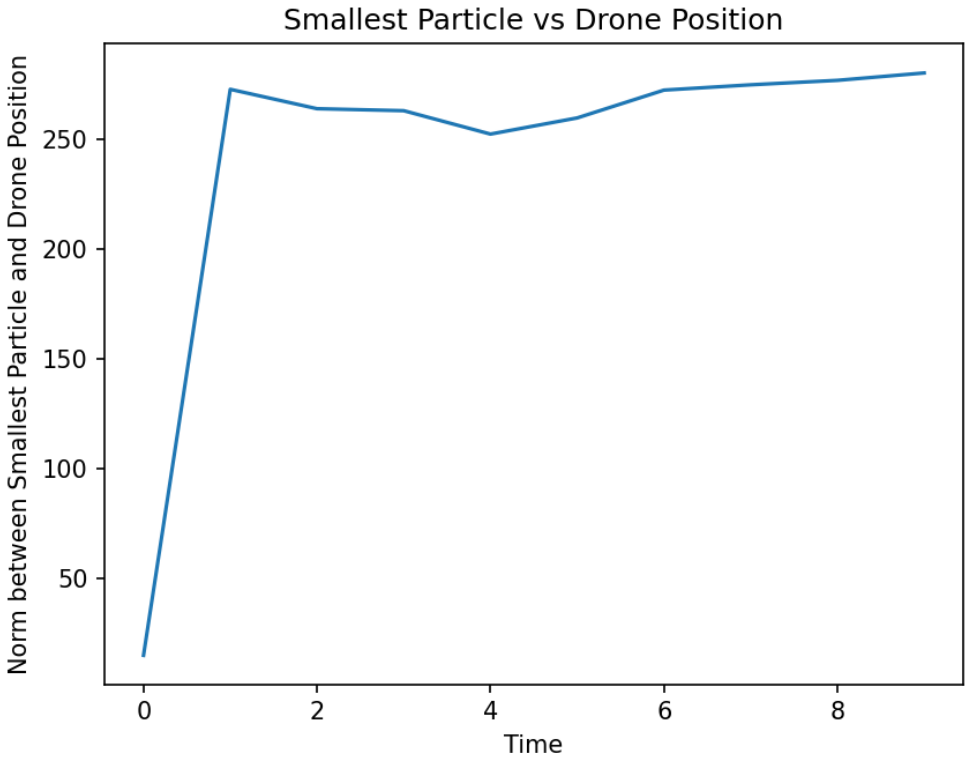
Time vs Performance



Final distance: 824.3261927699253

Method: **Particle filter with color histograms**, Particle size: 500, Crop size: 50x50

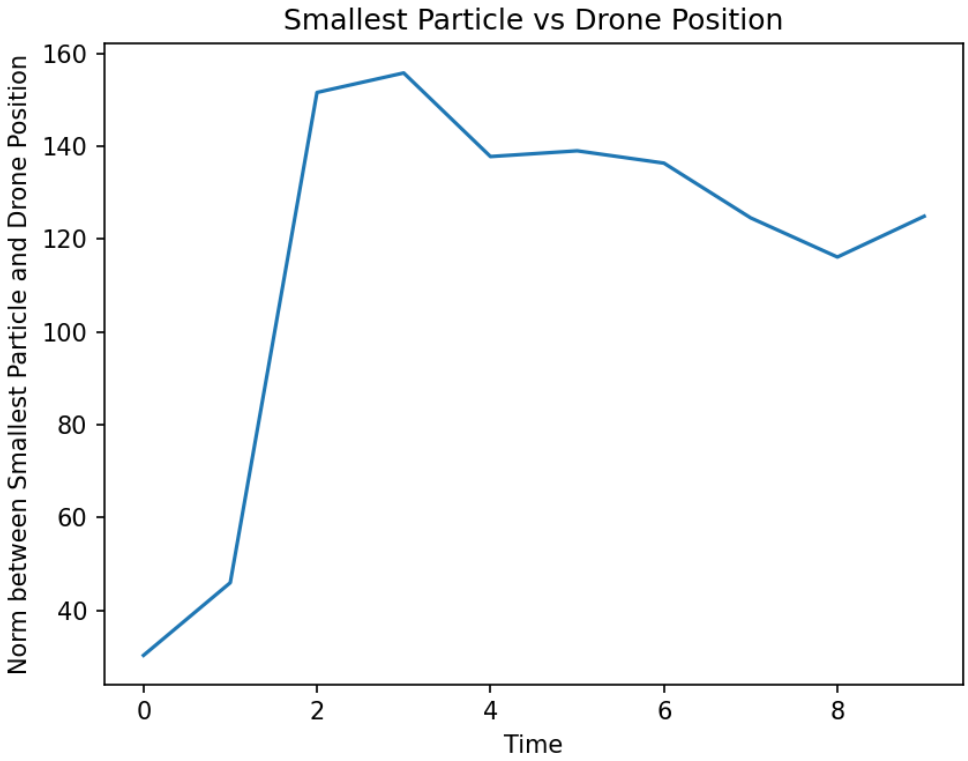
Time vs Performance



Final distance: 279.97645806458394

Method: **Particle filter with color histograms**, Particle size: 500, Crop size: 75x75

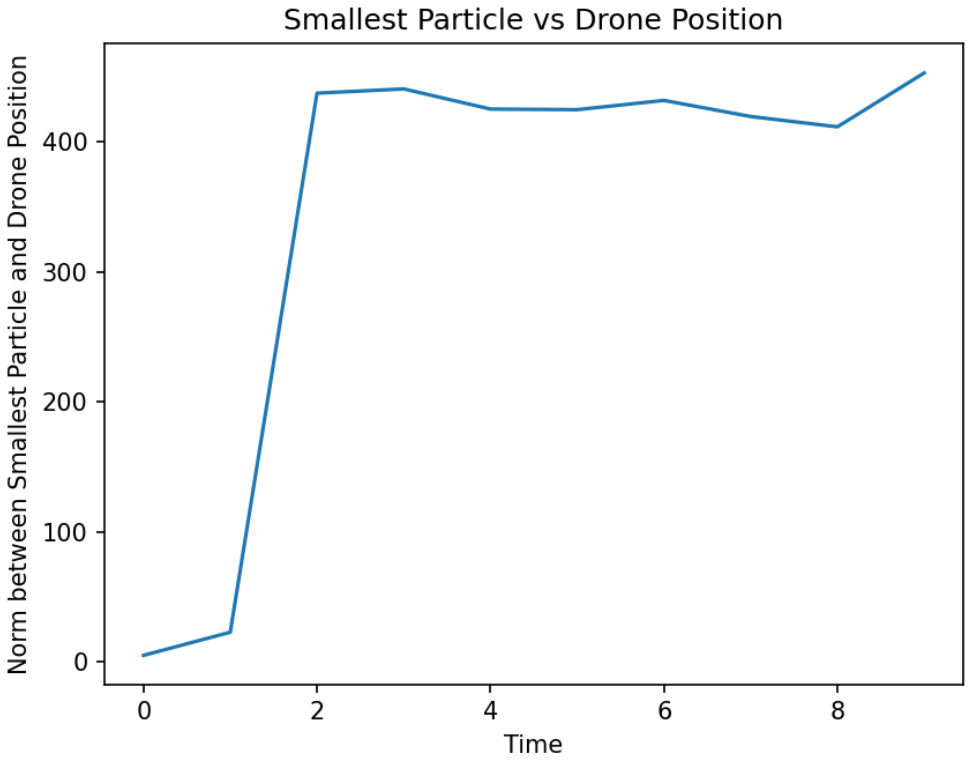
Time vs Performance



Final distance: 124.94851043757917

Method: **Particle filter with color histograms and adding noise to sensors**, Particle size: 500, Crop size: 75x75

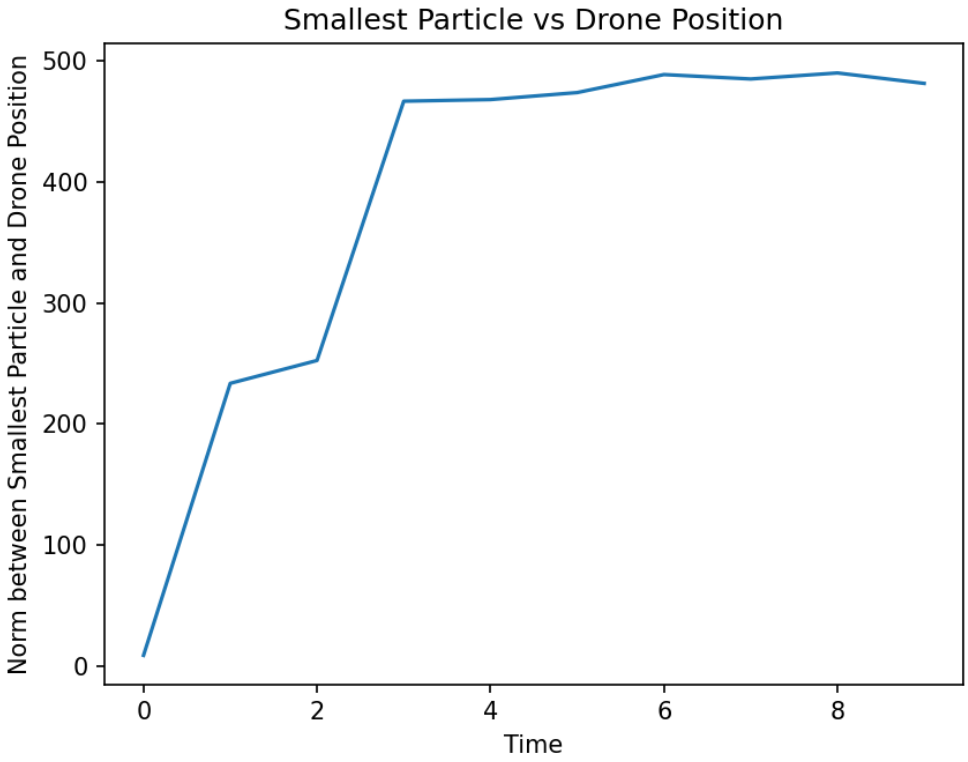
Time vs Performance



Final distance: 452.7752216322133

Method: **Particle filter with color histograms and adding noise to images**, Particle size: 500, Crop size: 75x75

Time vs Performance



Final distance: 481.4109152180006

In conclusion, based on the same sequence of experiments conducted in my report, I compared the performance of particle filtering with different particle numbers and found that 500 particles were the best option. Next, I compared the performance of the normal way with crop sizes of 5050 and 7575 and found that 7575 crop size was better. I then used color histograms with both crop sizes and found that the color histogram was significantly better and that 7575 was still the better crop size. Furthermore, I added noise to sensors and images, but the results were worse than without noise.