```
SetDirectory[
  "C:/Users/serha/OneDrive/Masaüstü/MyRepo/master_thesis_MMT003/210718_product_diversity
    "];
```

```
ccm = Import["../data/ccm_manipulated_347418.csv"];
csp = Import["../data/csp_manipulated_205496_rev1.csv"];
pltcm = Import["../data/pltcm_manipulated_59604_rev1.csv"];
cgl = Import["../data/cgl_manipulated_27147_rev1.csv"];
```

```
(*MemberQ[pltcm[[All,{4,3}]],cgl[[405,{3,4}]]]
 ContainsAll[pltcm[[All,{4,3}]],cgl[[All,{3,4}]]]
 Length@Intersection[cspdata[[All,{16,17}]],pltcmdata[[All,{21,22}]]]
 Length@Intersection[cspdata[[All,{16,17}]],ccmdata[[All,{7,6}]]]*)
```

```
histrow[width_, thick_, data_] :=
  GraphicsRow[{Histogram[width, PlotRange → Full, Frame → True,
     FrameLabel → {"Max. Width Differences in Sequences", "Counts"}, ImageSize → Medium],
    Histogram[thick, PlotRange → Full, Frame → True,
     FrameLabel → {"Max. Thickness Differences in Sequences", "Counts"},
     ImageSize → Medium], {MinMax@data[[All, 9]], MinMax@data[[All, 10]]}}];
```

```
histogram[data_, name_] :=
  GraphicsRow[{name, Histogram[data[[All, 9]], PlotRange → Full, Frame → True,
     FrameLabel → {"Width Values", "Counts"}, ImageSize → Medium],
    Histogram[data[[All, 10]], PlotRange → Full, Frame → True,
     FrameLabel → {"Thickness Values", "Counts"}, ImageSize → Medium]}];
```

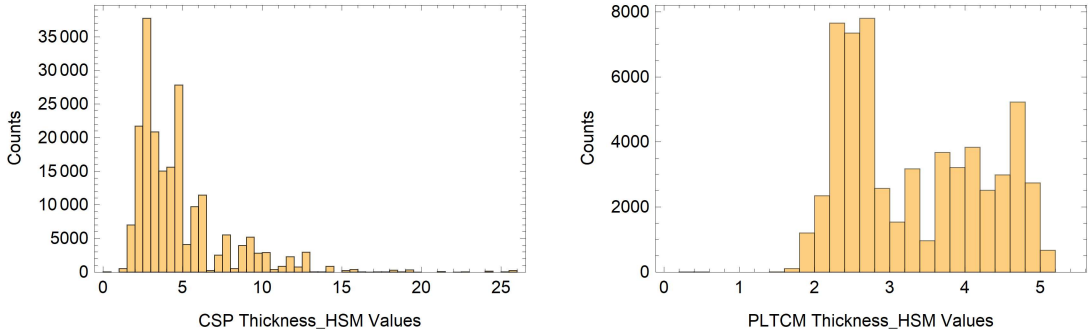
```
data = ccm;
seqgroupswidth =
  Values@GroupBy[Thread[{data[[All, 9]], data[[All, 2]]}], Last -> First];
seqgroupsthick = Values@GroupBy[Thread[{data[[All, 10]], data[[All, 2]]}], Last -> First];
row1 = histrow[
  Table[Abs@((MinMax@seqgroupswidth[[i]])[[1]] - (MinMax@seqgroupswidth[[i]])[[2]]),
   {i, Length@seqgroupswidth}], Table[Abs@((MinMax@seqgroupsthick[[i]])[[1]] -
      (MinMax@seqgroupsthick[[i]])[[2]]), {i, Length@seqgroupsthick}], ccm];
```

```
GraphicsColumn[{row1, row2, row3, row4}]
```

```
GraphicsColumn[{histogram[ccm, "CCM"],
  histogram[csp, "CSP"], histogram[pltcm, "PLTCM"], histogram[cgl, "CGL"]}]
```

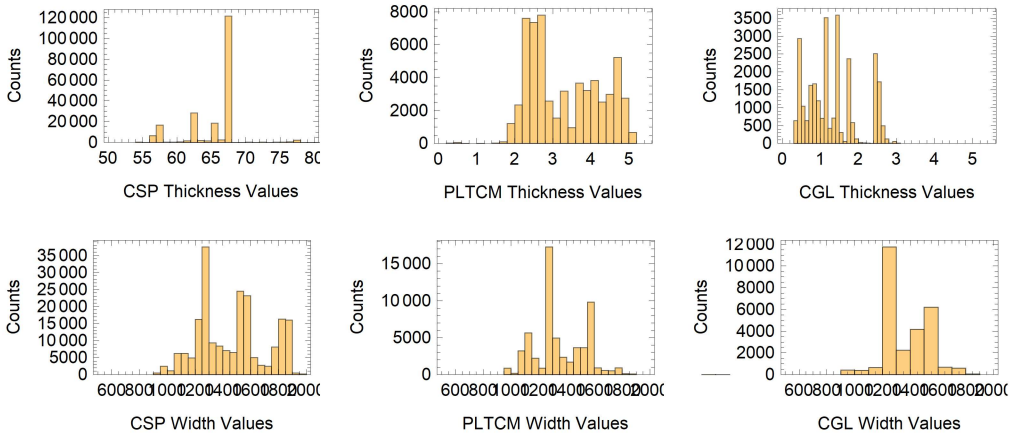
In[ ]:=
```
GraphicsRow[{Histogram[csp[[All, 15]], PlotRange → Full, Frame → True,
   FrameLabel → {"CSP Thickness_HSM Values", "Counts"}, ImageSize → Medium],
  Histogram[pltcm[[All, 17]], PlotRange → {{0, 5.5}, All}, Frame → True,
   FrameLabel → {"PLTCM Thickness_HSM Values", "Counts"}, ImageSize → Medium]}]
```

Out[ ]=



In[ ]:=
```
GraphicsColumn[
 {GraphicsRow[{Histogram[csp[[All, 10]], PlotRange → {{50, 80}, All}, Frame → True,
    FrameLabel → {"CSP Thickness Values", "Counts"}, ImageSize → Medium],
   Histogram[pltcm[[All, 10]], PlotRange → {{0, 5.5}, All}, Frame → True,
    FrameLabel → {"PLTCM Thickness Values", "Counts"}, ImageSize → Medium],
   Histogram[cgl[[All, 10]], PlotRange → {{0, 5.5}, All}, Frame → True,
    FrameLabel → {"CGL Thickness Values", "Counts"}, ImageSize → Medium]}],
  GraphicsRow[{Histogram[csp[[All, 9]], PlotRange → {{500, 2000}, All},
    Frame → True, FrameLabel → {"CSP Width Values", "Counts"}, ImageSize → Medium],
   Histogram[pltcm[[All, 9]], PlotRange → {{500, 2000}, All}, Frame → True,
    FrameLabel → {"PLTCM Width Values", "Counts"}, ImageSize → Medium],
   Histogram[cgl[[All, 9]], PlotRange → {{500, 2000}, All}, Frame → True,
    FrameLabel → {"CGL Width Values", "Counts"}, ImageSize → Medium]}]}]
```

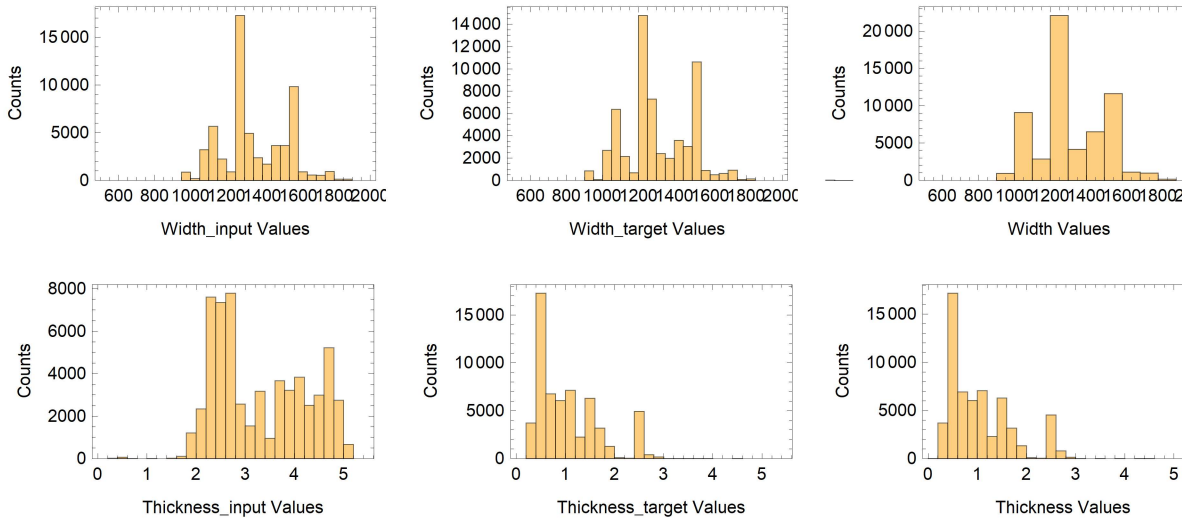
Out[ ]=



PLTCM features

In[ ]:=
```
GraphicsColumn[
 {GraphicsRow[{Histogram[pltcm[[All, 9]], PlotRange → {{500, 2000}, All}, Frame → True,
     FrameLabel → {"Width_input Values", "Counts"}, ImageSize → Medium],
    Histogram[pltcm[[All, 16]], PlotRange → {{500, 2000}, All}, Frame → True,
     FrameLabel → {"Width_target Values", "Counts"}, ImageSize → Medium],
    Histogram[pltcm[[All, 20]], PlotRange → {{500, 2000}, All}, Frame → True,
     FrameLabel → {"Width Values", "Counts"}, ImageSize → Medium]}],
  GraphicsRow[{Histogram[pltcm[[All, 10]], PlotRange → {{0, 5.5}, All}, Frame → True,
     FrameLabel → {"Thickness_input Values", "Counts"}, ImageSize → Medium],
    Histogram[pltcm[[All, 15]], PlotRange → {{0, 5.5}, All}, Frame → True,
     FrameLabel → {"Thickness_target Values", "Counts"}, ImageSize → Medium],
    Histogram[pltcm[[All, 18]], PlotRange → {{0, 5.5}, All}, Frame → True,
     FrameLabel → {"Thickness Values", "Counts"}, ImageSize → Medium]}]}]
```

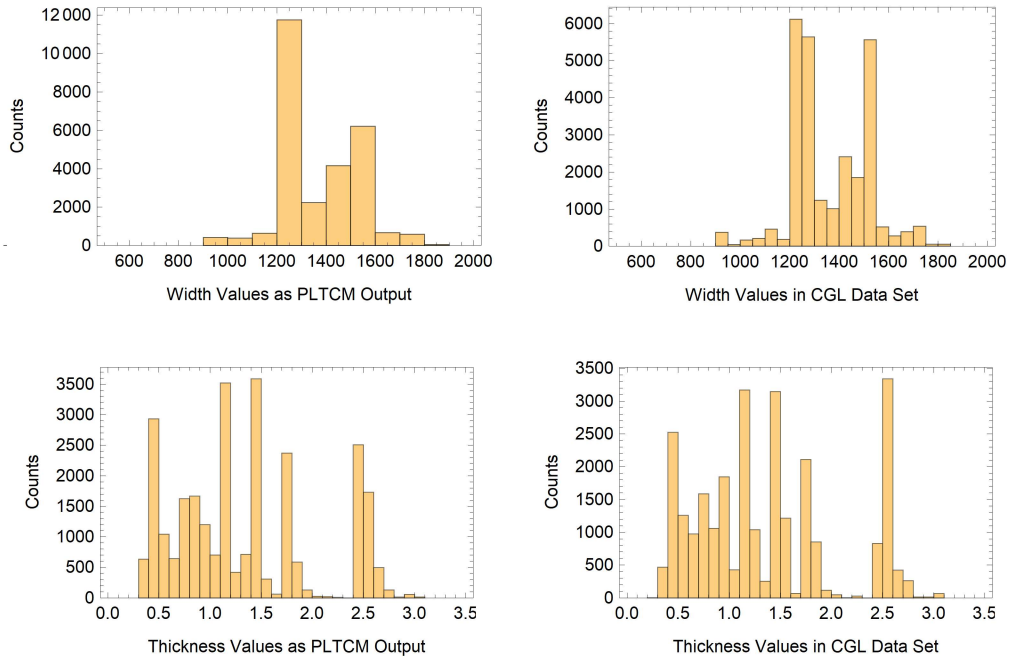
Out[ ]=



CGL features

In[ ]:=
```
GraphicsColumn[
 {GraphicsRow[{Histogram[cgl[[All, 9]], PlotRange → {{500, 2000}, All}, Frame → True,
     FrameLabel → {"Width Values as PLTCM Output", "Counts"}, ImageSize → Medium],
    Histogram[cgl[[All, 5]], PlotRange → {{500, 2000}, All}, Frame → True,
     FrameLabel → {"Width Values in CGL Data Set", "Counts"}, ImageSize → Medium]}],
  GraphicsRow[{Histogram[cgl[[All, 10]], PlotRange → {{0, 3.5}, All}, Frame → True,
     FrameLabel → {"Thickness Values as PLTCM Output", "Counts"}, ImageSize → Medium],
    Histogram[cgl[[All, 6]], PlotRange → {{0, 3.5}, All}, Frame → True,
     FrameLabel → {"Thickness Values in CGL Data Set", "Counts"}, ImageSize → Medium]}]}]
```

Out[ ]=


Counts
Width Values as PLTCM Output
Counts
Width Values in CGL Data Set
Counts
Thickness Values as PLTCM Output
Counts
Thickness Values in CGL Data Set

In[ ]:=
```
GraphicsColumn[
 {GraphicsRow[{Histogram[pltcm[[All, 9]], PlotRange → {{500, 2000}, All}, Frame → True,
    FrameLabel → {"PLTCM Width_input Values", "Counts"}, ImageSize → Medium],
   Histogram[pltcm[[All, 25]], PlotRange → {{0, 1600}, All}, Frame → True,
    FrameLabel → {"PLTCM Length_input Values", "Counts"}, ImageSize → Medium],
   Histogram[pltcm[[All, 10]], PlotRange → {{0, 5.5}, All}, Frame → True,
    FrameLabel → {"PLTCM Thickness_input Values", "Counts"}, ImageSize → Medium]}],
  GraphicsRow[{Histogram[cgl[[All, 9]], PlotRange → {{500, 2000}, All}, Frame → True,
    FrameLabel → {"CGL Width Values (PLTCM Outcomes)", "Counts"}, ImageSize → Medium],
   Histogram[cgl[[All, 8]], {10^2}, PlotRange → {{0, 6000}, All}, Frame → True,
    FrameLabel → {"CGL Length Values", "Counts"}, ImageSize → Medium],
   Histogram[cgl[[All, 10]], PlotRange → {{0, 5.5}, All}, Frame → True, FrameLabel →
     {"CGL Thickness Values (PLTCM Outcomes)", "Counts"}, ImageSize → Medium]}]}]
```

Out[ ]=