

EE496 Homework 2 - Evolutionary Algorithms

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Experimental Work

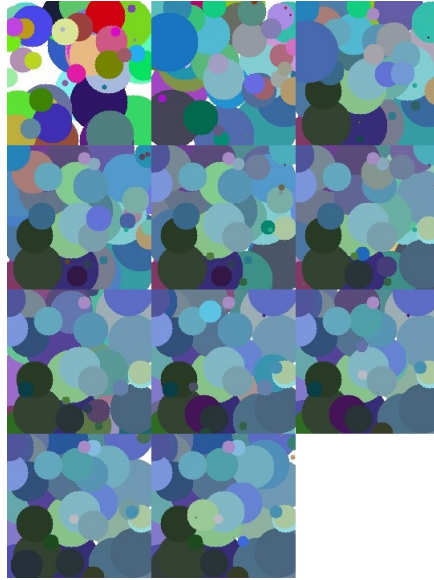


Figure 1: The best of individuals for the **default** parameters

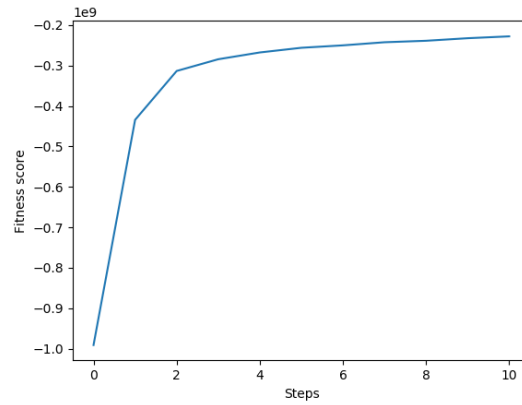


Figure 2: The fitness curve for the **default** parameters

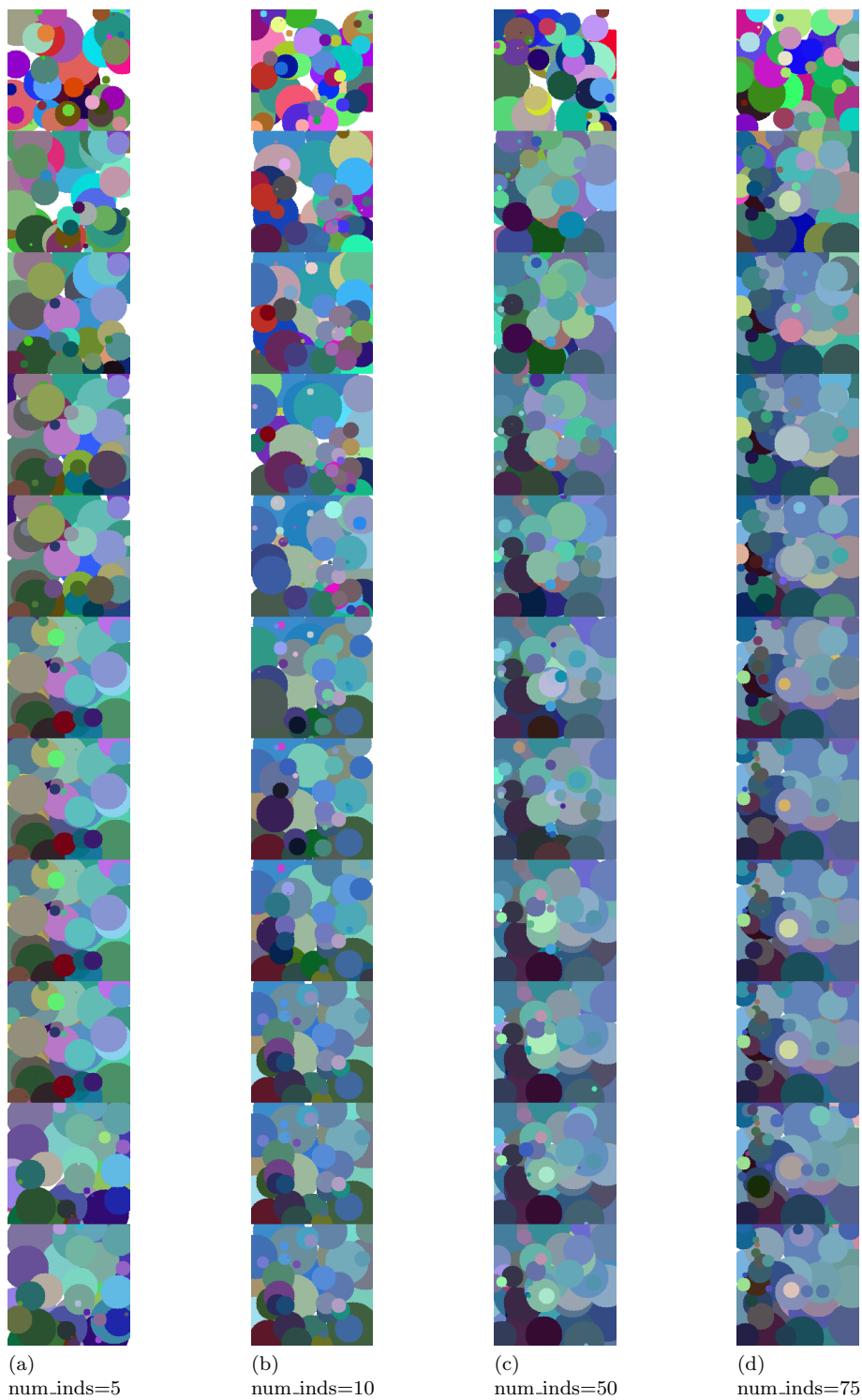
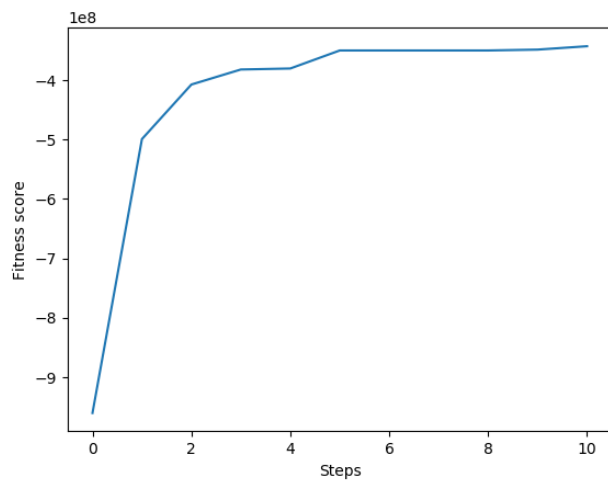
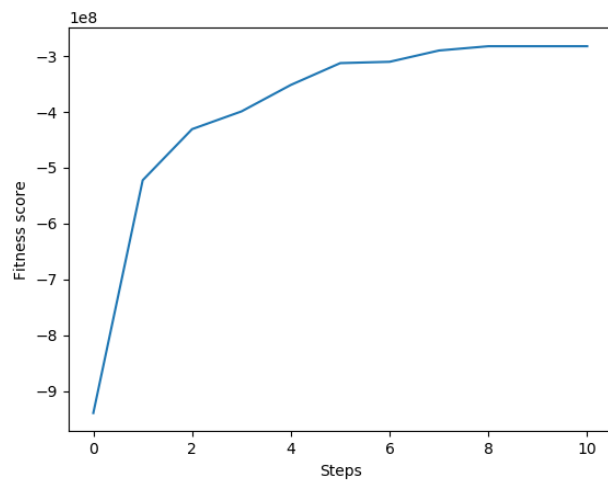


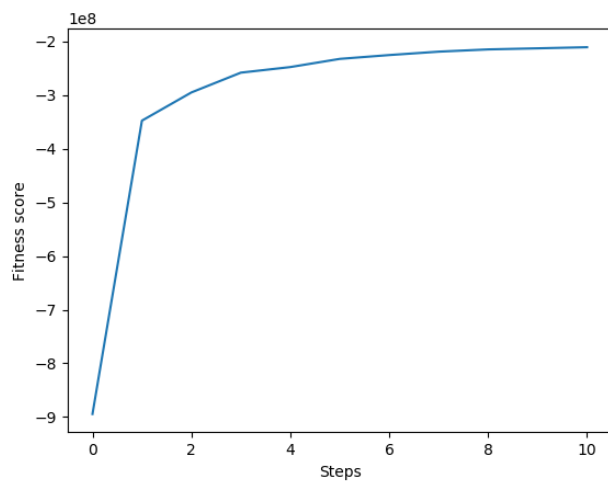
Figure 3: The image of the best individual in the population at every 1000th generation for ($\langle \text{num_inds} \rangle$)=5,10,50,75



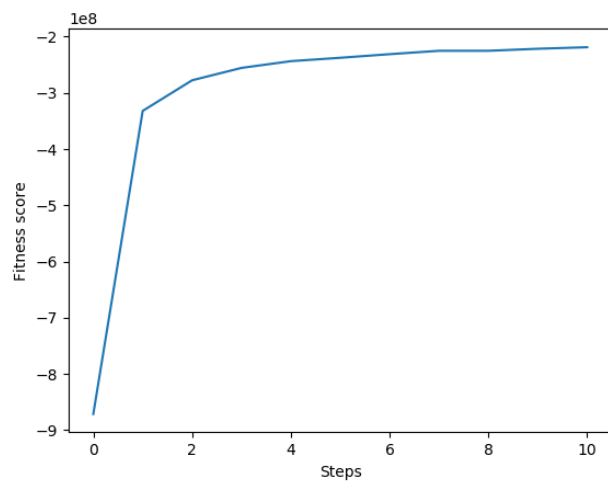
(a) num_inds=5



(b) num_inds=10



(c) num_inds=50



(d) num_inds=75

Figure 4: The fitness plot from generation 1 to generation 10000 for ($\langle \text{num_inds} \rangle$)=5,10,50,75

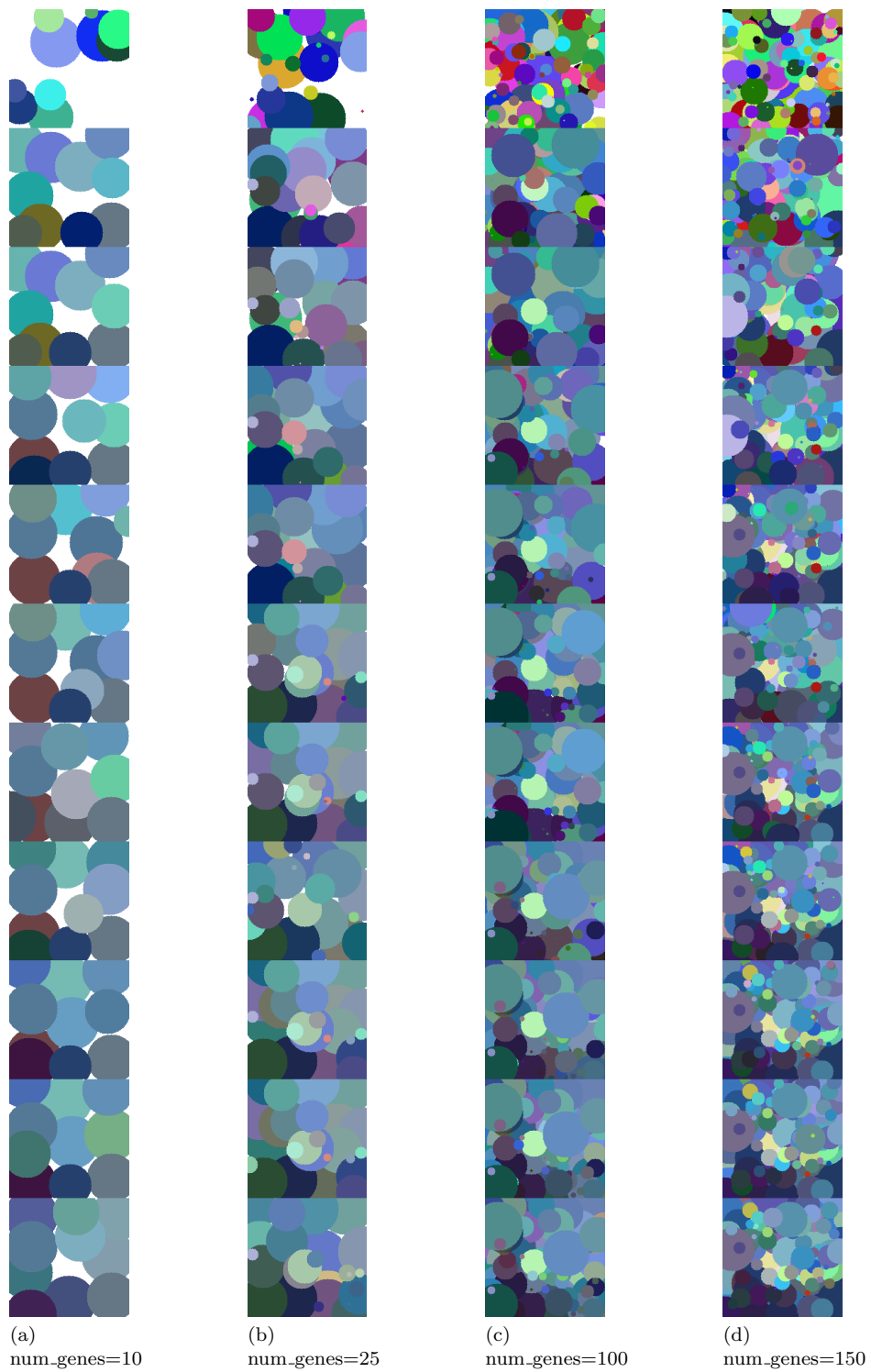
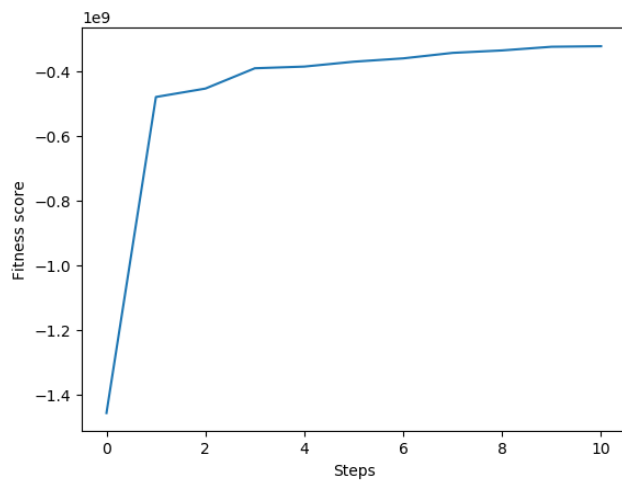
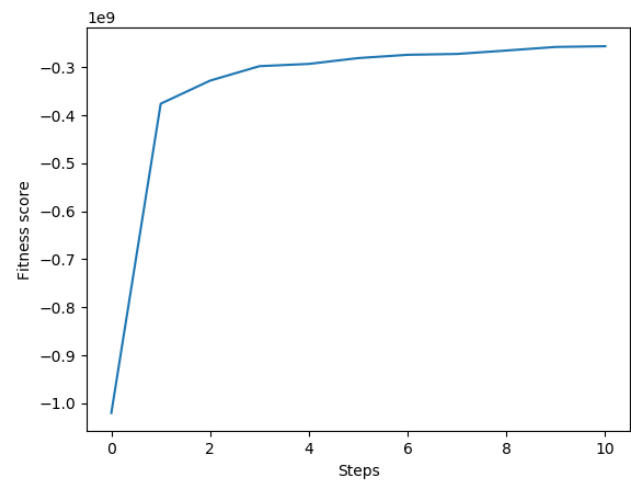


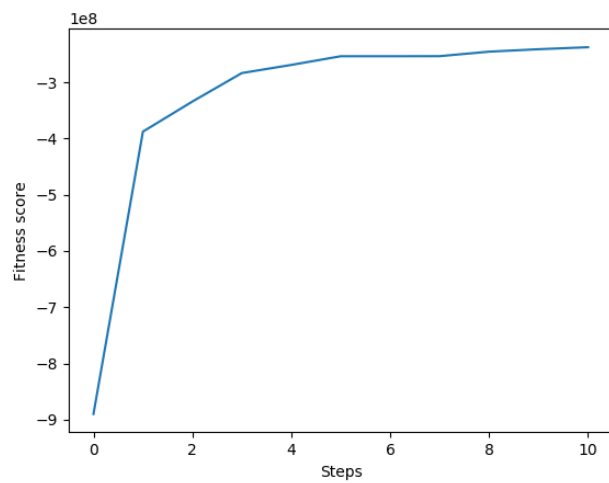
Figure 5: The image of the best individual in the population at every 1000th generation for ($\langle \text{num_genes} \rangle$)=10,25,100,150



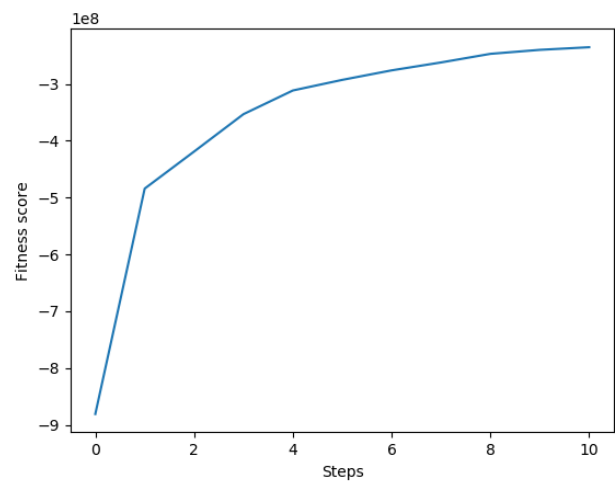
(a) num_genes=10



(b) num_genes=25



(c) num_genes=100



(d) num_genes=150

Figure 6: The fitness plot from generation 1 to generation 10000 for ($\langle \text{num_genes} \rangle$)=10,25,100,150

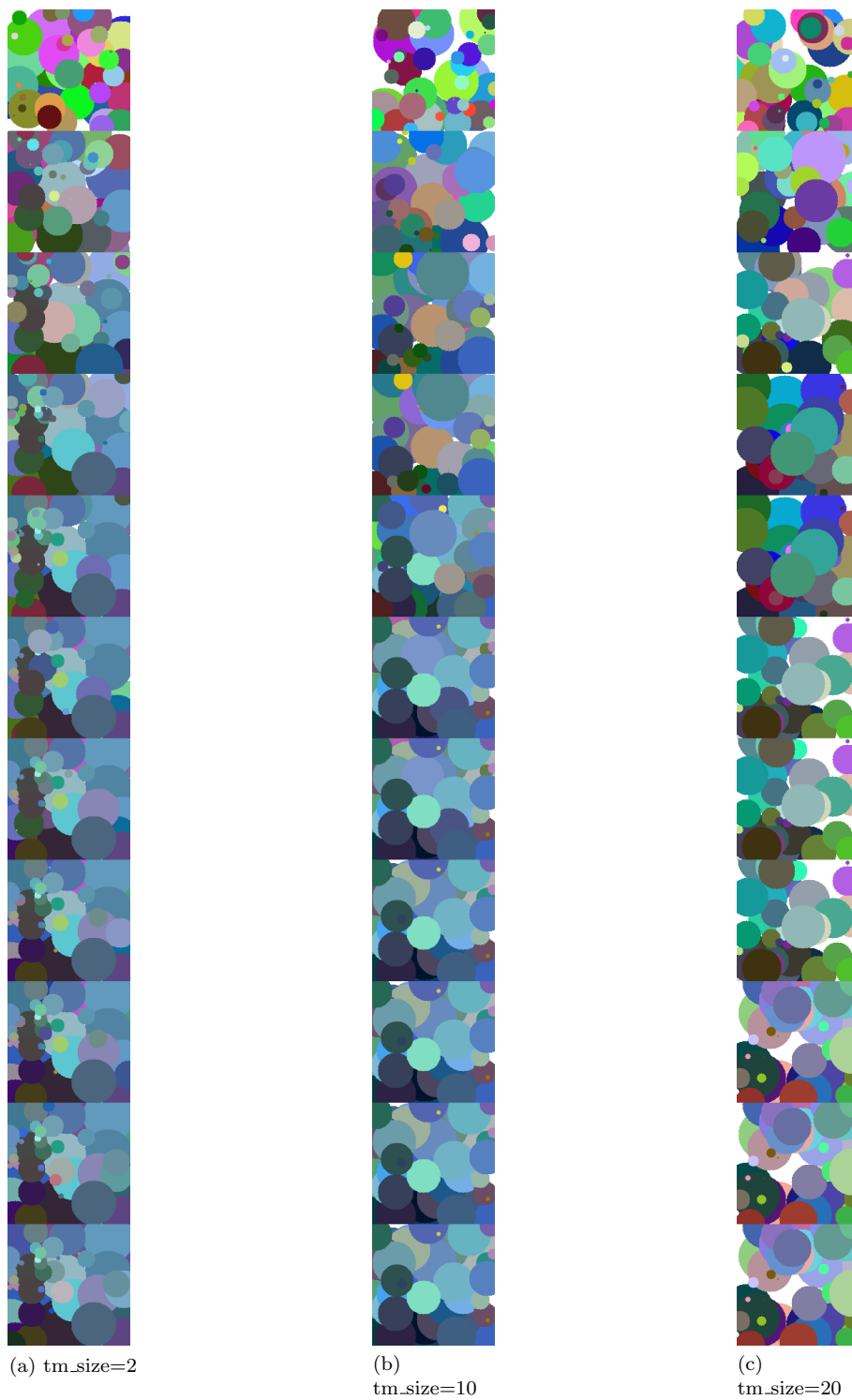
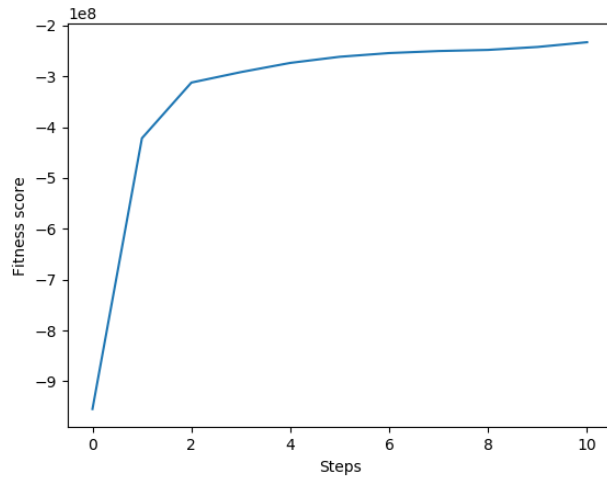
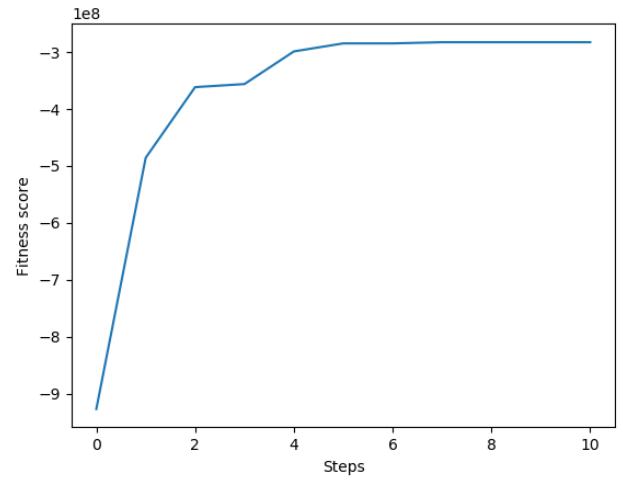


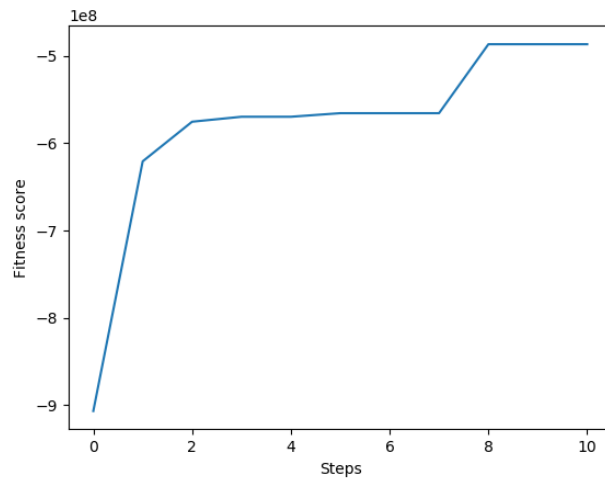
Figure 7: The image of the best individual in the population at every 1000th generation for $\langle tm_size \rangle = 2, 10, 20$



(a) $tm_size=2$



(b) $tm_size=10$



(c) $tm_size=20$

Figure 8: The fitness plot from generation 1 to generation 10000 for $(\langle tm_size \rangle)=2, 10, 20$

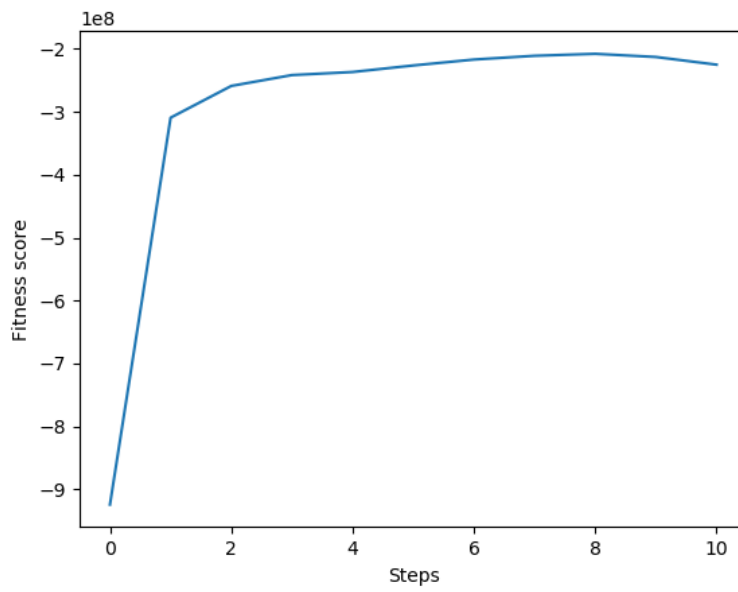


(a)
frac_elites=0.05

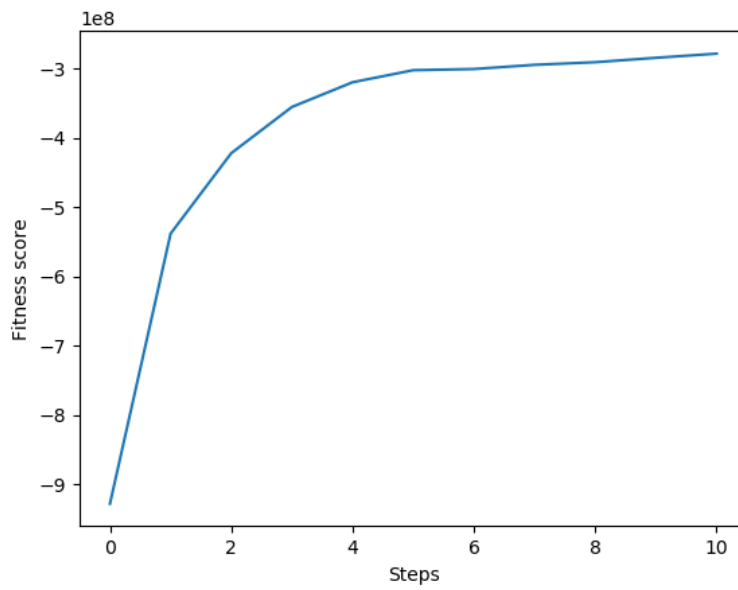


(b)
frac_elites=0.4

Figure 9: The image of the best individual in the population at every 1000th generation for $(\langle \text{frac_elites} \rangle) = 0.05, 0.4$



(a) $\text{frac_elites}=0.05$



(b) $\text{frac_elites}=0.4$

Figure 10: The image of the best individual in the population at every 1000th generation for (frac_elites)=0.05, 0.4

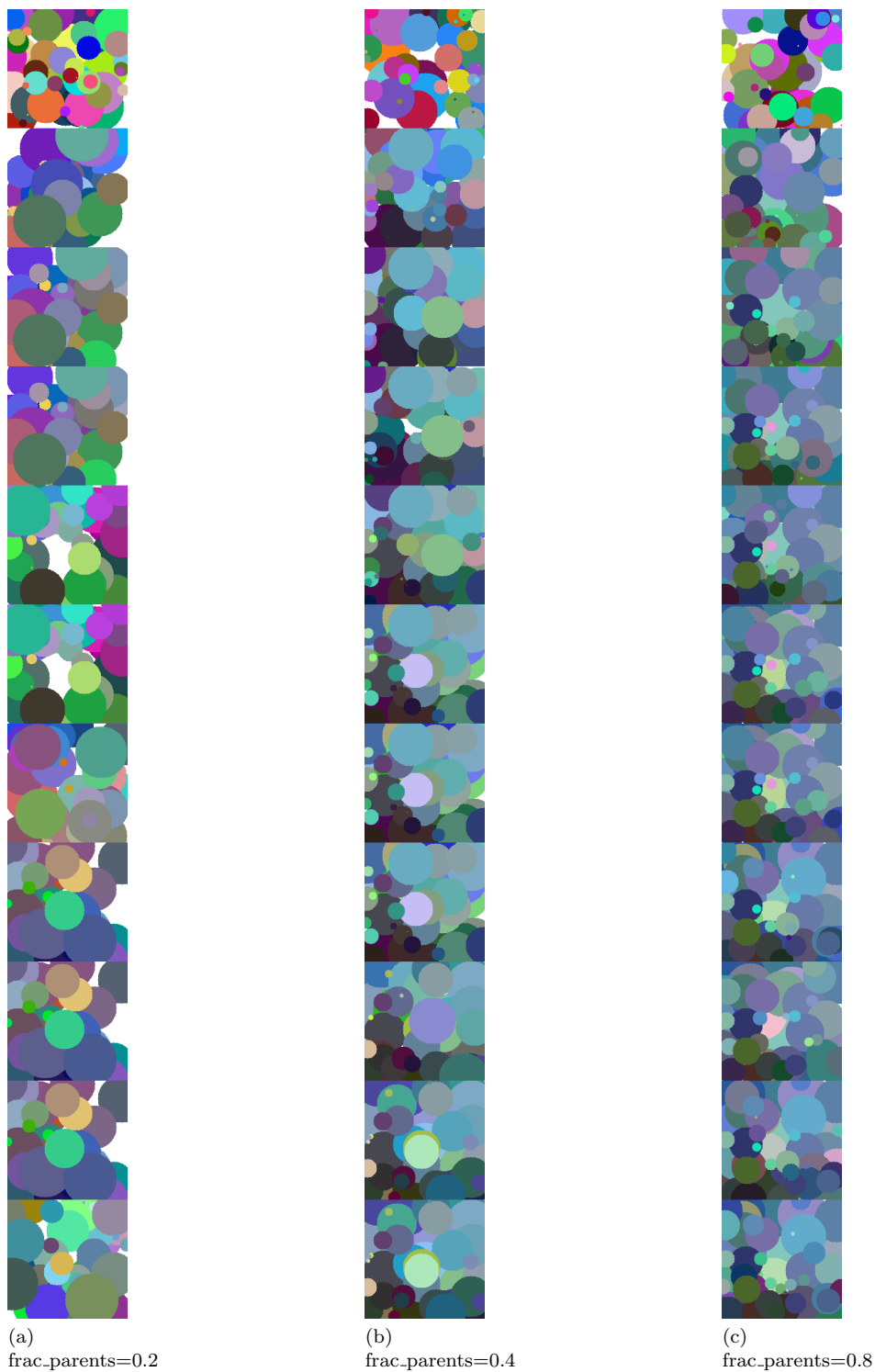
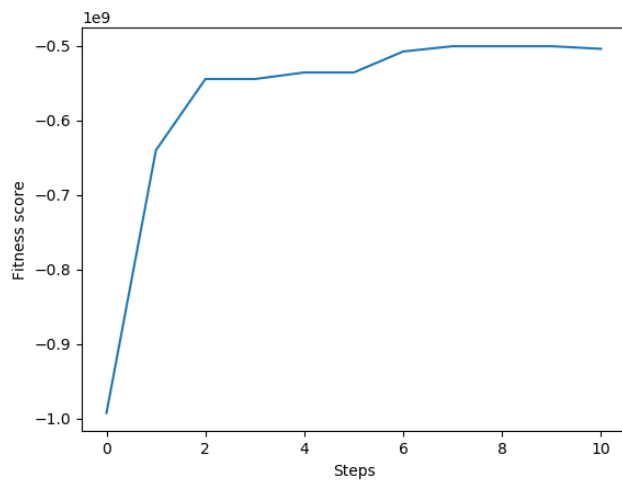
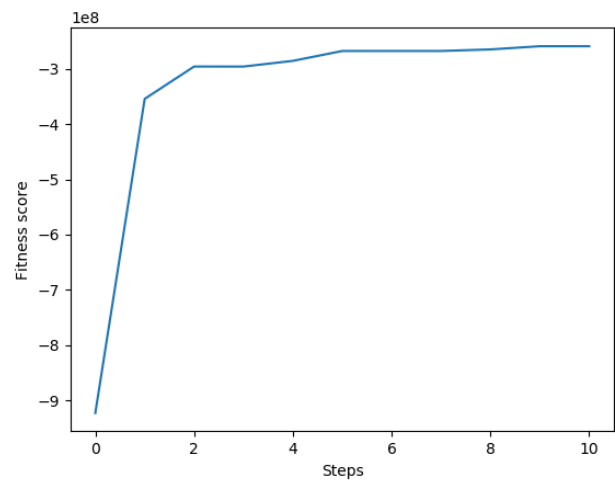


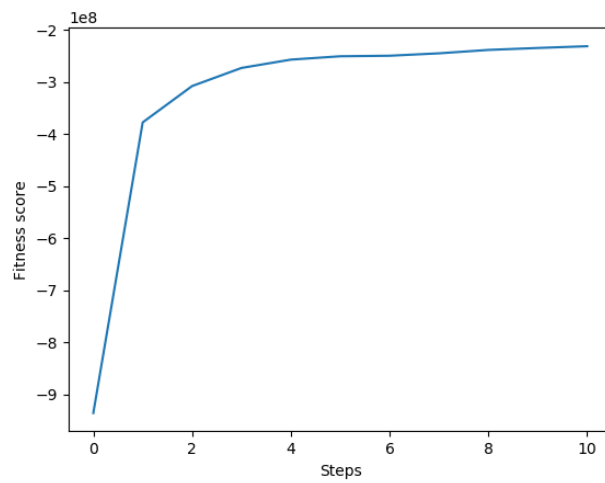
Figure 11: The image of the best individual in the population at every 1000th generation for $\langle \text{frac_parents} \rangle = 0.2, 0.4, 0.8$



(a) $\text{frac_parents}=0.2$



(b) $\text{frac_parents}=0.4$



(c) $\text{frac_parents}=0.8$

Figure 12: The fitness plot from generation 1 to generation 10000 for $(\langle \text{frac_parents} \rangle)=0.2, 0.4, 0.8$

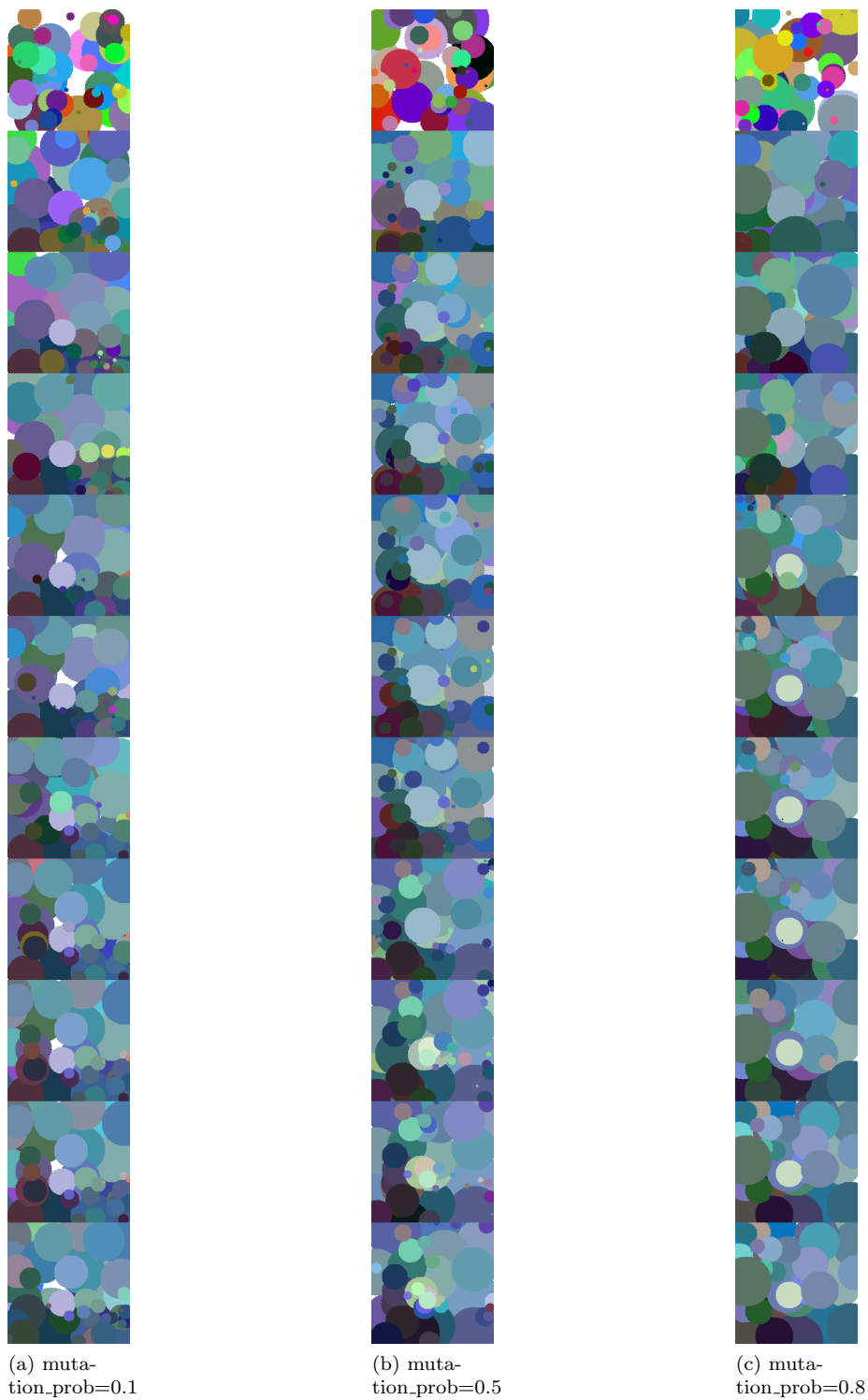
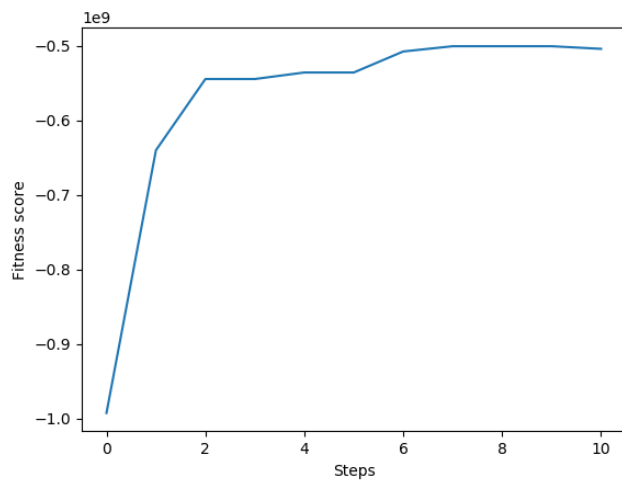
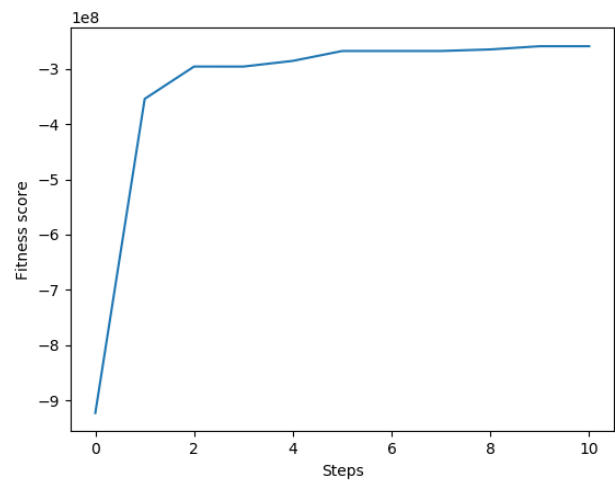


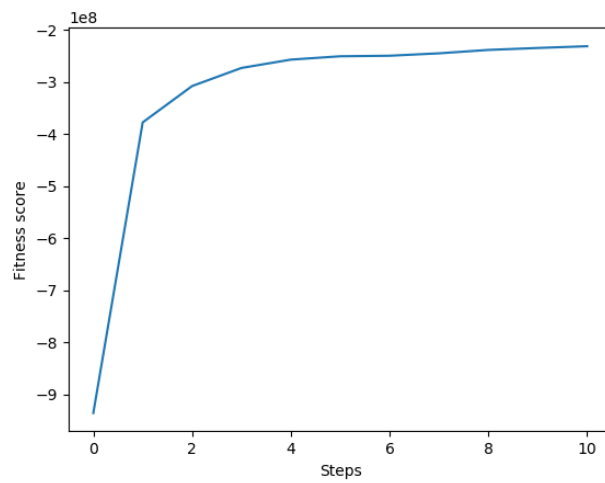
Figure 13: The image of the best individual in the population at every 1000th generation for ($\langle \text{mutation_prob} \rangle$)=0.1, 0.5, 0.8



(a) mutation_prob=0.1



(b) mutation_prob=0.5



(c) mutation_prob=0.8

Figure 14: The fitness plot from generation 1 to generation 10000 for ($\langle \text{mutation_prob} \rangle$)=0.1, 0.5, 0.8

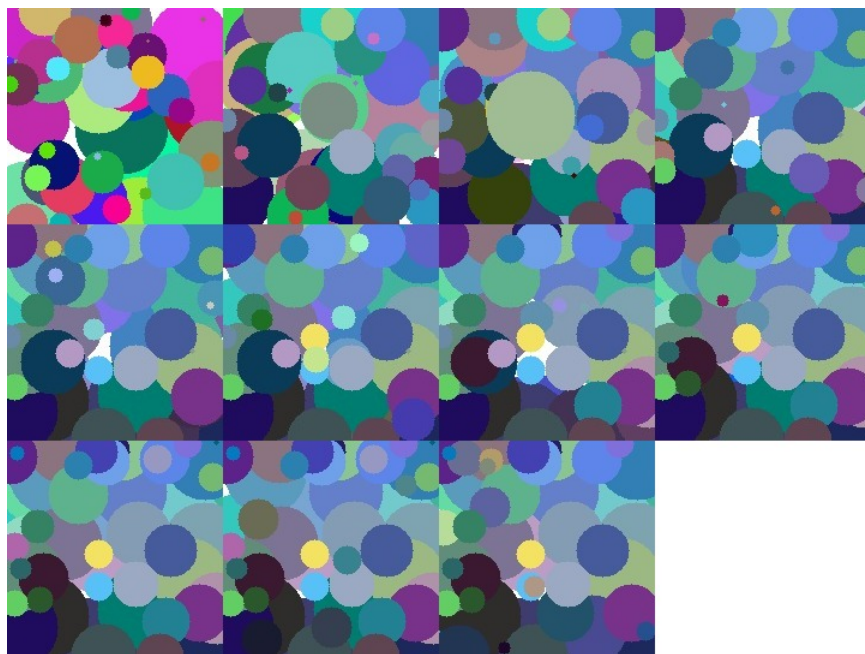


Figure 15: The best of individuals for the **unguided** mutation type

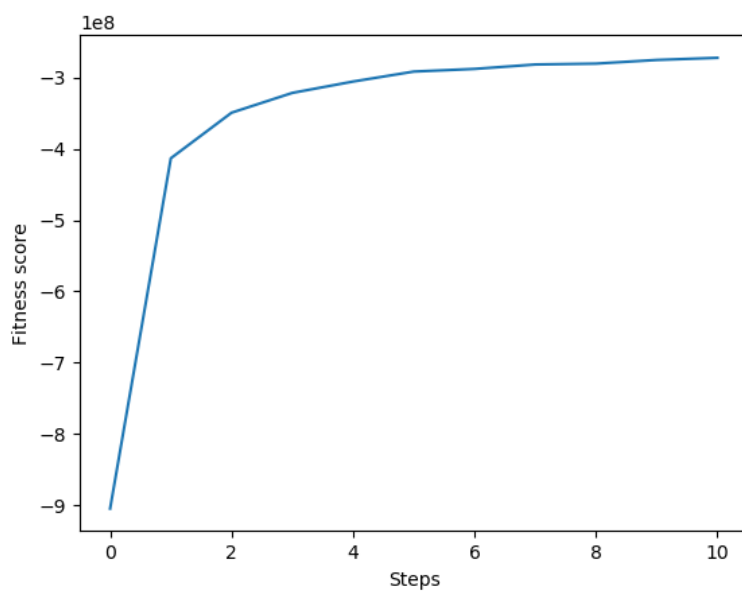


Figure 16: The fitness curve for the **unguided** mutation type

Discussion

- 1.
- 2.
- 3.

Appendix