Parallel Image search using SIFT

High performance Python Lab Final Project

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- **Goal**: *find locations of a given item on a store shelf.*

Query image

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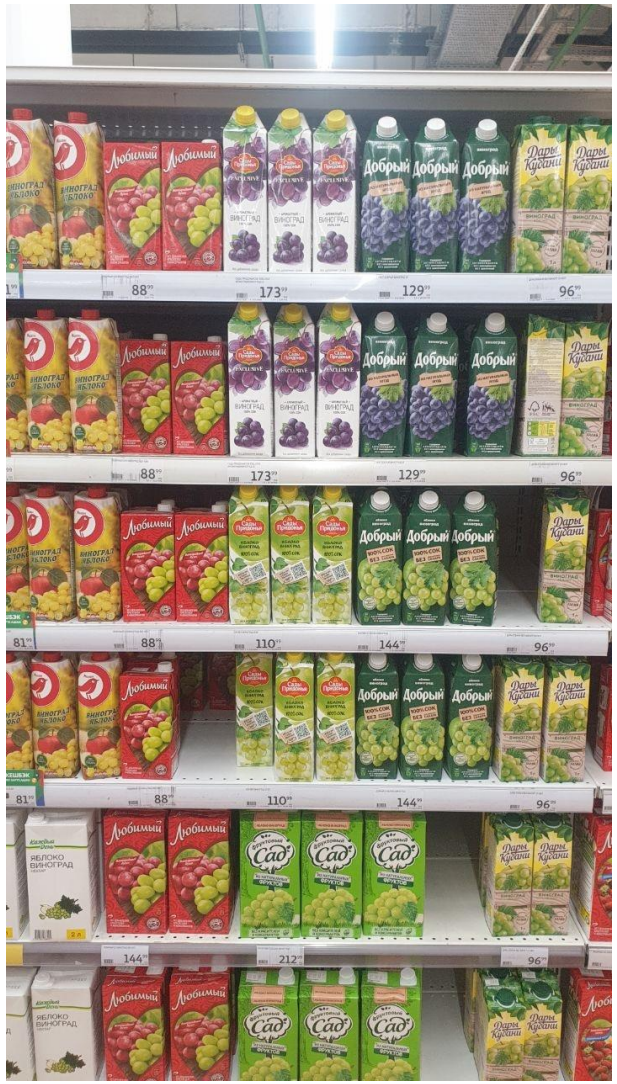

Train image

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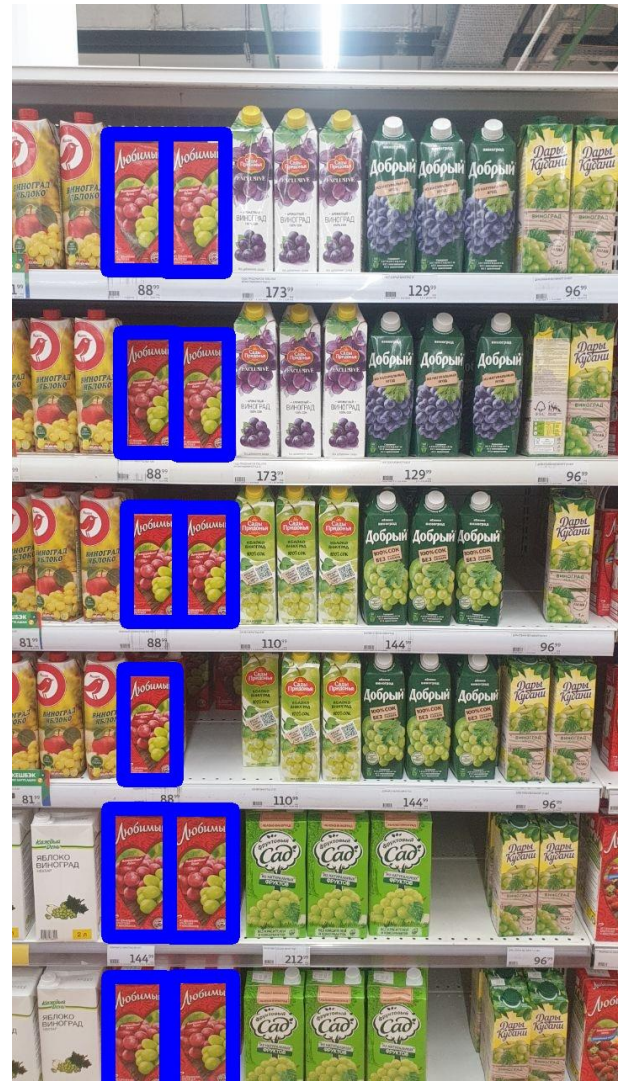

Result

- **Goal**: *find locations of a given item on a store shelf.*

Query image

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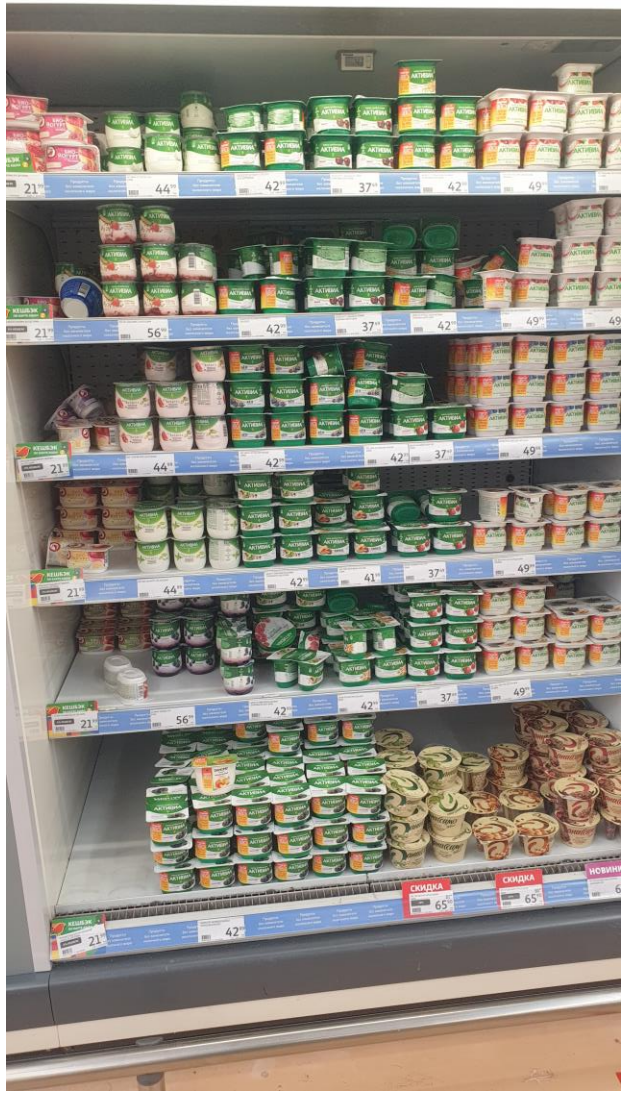

Train image

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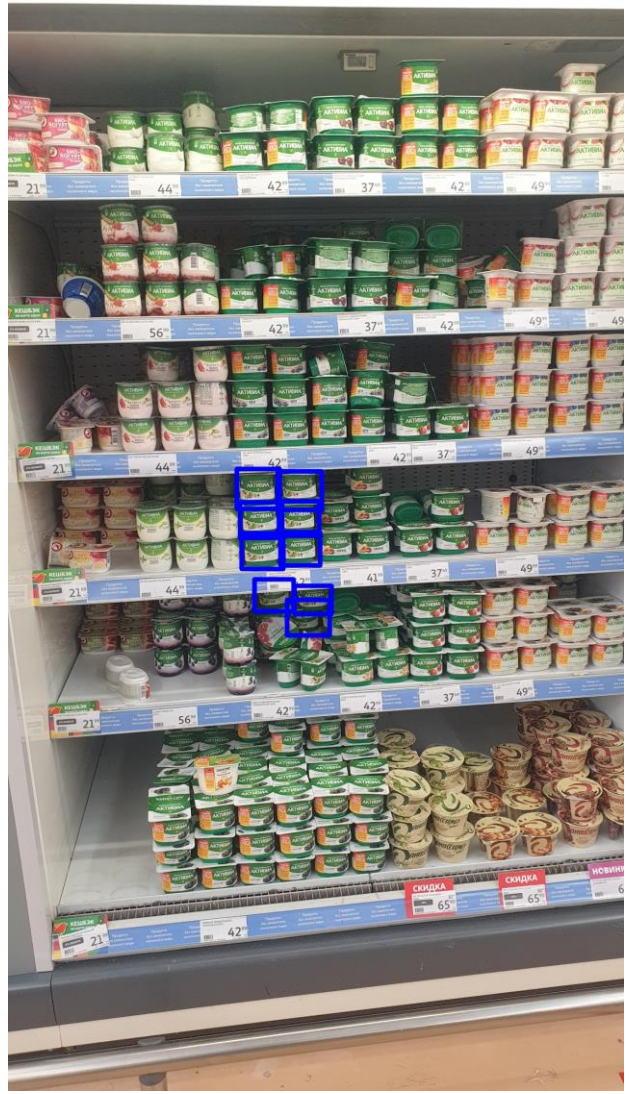


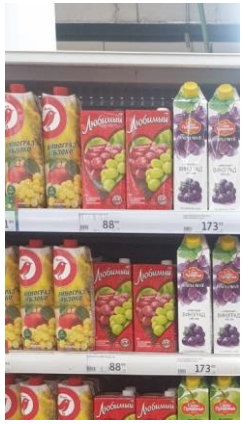
Result

- **Basic algorithm description**

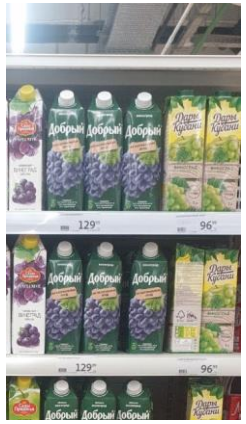
  - 1) Find key points on both query and train images
  - 2) Find good matches
  - 3) Try to find homography transformation.
    - If it works, then mask found item out of the train image and go to step 2.
    - If it doesn’t work, clusterize to two clusters all key points on train image and leave only largest cluster.
  - 4) Repeat step 3 until there are less than 4 points left.
  - 5) Change good matches distance filter parameter and go to step 2 until parameter reaches value of 0.7.

• Parallelization approach

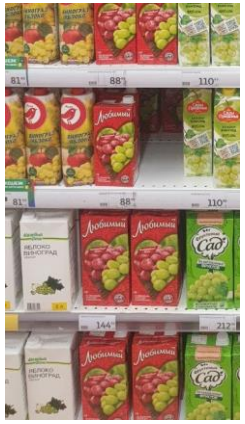
If number of processes is **full square**



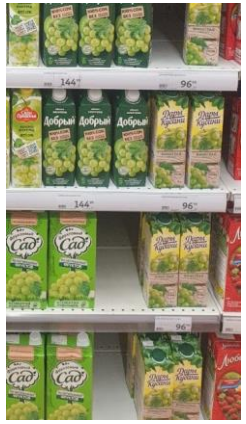
Rank 0



Rank 1



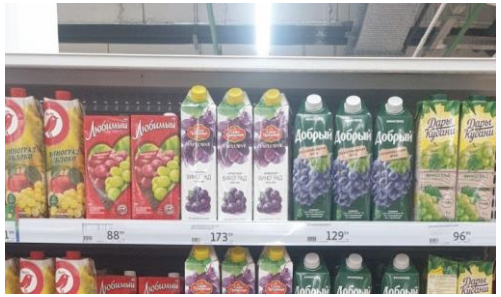
Rank 2



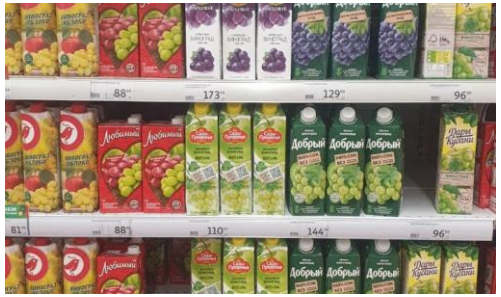
Rank 3

If number of processes is **not a full square**

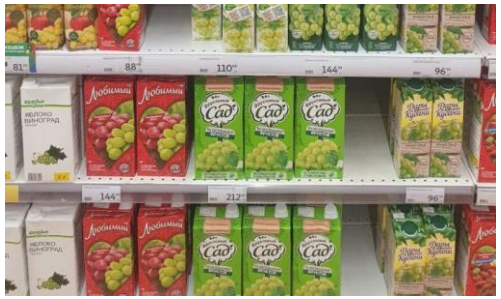
Rank 0



Rank 1



Rank 2



Speedup chart