Representative vectors were computed using 200 plot-generating programs. The metric is cosine similarity in all experiments. Note that diffs are self-normalized when plotted, so colors in diff images are only illustrative.

1 Transformation clustering experiment

In this experiment we cluster the representative vectors of random transforms. We clustered 100 randomly sampled transforms with the AffinityPropagation algorithm with parameters {'damping': 0.5, 'max_iter': 200, 'convergence_iter': 15} and formed 13 clusters.

1.1 Cluster 0

Transforms in this cluster:

- marker = 5

- marker = 8

- markeredgewidth = 2.996632178446022

- markeredgewidth = 3.4217932682402927

- markeredgewidth = 3.5979417597447654

- marker = 10
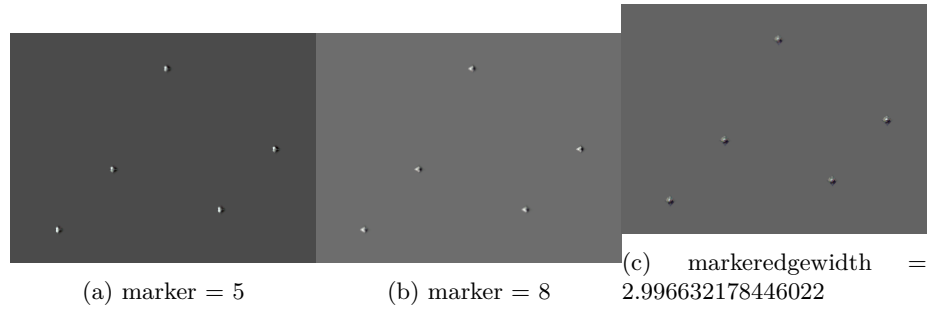
- markeredgewidth = 3.5501975826397154

- marker = 5

(a) marker = 5   (b) marker = 8   (c)   markeredgewidth   = 2.996632178446022

Figure 1: Batch of representative vectors of transforms in cluster 3

1

(a) markeredgewidth = 3.4217932682402927

(b) markeredgewidth = 3.5979417597447654

(c) marker = 10

Figure 2: Batch of representative vectors of transforms in cluster 3

(a) markeredgewidth = 3.5501975826397154

(b) marker = 5

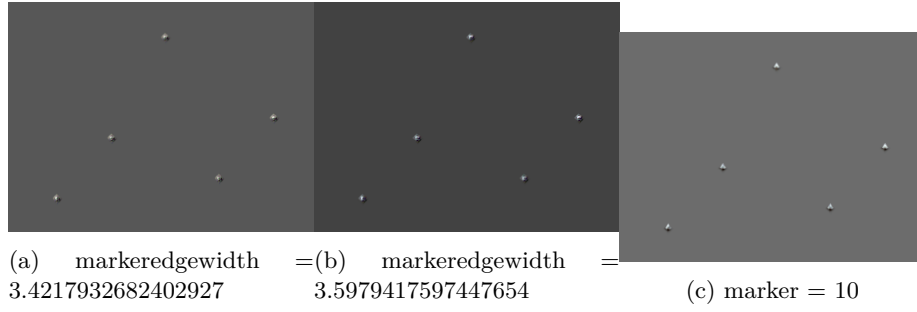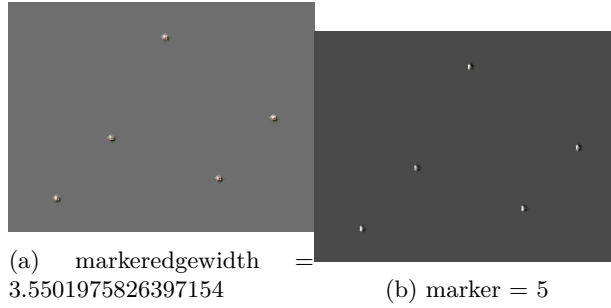Figure 3: Batch of representative vectors of transforms in cluster 2

1.2   Cluster 1

Transforms in this cluster:

- color = "#b95f3c"

- color = "#ee8873"

- color = "#f6836f"

- color = "#fbd91a"

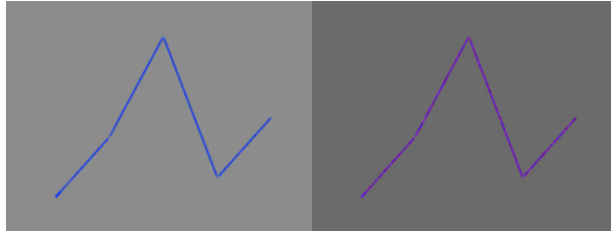- color = "#85a458"

1.3   Cluster 2

Transforms in this cluster:

- markeredgewidth = 1.0481819303825364

- markeredgecolor = "#63c8ea"

- markeredgecolor = "#d49fc7"

(a) color = "#b95f3c"   (b) color = "#ee8873"   (c) color = "#f6836f"
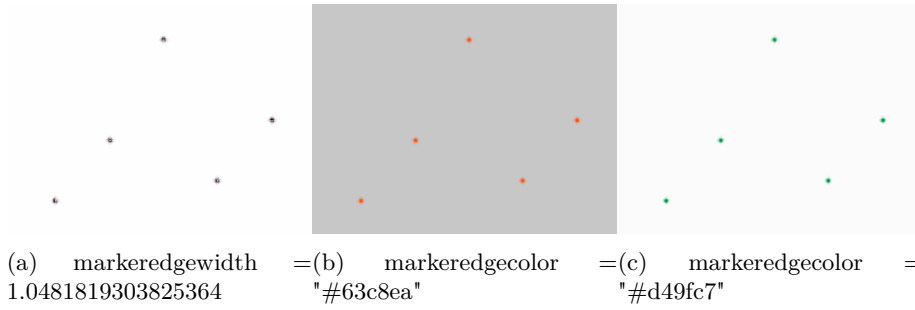
Figure 4: Batch of representative vectors of transforms in cluster 3

(a) color = "#fbd91a"   (b) color = "#85a458"

Figure 5: Batch of representative vectors of transforms in cluster 2

- markeredgecolor = "#898ce8"

- markeredgewidth = 1.6258473078938365

- markeredgewidth = 1.723519442653501

- marker = ","

(a) markeredgewidth = 1.0481819303825364   (b) markeredgecolor = "#63c8ea"   (c) markeredgecolor = "#d49fc7"

Figure 6: Batch of representative vectors of transforms in cluster 3

(a) markeredgecolor = "#898ce8"   (b) markeredgewidth = 1.6258473078938365   (c) markeredgewidth = 1.723519442653501
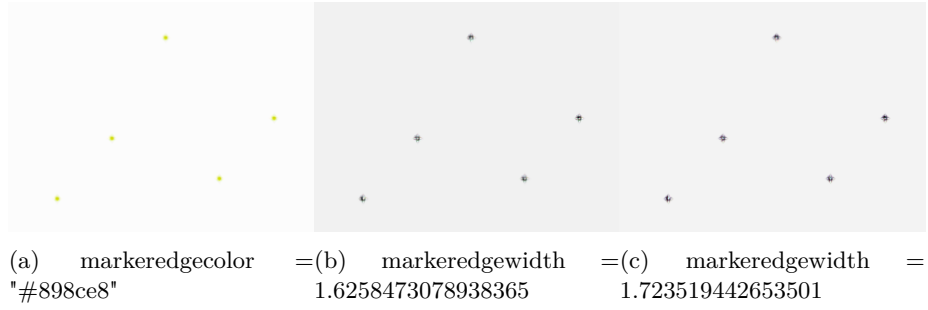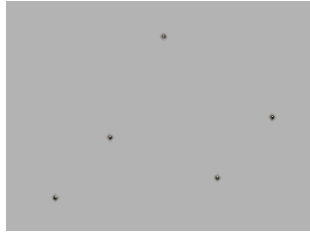
Figure 7: Batch of representative vectors of transforms in cluster 3

(a) marker = ","

Figure 8: Batch of representative vectors of transforms in cluster 1

1.4   Cluster 3

Transforms in this cluster:

- markerfacecolor = "#fc3263"

- markeredgecolor = "#fd4cae"

- markerfacecolor = "#fdafeb"

- markerfacecolor = "#fb7a6d"

- markeredgecolor = "#8315f1"

- markerfacecolor = "#bd47d0"

1.5   Cluster 4

Transforms in this cluster:

- markeredgecolor = "#362a91"

- markeredgecolor = "#842b78"
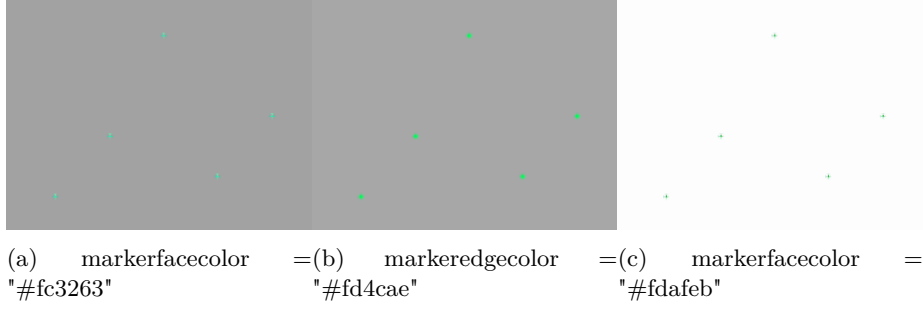
- markerfacecolor = "#85069f"

4

(a) markerfacecolor = "#fc3263"
(b) markeredgecolor = "#fd4cae"
(c) markerfacecolor = "#fdafeb"

Figure 9: Batch of representative vectors of transforms in cluster 3

(a) markerfacecolor = "#fb7a6d"
(b) markeredgecolor = "#8315f1"
(c) markerfacecolor = "#bd47d0"

Figure 10: Batch of representative vectors of transforms in cluster 3

- markeredgecolor = "#61156d"

- markeredgecolor = "#862761"

(a) markeredgecolor = "#362a91"
(b) markeredgecolor = "#842b78"
(c) markerfacecolor = "#85069f"

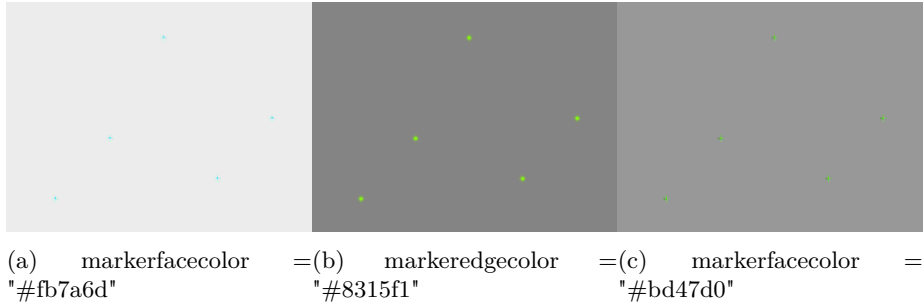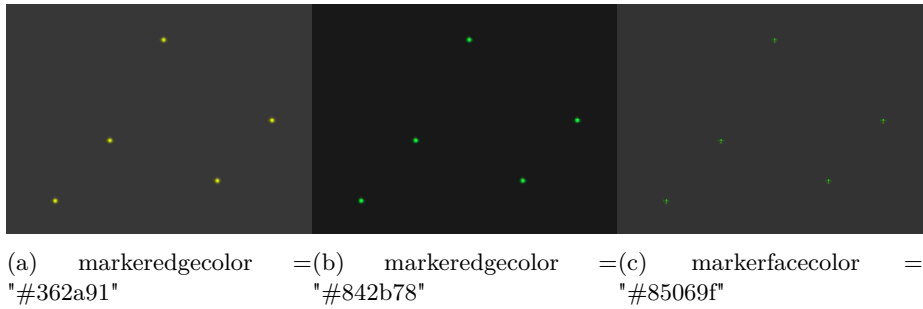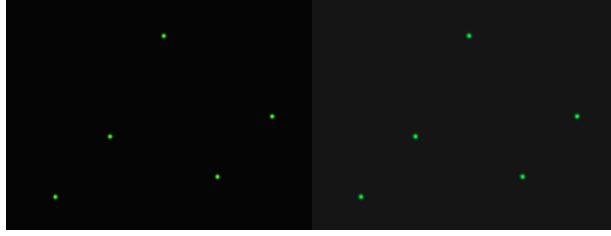Figure 11: Batch of representative vectors of transforms in cluster 3

1.6 Cluster 5

Transforms in this cluster:

(a) markeredgecolor = "#61156d"
(b) markeredgecolor = "#862761"

Figure 12: Batch of representative vectors of transforms in cluster 2

- markeredgecolor = "#a8ed0a"
- markerfacecolor = "#f7dc09"
- markerfacecolor = "#7f6f0c"
- markerfacecolor = "#b9553d"
- markerfacecolor = "#8c906d"
- markerfacecolor = "#b57d27"
- markerfacecolor = "#9aa95b"
- markeredgecolor = "#877b13"

(a) markeredgecolor = "#a8ed0a"
(b) markerfacecolor = "#f7dc09"
(c) markerfacecolor = "#7f6f0c"

Figure 13: Batch of representative vectors of transforms in cluster 3

1.7   Cluster 6

Transforms in this cluster:

- markeredgecolor = "#094419"
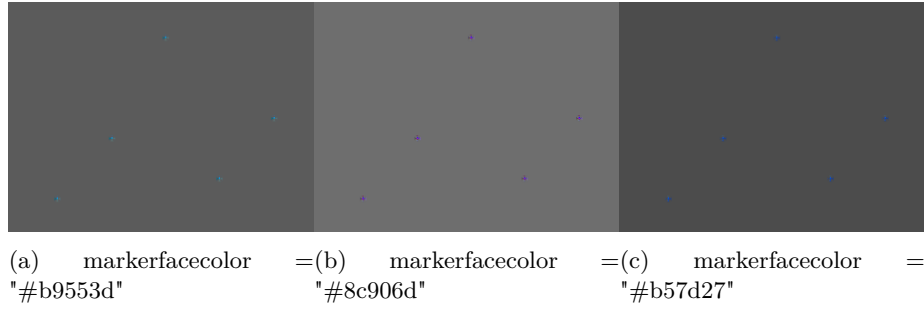
(a) markerfacecolor = "#b9553d" (b) markerfacecolor = "#8c906d" (c) markerfacecolor = "#b57d27"

Figure 14: Batch of representative vectors of transforms in cluster 3

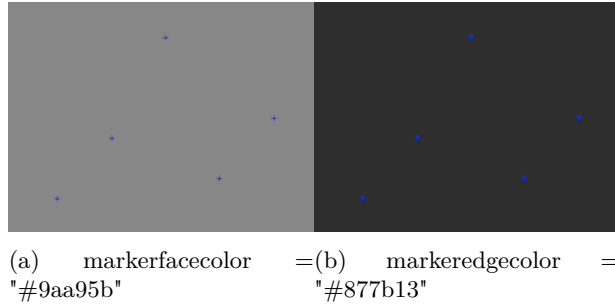(a) markerfacecolor = "#9aa95b" (b) markeredgecolor = "#877b13"

Figure 15: Batch of representative vectors of transforms in cluster 2

- markerfacecolor = "#344e23"

- markeredgewidth = 3.6247530917266224

- marker = "x"

- markeredgewidth = 3.64580111805961

- markeredgecolor = "#70190e"

- markeredgewidth = 4.331768810889578

- markeredgewidth = 4.030729982007658

- markeredgewidth = 3.8809198869656214

- markeredgewidth = 4.139822571958975
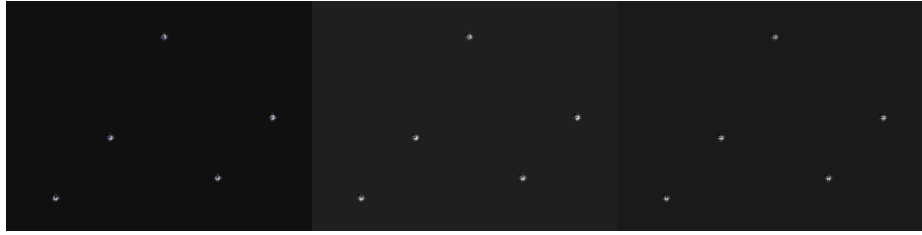
- markeredgewidth = 3.862852394880082

7

(a) markeredgecolor = "#094419" (b) markerfacecolor = "#344e23" (c) markeredgewidth = 3.6247530917266224

Figure 16: Batch of representative vectors of transforms in cluster 3
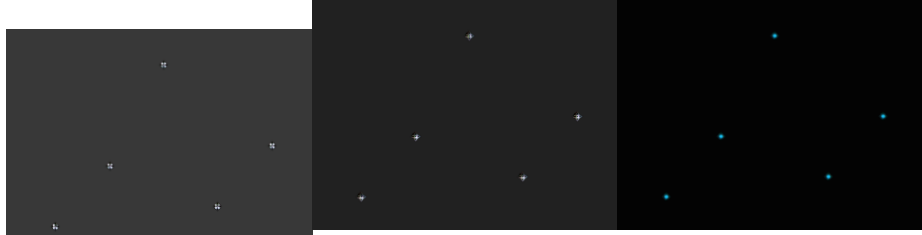
(a) marker = "x" (b) markeredgewidth = 3.64580111805961 (c) markeredgecolor = "#70190e"

Figure 17: Batch of representative vectors of transforms in cluster 3

(a) markeredgewidth = 4.331768810889578 (b) markeredgewidth = 4.030729982007658 (c) markeredgewidth = 3.8809198869656214
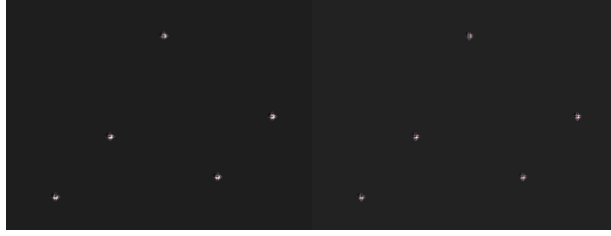
Figure 18: Batch of representative vectors of transforms in cluster 3

1.8   Cluster 7

Transforms in this cluster:

- linewidth = 1.9556910344682792

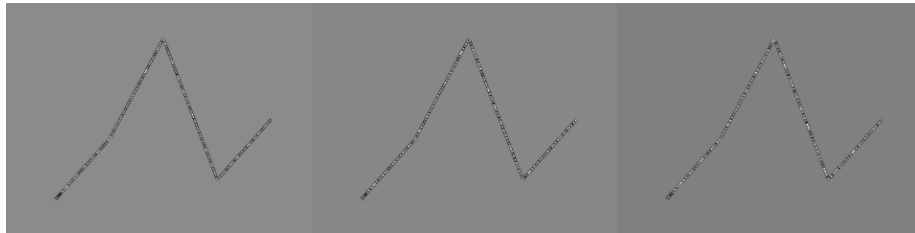- linewidth = 2.215007258952125

- linewidth = 2.3877577216921204

(a)   markeredgewidth   =(b)   markeredgewidth   =
4.139822571958975   3.862852394880082

Figure 19: Batch of representative vectors of transforms in cluster 2

- color = "#f82ffa"

- color = "#bc40fb"

- linestyle = (0, (3, 10, 1, 10))

- linestyle = (0, (3, 5, 1, 5, 1, 5))

- linewidth = 1.353563838984721

- color = "#f9eea9"

- linestyle = (0, (1, 10))

- color = "#8a97cc"

- linestyle = (0, (3, 10, 1, 10, 1, 10))

(a)   linewidth   =(b)   linewidth   =(c)   linewidth   =
1.9556910344682792   2.215007258952125   2.3877577216921204

Figure 20: Batch of representative vectors of transforms in cluster 3

1.9   Cluster 8

Transforms in this cluster:

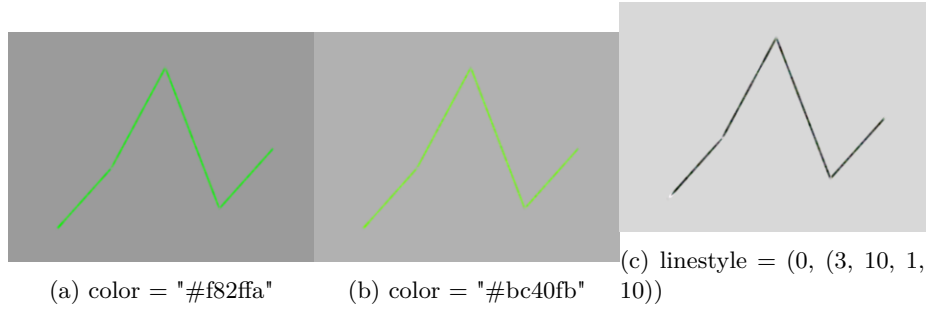(a) color = "#f82ffa"　　(b) color = "#bc40fb"　(c) linestyle = (0, (3, 10, 1, 10))

Figure 21: Batch of representative vectors of transforms in cluster 3

(a) linestyle = (0, (3, 5, 1, 5, (b)　　linewidth　=　(c) color = "#f9eea9"
1, 5))　　　　　　　　1.353563838984721

Figure 22: Batch of representative vectors of transforms in cluster 3

(a) linestyle = (0, (1, 10))　　(b) color = "#8a97cc"　(c) linestyle = (0, (3, 10, 1, 10, 1, 10))

Figure 23: Batch of representative vectors of transforms in cluster 3

- markerfacecolor = "#0cbbd3"
- markerfacecolor = "#0c4d65"
- markerfacecolor = "#308091"

1.10   Cluster 9

Transforms in this cluster:

(a) markerfacecolor = (b) markerfacecolor = (c) markerfacecolor =
"#0cbbd3"   "#0c4d65"   "#308091"

Figure 24: Batch of representative vectors of transforms in cluster 3

- marker = 4

- marker = 6

- marker = 4

- marker = 11

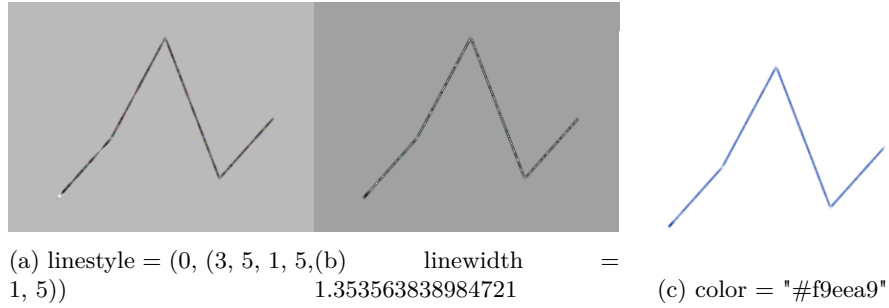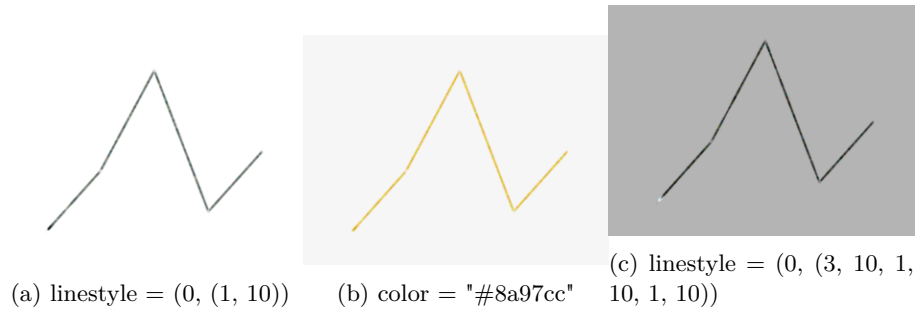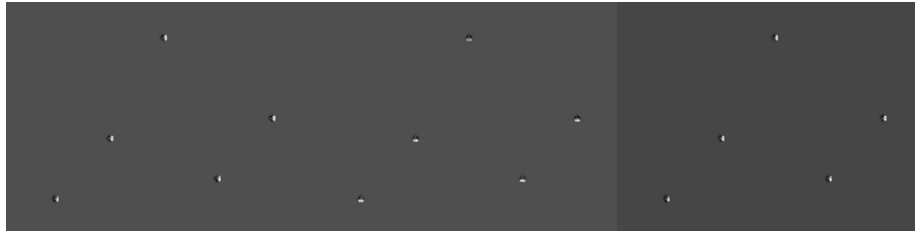(a) marker = 4   (b) marker = 6   (c) marker = 4

Figure 25: Batch of representative vectors of transforms in cluster 3

(a) marker = 11

Figure 26: Batch of representative vectors of transforms in cluster 1

1.11 Cluster 10

Transforms in this cluster:

- markeredgewidth = 2.5857516360496726

- markeredgewidth = 2.80709827226637
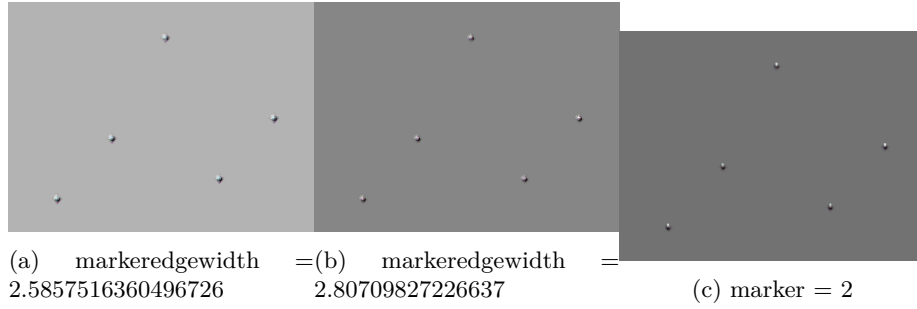
- marker = 2

- markeredgewidth = 2.4863375368881613

(a) markeredgewidth = 2.5857516360496726 (b) markeredgewidth = 2.80709827226637

(c) marker = 2

Figure 27: Batch of representative vectors of transforms in cluster 3
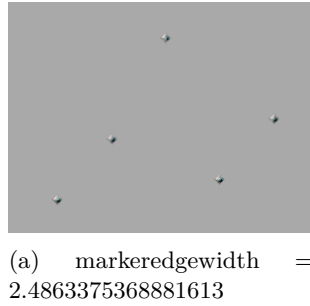

(a) markeredgewidth = 2.4863375368881613

Figure 28: Batch of representative vectors of transforms in cluster 1

1.12 Cluster 11

Transforms in this cluster:

- linewidth = 3.788327051977464

- linewidth = 4.872949877450573

- linestyle = (0, (1, 1))

- linewidth = 4.95831076872464

- color = "#3cba08"

- linewidth = 3.7067684043152056

- linestyle = (0, (5, 5))

- linestyle = (0, (3, 1, 1, 1, 1, 1))

- linestyle = (0, (5, 5))

- linewidth = 3.7820130863121286

- color = "#4b5488"

- linestyle = (0, (5, 5))

- color = "#6d35a2"

- linestyle = (0, (3, 1, 1, 1))

- linewidth = 4.433284306367263

- linewidth = 3.769527319136468

- linewidth = 4.022593904368019

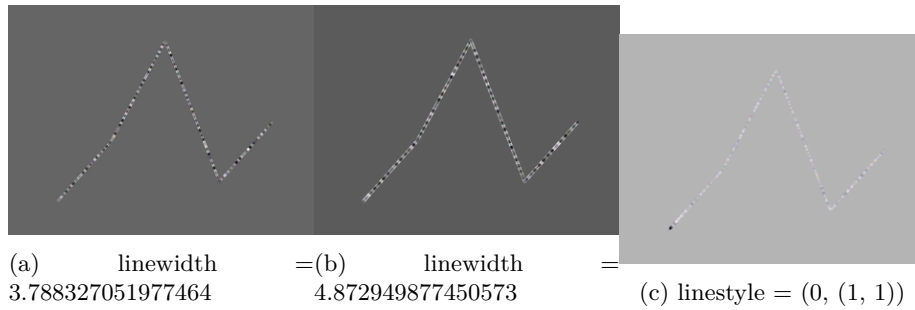(a) linewidth = 3.788327051977464 (b) linewidth = 4.872949877450573 (c) linestyle = (0, (1, 1))

Figure 29: Batch of representative vectors of transforms in cluster 3

1.13 Cluster 12

Transforms in this cluster:
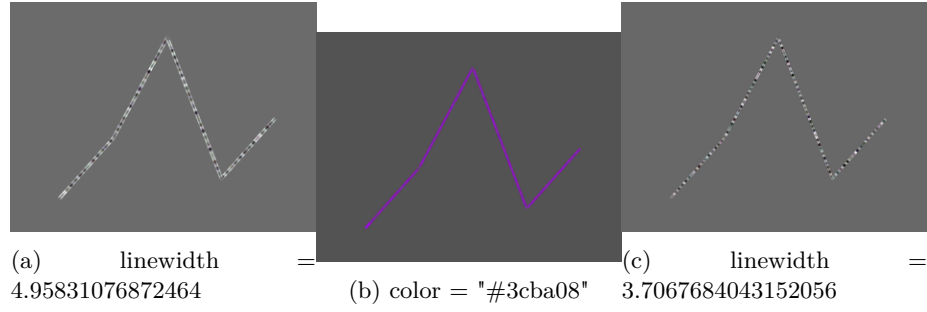
- color = "#c13180"

- marker = 3

- marker = 1

(a) linewidth = 4.95831076872464

(b) color = "#3cba08"

(c) linewidth = 3.7067684043152056

Figure 30: Batch of representative vectors of transforms in cluster 3

(a) linestyle = (0, (5, 5))

(b) linestyle = (0, (3, 1, 1, 1, 1, 1))
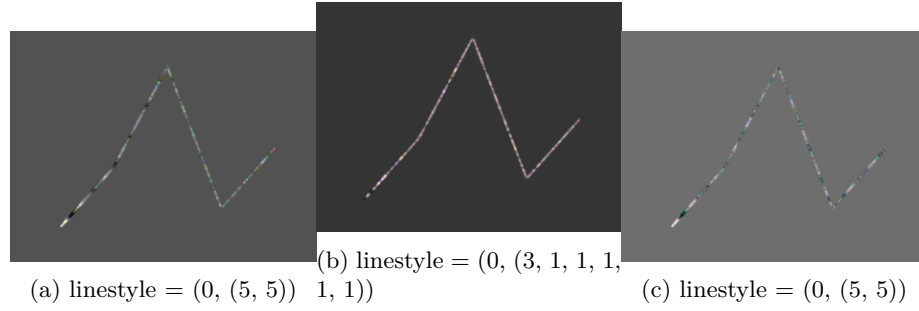
(c) linestyle = (0, (5, 5))

Figure 31: Batch of representative vectors of transforms in cluster 3

(a) linewidth = 3.7820130863121286

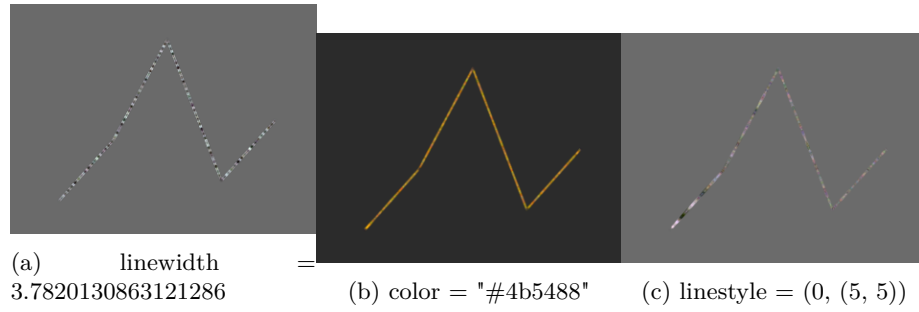(b) color = "#4b5488"

(c) linestyle = (0, (5, 5))

Figure 32: Batch of representative vectors of transforms in cluster 3

- marker = 1

- linestyle = (0, (1, 1))

- color = "#2c43ea"

- linewidth = 3.2305373005028133
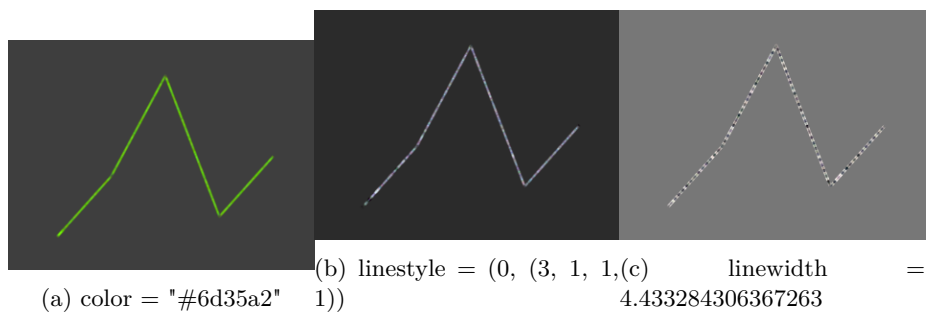
- markerfacecolor = "#5fcb6f"

(a) color = "#6d35a2"

(b) linestyle = (0, (3, 1, 1, 1))

(c) linewidth = 4.433284306367263

Figure 33: Batch of representative vectors of transforms in cluster 3

(a) linewidth = 3.769527319136468

(b) linewidth = 4.022593904368019

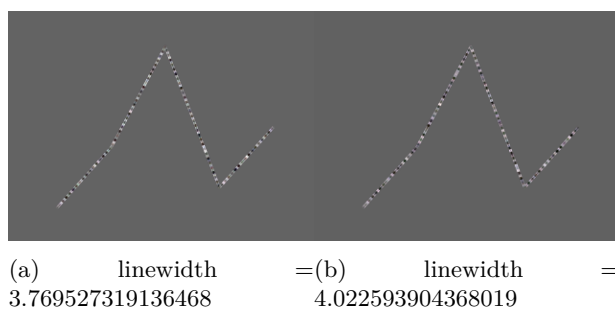Figure 34: Batch of representative vectors of transforms in cluster 2

- marker = "3"

- linewidth = 2.7911975454148803

(a) color = "#c13180"

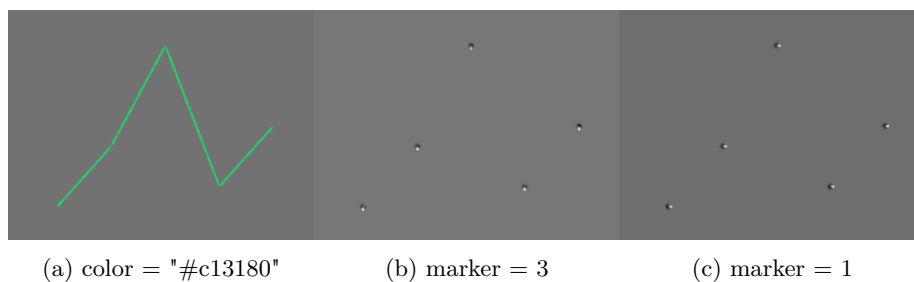(b) marker = 3

(c) marker = 1

Figure 35: Batch of representative vectors of transforms in cluster 3

15

(a) marker = 1   (b) linestyle = (0, (1, 1))   (c) color = "#2c43ea"

Figure 36: Batch of representative vectors of transforms in cluster 3

(a)   linewidth   = 3.2305373005028133

(b)   markerfacecolor   = "#5fcb6f"

(c) marker = "3"

Figure 37: Batch of representative vectors of transforms in cluster 3

(a)   linewidth   = 2.7911975454148803

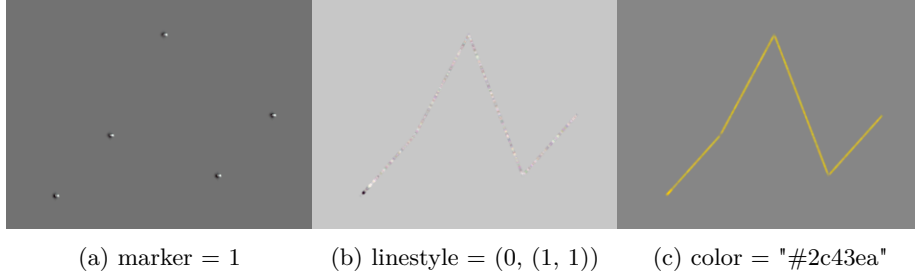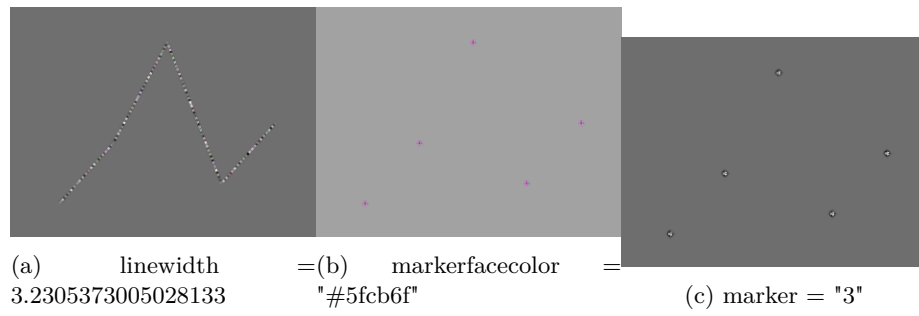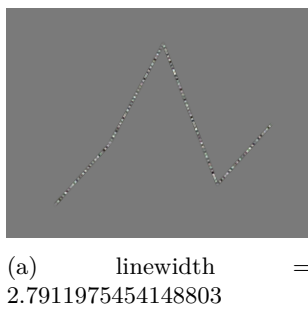Figure 38: Batch of representative vectors of transforms in cluster 1