

Interaktivna 3D vizualizacija gradijentne optimizacije

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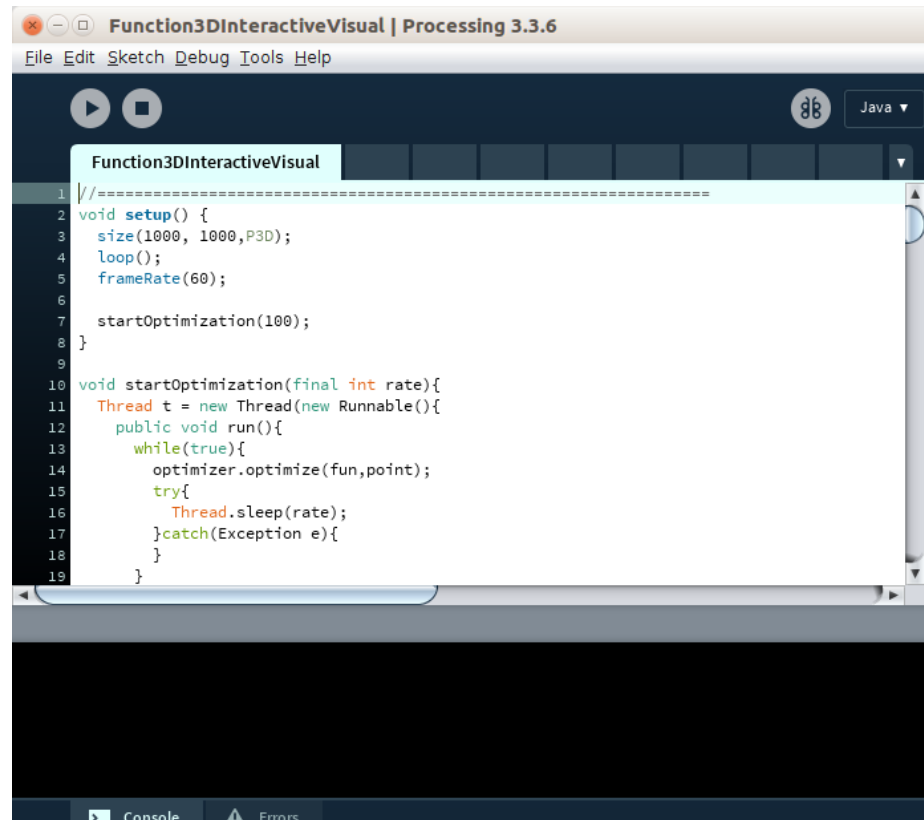
Seminarski rad u okviru predmeta "Duboko učenje" [2017/2018]
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Motivacija

- ▶ Bolje razumijevanje gradijentne optimizacije
 - ▶ Utjecaj stope učenja
 - ▶ Rad različitih algoritama

Processing

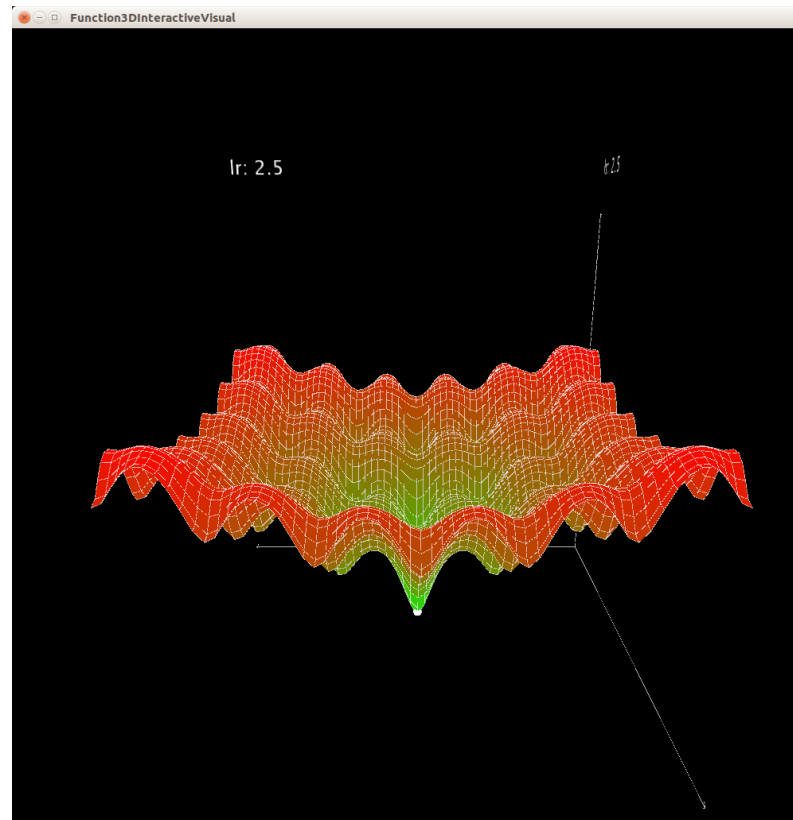
- ▶ Open source programski jezik I IDE
- ▶ Zasnovan na Javi
- ▶ Fokusiran na digitalnu vizualizaciju
- ▶ Za upoznavanje laika s programiranjem
- ▶ Sketchbook
- ▶ Sketch



```
Function3DInteractiveVisual | Processing 3.3.6
File Edit Sketch Debug Tools Help

Function3DInteractiveVisual
1 //-----
2 void setup() {
3   size(1000, 1000, P3D);
4   loop();
5   frameRate(60);
6
7   startOptimization(100);
8 }
9
10 void startOptimization(final int rate){
11   Thread t = new Thread(new Runnable(){
12     public void run(){
13       while(true){
14         optimizer.optimize(fun,point);
15         try{
16           Thread.sleep(rate);
17         }catch(Exception e){
18         }
19       }
20     }
21   });
22 }
```

Ostvareni rad



Podržane optimizacije

- ▶ Gradijentni spust s fiksnom stopom učenja
- ▶ Gradijentni spust s linearno promjenjivom stopom učenja
- ▶ Gradijentni spust s momentom
- ▶ Gradijentni spust s Nesterovljevim momentom
- ▶ RMSProp
- ▶ Adagrad
- ▶ Adam

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the left and right sides of the frame, leaving a large white central area. The shapes are layered, creating a sense of depth and movement.

DEMO