Change beam-size of beam search

Heuristics – Case: Fruit fly

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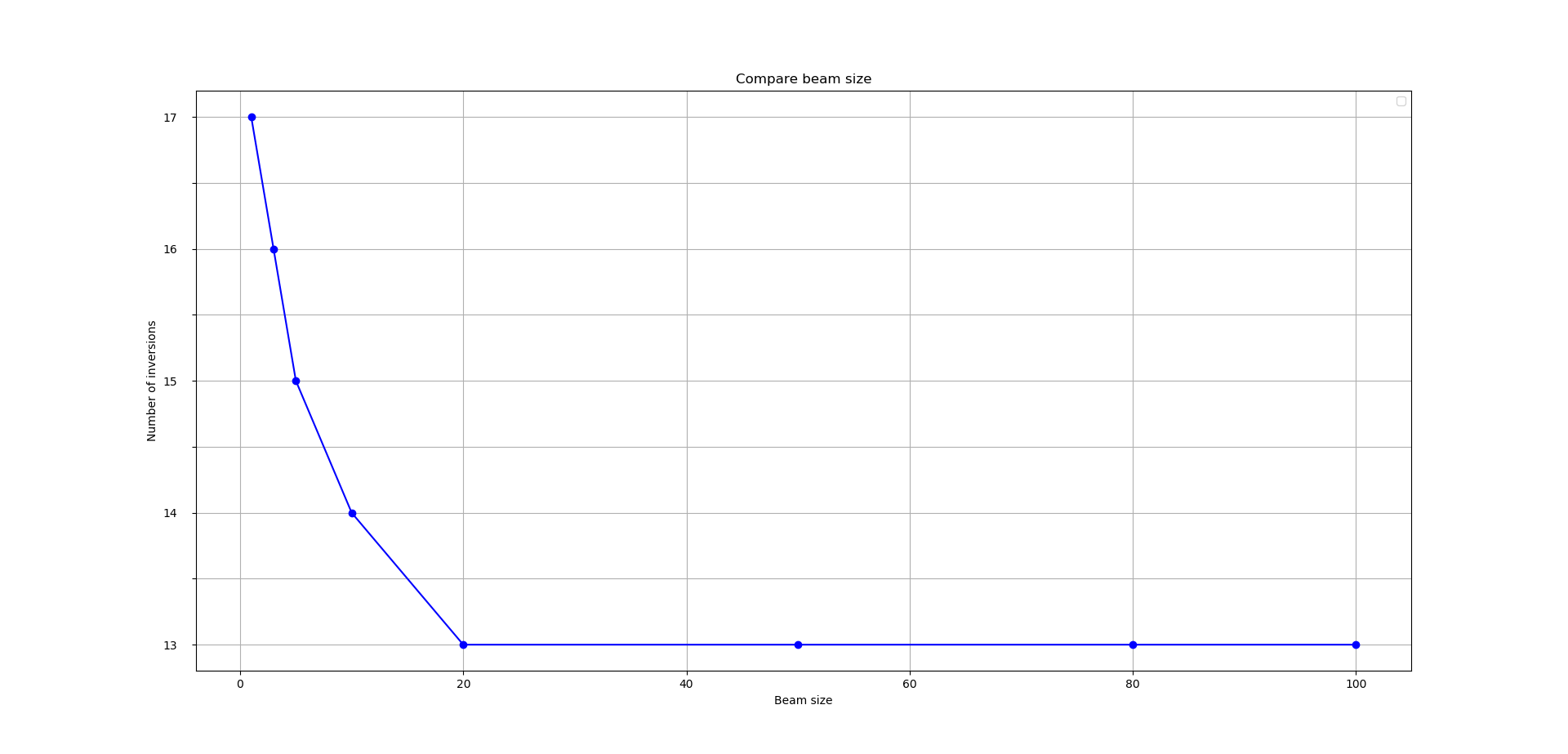
**Goal of experiment:**

The goal of the experiment is to see what the influence is of the beam size on the number of inversions to the solution.

**Methods:**

The beam search algorithm selects an n number of children per layer based on heuristics. Changing the beam size changes how many children per layer are pruned. A small beam might prune too much and throw good solutions away. This experiment will test what influence is of changing the beam size while doing a beam search on the Drosophila Melanogaster genome of length 25.

**Results:**



**Figure 1. Shows the influence of the beam size on the number of inversions to the solution.**

**Discussion:**

It seems that with a beam size of 20 the shortest path if found with 13 inversions. Beam sizes smaller than 20 find solutions with a higher number of inversions. This might implicate that a beam size smaller than 20 prunes good solutions away. Therefore, a beam size smaller than 20 is not recommended.

**Conclusion:**

Beam search with a beam size of 20 seems to find the shortest path of 13 inversions. However, this might still not be the shortest path, as you are pruning and there might be a chance that good solutions are removed.