# COMPUTER VISION – HW2 – YAĞIZ DÖNER – 141044062

6 Resim türünden farklı açılara ait 2'şer resmi programımda kullandım. Resimler türlerine göre çifter olarak sırayla işleniyorlar. Program ilk olarak resimleri alarak onları gri tonlamalı hale dönüştürüyor.

Daha sonra "Future Based Algorithm" kısmı için ödevde bizden istendiği şekilde, OpenCV de ORB'nin detectAndCompute() fonksiyonunu kullandım. Bu fonksiyon sayesinde her bir resim için belirli anahtar noktalar ve tanımlamalar elde ediyorum. Buradan elde ettiğim noktaları yine OpenCV de BFMatcher'ın match() fonksiyonunda kullanarak, eşleşen noktaları elde ettim. Bu eşleşen noktaları OpenCV'nin drawMatches() fonksiyonu sayesinde, resimler üzerinde gösterdim.

Bu işlemlerden sonra 3. adım olan "Correlation Based Algorithm" için stereoBM ve stereoSGBM arasından istenilen algoritmaya uygunluğu daha iyi olduğu için stereoBM'i seçerek devam ettim. StereoBM "numDisparities" ve "blockSize" adında iki değişkene sahip. Buradan girilen sayılara göre verilen görüntülerin disparity görüntülerini üretiyor. İşlemler sonucu elde etmiş olduğum disparity görüntüleri, middlebury sayfasındakilerle çok büyük benzerlikler göstersede, içindeki geometrik desenlerin çizgileri, orada ki kadar düzgün değil.

## Barn1;

```
Results of Barn1
Descriptors of First Image :
 [[232  48 188 ...  72  70  34]
 [201  50 252 ... 224 199 113]
 [254  83 108 ... 133 254  87]
 ...
 [ 25 198  70 ... 209 105  12]
 [114  14 196 ...  12  94  31]
 [ 26 157 119 ... 192 229 122]]
Descriptors of Second Image :
 [[119  77 110 ... 185  88  13]
 [ 69 241 153 ... 248 129 161]
 [128  74  95 ... 155 113 249]
 ...
 [163 206 103 ... 216 245 252]
 [250  36 254 ...  44  39 106]
 [200 153  19 ...   4 167 187]]
There are  500  points before BFMatcher
There are  337  matching points after BFMatcher
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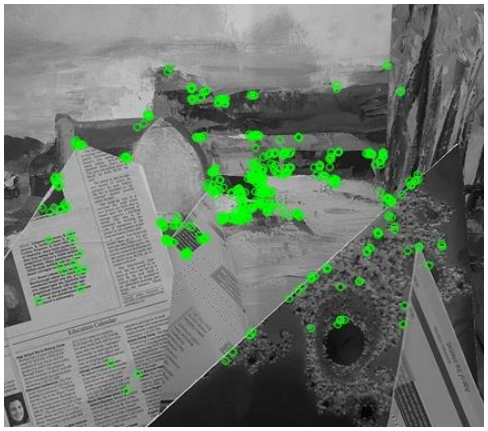
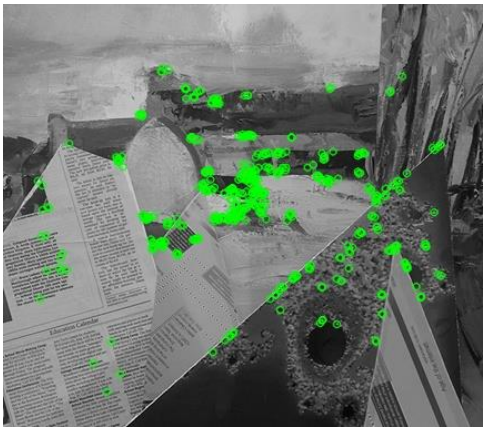
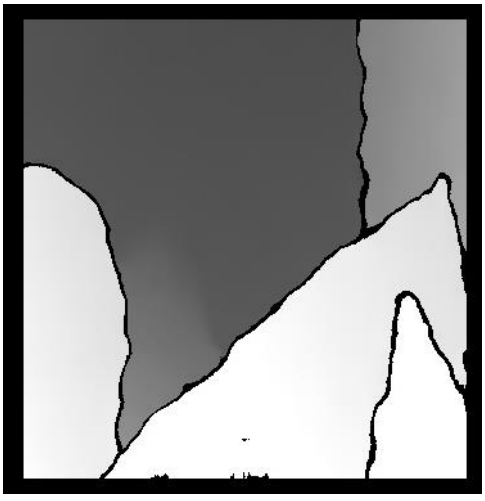
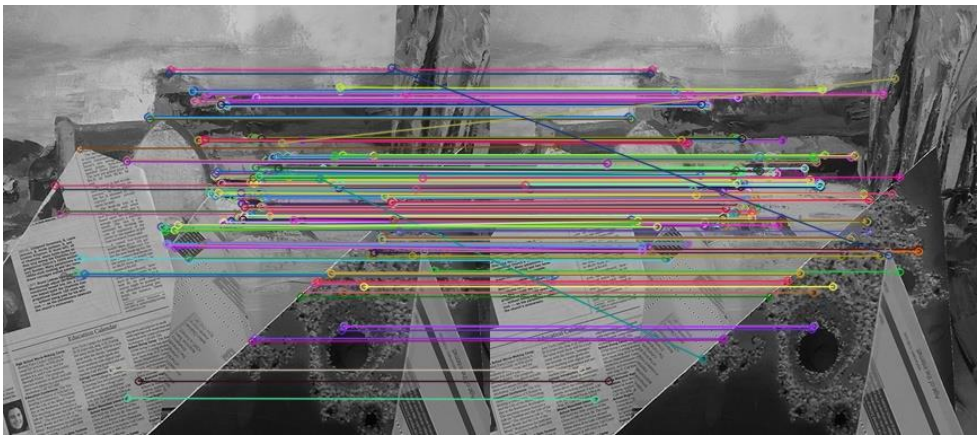


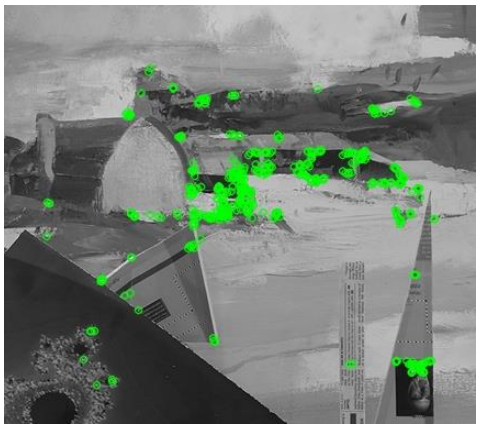


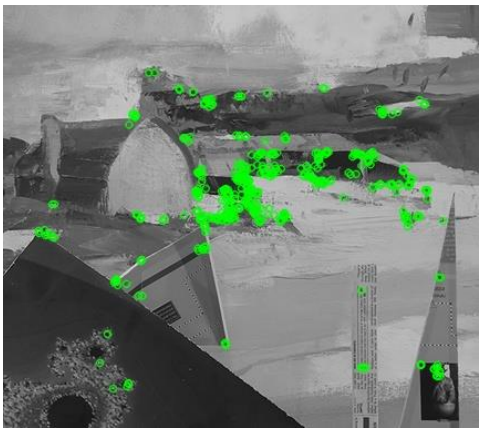


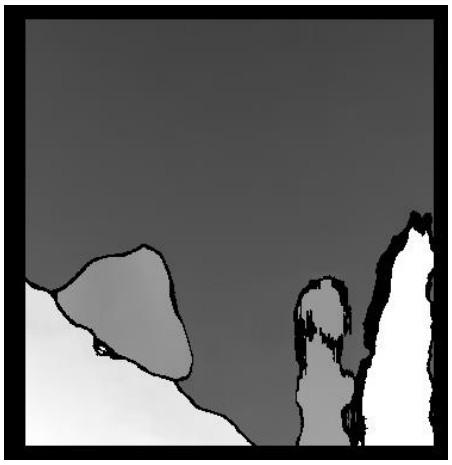


# Barn2;

```
Results of Barn2 :
Descriptors of First Image :
 [[205 253 150 ... 115 171   3]
 [156  95  31 ... 123 165 251]
 [ 33 197  83 ... 162 194 168]
 ...
 [161 212 234 ... 218 240 129]
 [ 64  48 157 ...  43   3   0]
 [ 89  81  55 ... 183  97  57]]
Descriptors of Second Image :
 [[ 79  26 174 ... 172  12 127]
 [207 181 105 ... 228 139 117]
 [ 33 197  83 ... 162 194 168]
 ...
 [ 24 157 127 ... 192 229 234]
 [131 192  37 ...  12 177 252]
 [ 84 104 123 ...  51  39 226]]
There are  500  points before BFMatcher
There are  379  matching points after BFMatcher
```

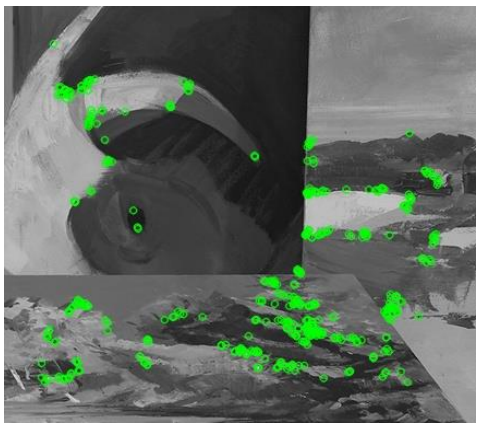


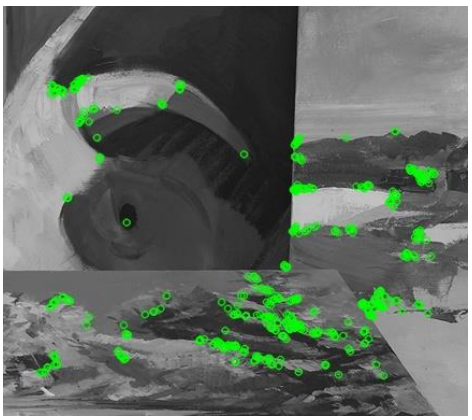




# Bull;

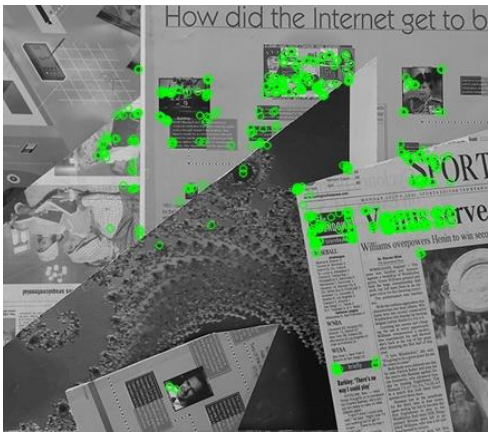
```
Results of Bull :
Descriptors of First Image :
 [[ 42 221 114 ... 142 236 206]
 [224 135  25 ...   8 208  43]
 [ 55 207  66 ... 142 235 148]
 ...
 [ 34 172 152 ...  78 206 207]
 [238 160 149 ...  68 135 195]
 [109  48 156 ... 113  11  18]]
Descriptors of Second Image :
 [[168  91 123 ... 159  85 251]
 [126  99  50 ...  55  47  70]
 [ 84 113 157 ... 123 135  98]
 ...
 [161 186 177 ...  72 213 237]
 [ 98 172 136 ...  78 206 206]
 [238 160 181 ...  68 135  66]]
There are  469  points before BFMatcher
There are  340  matching points after BFMatcher
```

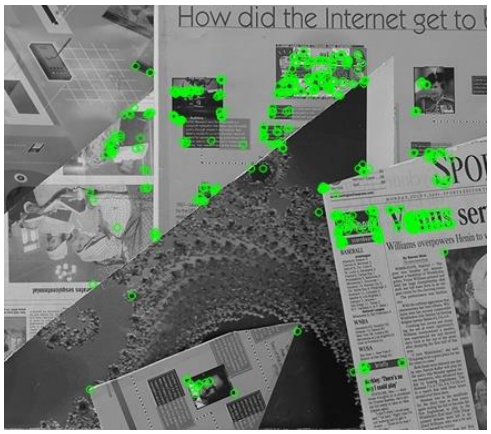




# Poster;

```
Results of Poster :
Descriptors of First Image :
 [[  0 159  31 ...  72 157 219]
 [ 73  37 210 ... 218 235 140]
 [150  76 166 ... 124 181 114]
 ...
 [246 127 106 ... 255 247 247]
 [ 47  32 231 ... 191  90 245]
 [127 125 230 ... 255 250  87]]
Descriptors of Second Image :
 [[ 22  32 153 ... 123  21   6]
 [  6 134 236 ... 252 188 240]
 [ 65 168  83 ... 168  35 128]
 ...
 [175 253   0 ...  95 218 150]
 [ 47  96 231 ... 175  90 228]
 [139 157 244 ... 252 249 221]]
There are  492  points before BFMatcher
There are  322  matching points after BFMatcher
```

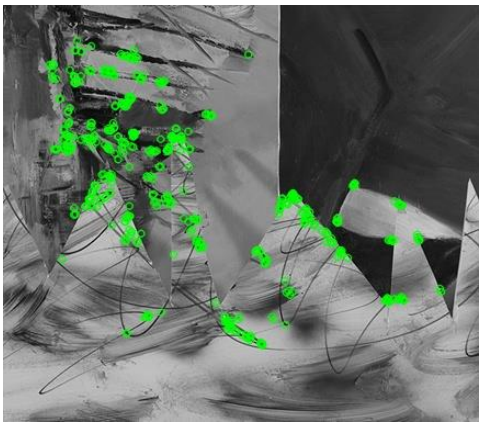


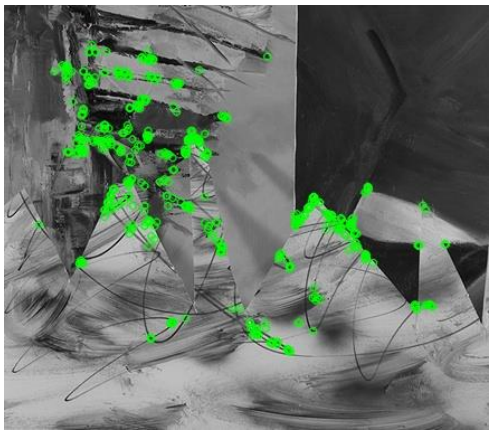



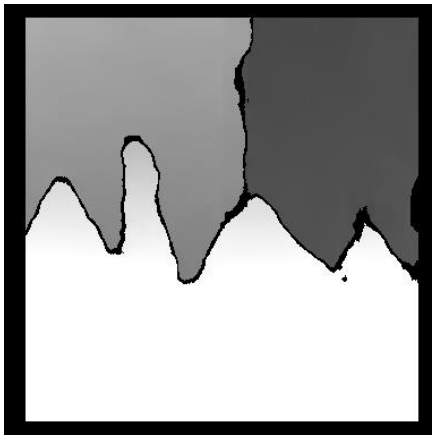


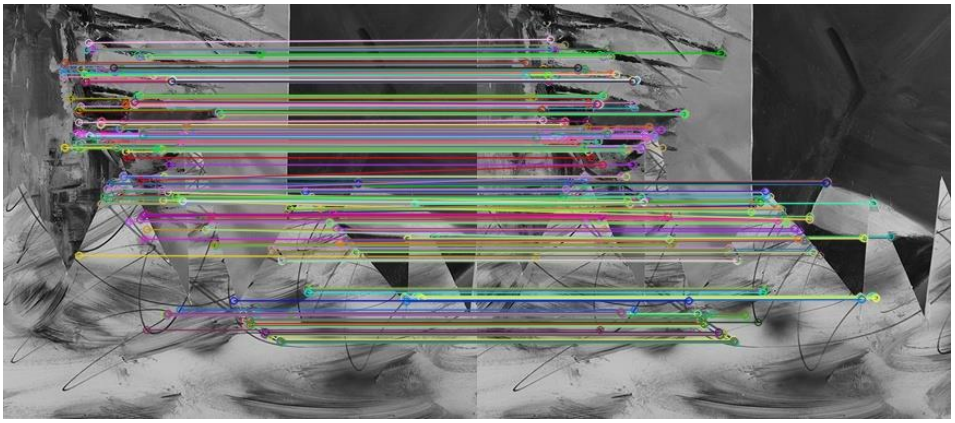
# Sawtooth;

```
Results of Sawtooth :
Descriptors of First Image :
 [[174 182 169 ... 205  28 247]
 [ 63 115  97 ... 175  90 213]
 [124 173  24 ... 106 110 130]
 ...
 [248  64  93 ... 152 132  34]
 [ 94 249 115 ... 179  37 122]
 [ 26 209  55 ...  30 165 251]]
Descriptors of Second Image :
 [[ 66 130 134 ...   4 173  30]
 [ 70 139 194 ...  62 189  26]
 [150 135 104 ... 206 188 211]
 ...
 [ 13 217  63 ...  10 141  51]
 [107 235  98 ... 156 218 220]
 [ 66 235 158 ...  82 174  14]]
There are  500  points before BFMatcher
There are  313  matching points after BFMatcher
```









# Venus;

```
Results of Venus :
Descriptors of First Image :
 [[129 157  25 ... 128 129  89]
 [179 201 107 ... 190 122 228]
 [ 18 255  46 ...  20  53 219]
 ...
 [ 46 249 210 ...  31 250 158]
 [122 173 211 ...  70 166 202]
 [102 184 186 ...  72 164 251]]
Descriptors of Second Image :
 [[ 87 139  94 ... 166  41  12]
 [ 57  73  59 ... 138 116  32]
 [241 243  23 ... 144 195  57]
 ...
 [114 123 106 ...  14  38  91]
 [161 253 122 ... 154 218 142]
 [125 112 245 ... 243   2 113]]
There are  499  points before BFMatcher
There are  314  matching points after BFMatcher
```

## YAĞIZ DÖNER - 141044062