YILDIZ TEKNİK ÜNİVERSİTESİ BİLGİSAYAR MÜHENDİSLİĞİ BÖLÜMÜ

YAPAY ZEKAYA GİRİŞ ÖDEVİ RAPORU

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ÖRNEK 1

BİREY SAYISI: 20

HER BİREYİN ELEMAN SAYISI: 20

JENERASYON SAYISI: 20

İlk popülasyonun evrimden önceki en yüksek fitness değerine sahip bireyi:

```
+----------------+----------------+
| Positive Words | Negative Words |
+----------------+----------------+
|      too       |       q        |
|    relative    |     phone      |
|     crisp      |    landline    |
|      good      |    motorola    |
|   autoanswer   |    extremely   |
|      one       |     since      |
|     wires      |    crackedi    |
|      fits      |      you       |
|      what      |    surefire    |
|      nyc       |       s        |
+----------------+----------------+
```
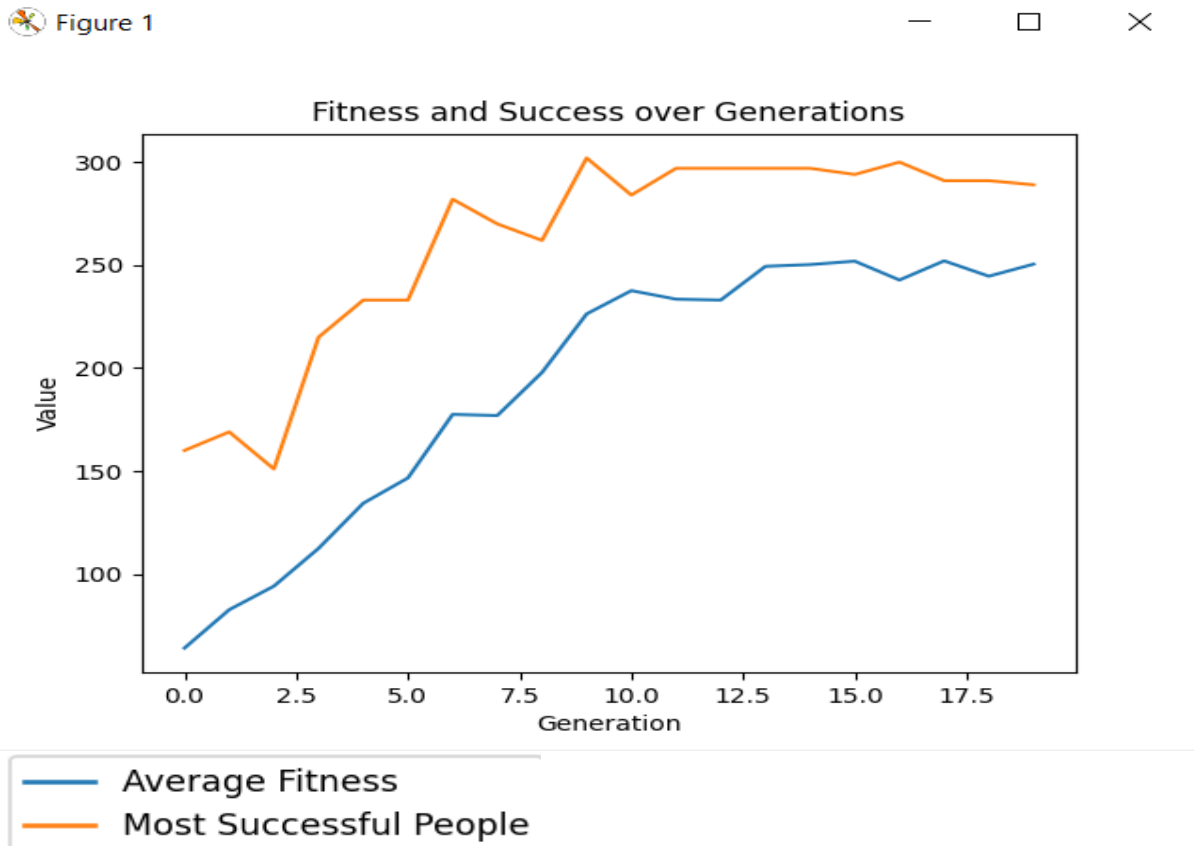
Evrim:

```
Generation:  1
Max fitness:  160
Generation:  2
Max fitness:  169
Generation:  3
Max fitness:  151
Generation:  4
Max fitness:  215
Generation:  5
Max fitness:  233
Generation:  6
Max fitness:  233
Generation:  7
Max fitness:  282
Generation:  8
Max fitness:  270
Generation:  9
Max fitness:  262
Generation:  10
Max fitness:  302
Generation:  11
Max fitness:  284
Generation:  12
Max fitness:  297
Generation:  13
Max fitness:  297
Generation:  14
Max fitness:  297
Generation:  15
Max fitness:  297
Generation:  16
Max fitness:  294
Generation:  17
Max fitness:  300
Generation:  18
Max fitness:  291
```

```
Generation:  19
Max fitness:  291
Generation:  20
Max fitness:  289
```

Son popülasyonun evrimden sonraki fitness değeri en yüksek birey:

Positive Words	Negative Words
yes	ever
wish	disappointed
great	nicer
good	us
autoanswer	buy
looks	build
phone	means
winner	long
from	been
flip	quality

Grafik:

Görüldüğü gibi arada düşüşler de olsa genel olarak fitness'ta artış söz konusu

ÖRNEK 2

BİREY SAYISI: 20

HER BİREYİN ELEMAN SAYISI: 40

JENERASYON SAYISI: 20

Birey sayısı ve jenerasyon sayısı sabit tutulup bireydeki eleman sayısı artırılıyor.

İlk popülasyonun evrimden önceki en yüksek fitness değerine sahip bireyi:

Positive Words	Negative Words
significantly	last
unit	bougth
helpful	sensor
seller	much
down	purchase
get	ear
book	firstperson
night	trying
works	buttons
glove	etc
plugged	ever
auto	both
under	decent
smell	answer
unacceptible	hearing
phone	eventually
slow	extended
offers	ever
life	metal
welldesigned	tmobile

Evrim:

```
Generation:  1
Max fitness:  210
Generation:  2
Max fitness:  206
Generation:  3
Max fitness:  207
Generation:  4
Max fitness:  243
Generation:  5
Max fitness:  252
Generation:  6
Max fitness:  243
Generation:  7
Max fitness:  244
Generation:  8
Max fitness:  245
Generation:  9
Max fitness:  301
```
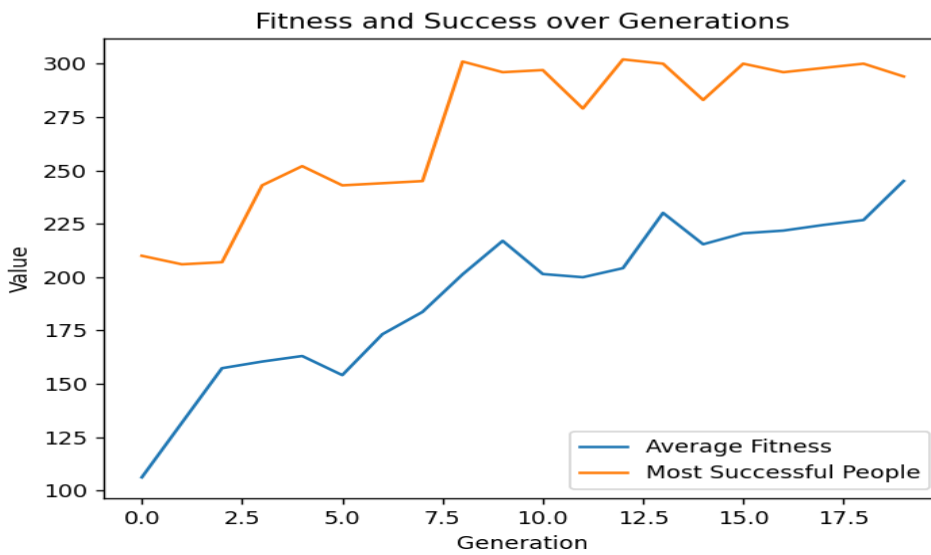
```
Generation:  10
Max fitness:  296
Generation:  11
Max fitness:  297
Generation:  12
Max fitness:  279
Generation:  13
Max fitness:  302
Generation:  14
Max fitness:  300
Generation:  15
Max fitness:  283
Generation:  16
Max fitness:  300
Generation:  17
Max fitness:  296
Generation:  18
Max fitness:  298
Generation:  19
Max fitness:  300
Generation:  20
Max fitness:  294
```

Son popülasyonun evrimden sonraki fitness değeri en yüksek birey:

```
+----------------+---------------------+
| Positive Words |   Negative Words    |
+----------------+---------------------+
|     though     |         last        |
|  minutesmajor  |        bougth       |
|      also      |         unit        |
|      very      |       someone       |
|      thats     |       greater       |
|     ordered    |         stop        |
|   sunglasses   |        light        |
|      night     | bluetoothmotorola   |
|       us       |       buttons       |
|      glove     |         etc         |
|    available   |         ever        |
|      specs     |          be         |
|    activesync  |        decent       |
|   transformed  |       exactly       |
|    distorted   |       browsing      |
|      phone     |        today        |
|     onethis    |        wrong        |
|    earpiece    |         look        |
|    websites    |         high        |
|     volume     |      accessing      |
+----------------+---------------------+
```

Grafik:

Bireylerin eleman sayılarını yükseltmek çok da büyük bir fark yaratmamış

ÖRNEK 3

BİREY SAYISI: 20

HER BİREYİN ELEMAN SAYISI: 20

JENERASYON SAYISI: 30

Birey sayısını ve bireylerin eleman sayısını sabit tutup jenerasyon sayısını artırıyoruz

İlk popülasyonun evrimden önceki en yüksek fitness değerine sahip birey:

```
+--------------------+--------------------+
|   Positive Words   |   Negative Words   |
+--------------------+--------------------+
|       alone        |        buds        |
|      quality       |         or         |
|        able        |        razr        |
|        tips        |       break        |
|       piece        |       phone        |
|    manufacturer    |     impossible     |
|        file        |       texas        |
|        star        |       latest       |
|        both        |     equipment      |
|    improvement     |       upbeat       |
+--------------------+--------------------+
```
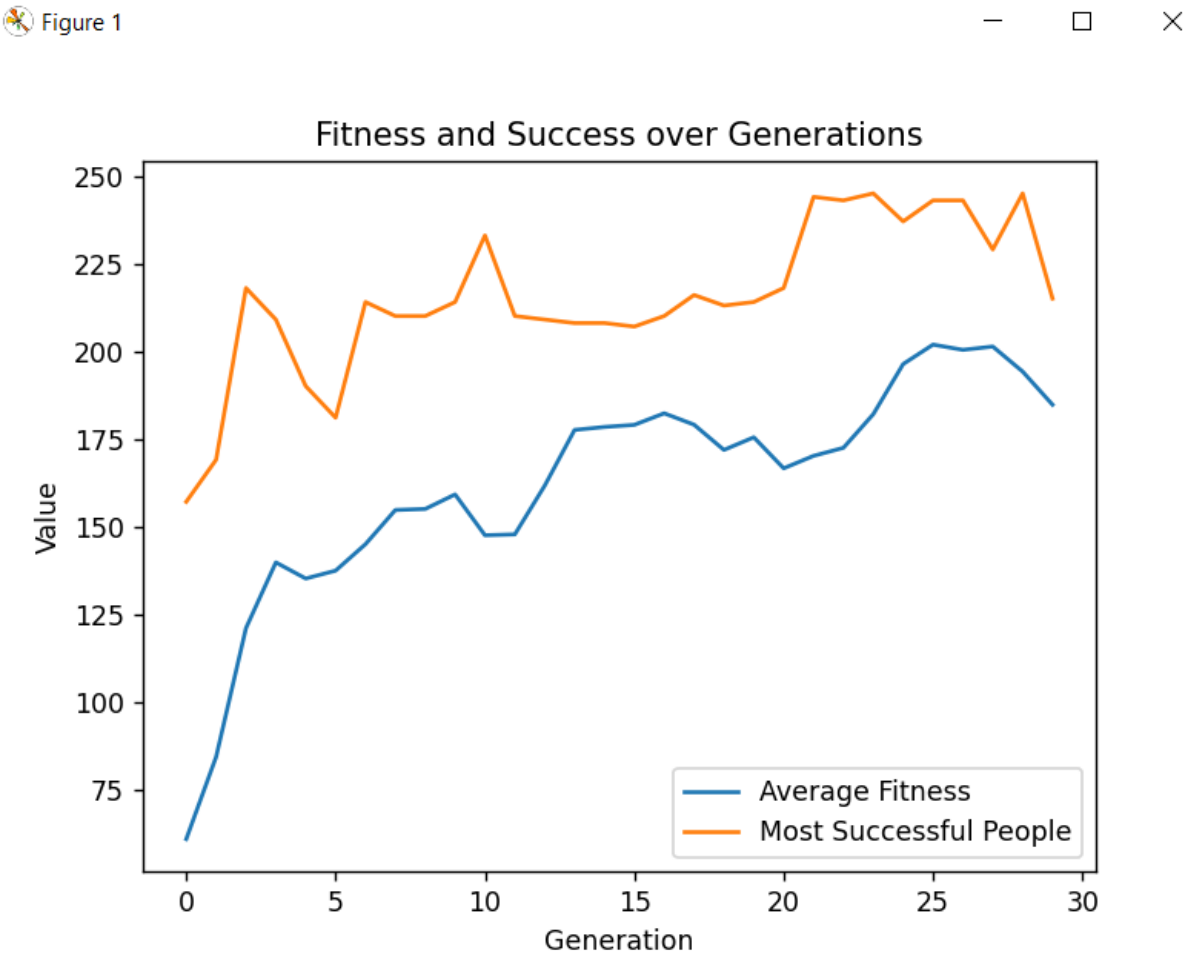
Evrim:

```
Generation:  1
Max fitness:  157
Generation:  2
Max fitness:  169
Generation:  3
Max fitness:  218
Generation:  4
Max fitness:  209
Generation:  5
Max fitness:  190
Generation:  6
Max fitness:  181
Generation:  7
Max fitness:  214
Generation:  8
Max fitness:  210
Generation:  9
Max fitness:  210
Generation:  10
Max fitness:  214
Generation:  11
Max fitness:  233
Generation:  12
Max fitness:  210
Generation:  13
Max fitness:  209
Generation:  14
Max fitness:  208
Generation:  15
Max fitness:  208
```

```
Generation:  15
Max fitness:  208
Generation:  16
Max fitness:  207
Generation:  17
Max fitness:  210
Generation:  18
Max fitness:  216
Generation:  19
Max fitness:  213
Generation:  20
Max fitness:  214
Generation:  21
Max fitness:  218
Generation:  22
Max fitness:  244
Generation:  23
Max fitness:  243
Generation:  24
Max fitness:  245
Generation:  25
Max fitness:  237
Generation:  26
Max fitness:  243
Generation:  27
Max fitness:  243
Generation:  28
Max fitness:  229
Generation:  29
Max fitness:  245
Generation:  30
Max fitness:  215
```

Son popülasyonun en iyisi:

```
+---------------------+---------------------+
|   Positive Words    |   Negative Words    |
+---------------------+---------------------+
|        shape        |       recieve       |
|        take         |          v          |
|        able         |      problems       |
|        tips         |        break        |
|      customer       |        phone        |
|       charge        |        light        |
|    expectations     |        this         |
|        easy         |        cool         |
|        sanyo        |    communication    |
|         hs          |        case         |
+---------------------+---------------------+
```

Grafik:

Jenerasyon arttıkça bireyler birbirine benzediği için yükseliş yavaşlıyor

ÖRNEK 4

BİREY SAYISI: 20

HER BİREYİN ELEMAN SAYISI: 20

JENERASYON SAYISI: 30

Bu sefer farklı bir şey yapıp evrim esnasında parent seçerken fitness değerlerine göre değil de fitness değerlerinin karesine göre seçelim. Bu durum fitness'ı yüksek olanların çok daha yüksek bir oranda seçilip yeni jenerasyona katılmalarını sağlayacak.

İlk popülasyonun evrimden önceki en yüksek fitness değerine sahip birey:

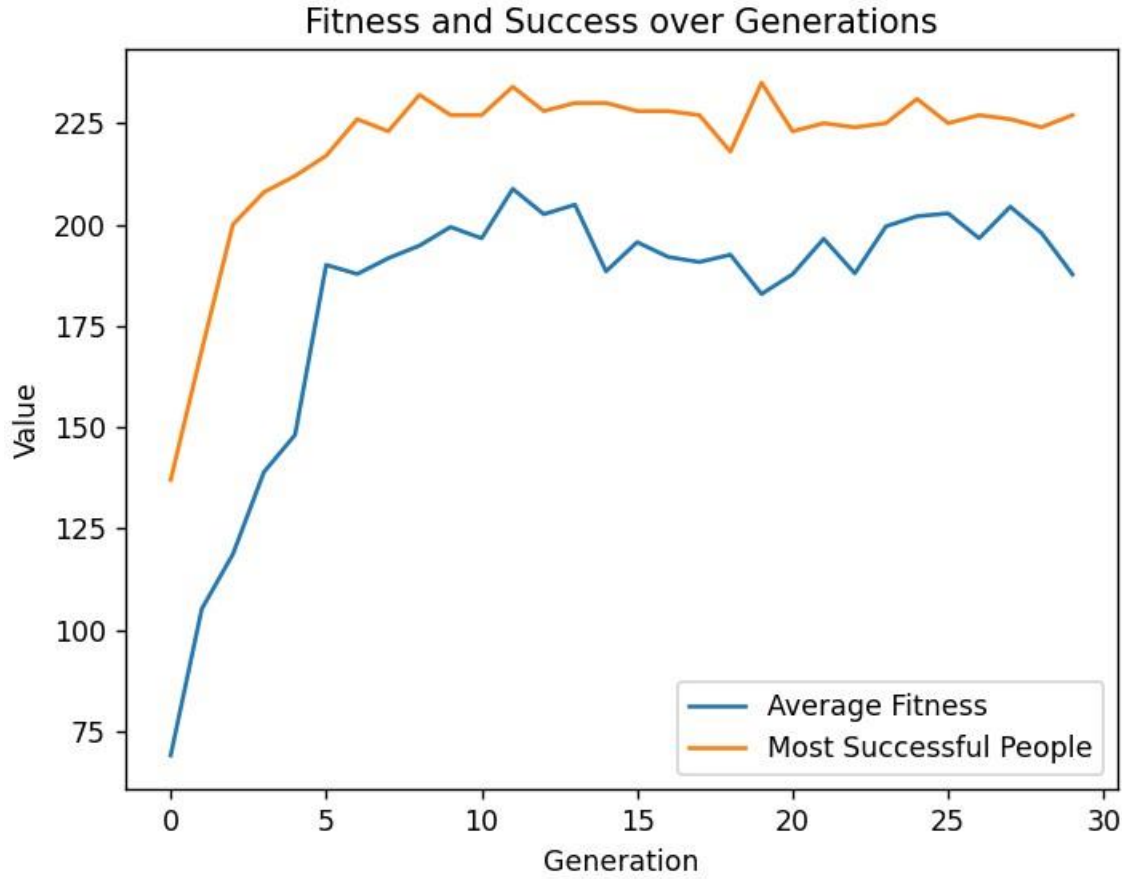| Positive Words	Negative Words
internetto	while
great	warning
color	lasted
some	jack
worthwhile	defect
mp	of
pad	within
tracfonewebsite	complain
dont	infuriating
recently	full

Evrim:

```
Generation:  1
Max fitness:  137
Generation:  2
Max fitness:  169
Generation:  3
Max fitness:  200
Generation:  4
Max fitness:  208
Generation:  5
Max fitness:  212
Generation:  6
Max fitness:  217
Generation:  7
Max fitness:  226
Generation:  8
Max fitness:  223
Generation:  9
Max fitness:  232
Generation:  10
Max fitness:  227
Generation:  11
Max fitness:  227
Generation:  12
Max fitness:  234
Generation:  13
Max fitness:  228
Generation:  14
Max fitness:  230
Generation:  15
Max fitness:  230
Generation:  16
Max fitness:  228
Generation:  17
Max fitness:  228
Generation:  18
Max fitness:  227
Generation:  19
Max fitness:  218
Generation:  20
Max fitness:  235
Generation:  21
Max fitness:  223
Generation:  22
Max fitness:  225
```

```
Generation:  24
Max fitness:  225
Generation:  25
Max fitness:  231
Generation:  26
Max fitness:  225
Generation:  27
Max fitness:  227
Generation:  28
Max fitness:  226
Generation:  29
Max fitness:  224
Generation:  30
Max fitness:  227
```

Son popülasyonun evrimden sonraki fitness değeri en yüksek birey:

```
+----------------+----------------+
| Positive Words | Negative Words |
+----------------+----------------+
|    monkeys     |  phonebattery  |
|     great      |    allowing    |
|     color      |    searched    |
|     phone      |     handy      |
|   worthwhile   |     right      |
|      lap       |    however     |
|      pad       |     course     |
|      drop      | intermittently |
| disappointment |      ever      |
|       lg       |   understand   |
+----------------+----------------+
```

Grafik:

Fitness and Success over Generations

Görüldüğü gibi en başta çok hızlı yükseliş sağlasa da yeni jenerasyonlarda bireylerin birbirlerine çok benzemesi sebebiyle yükseliş çok yavaşlıyor ve son jenerasyonda bireyler birbirine çok benziyor.

ÖRNEK 5

BİREY SAYISI: 40

HER BİREYİN ELEMAN SAYISI: 20

JENERASYON SAYISI: 20

Fitness'ı eski haline getirip eleman sayısı ve jenerasyon sayısını aynı tutup birey sayısını arttıralım.

İlk popülasyonun evrimden önceki en yüksek fitness değerine sahip birey:

```
+-----------------+-----------------+
| Positive Words  | Negative Words  |
+-----------------+-----------------+
|    prevents     |      fall       |
|     device      |    nightmare    |
|  manufacturer   |    slipping     |
|    bluetooth    |      voice      |
|       be        |    normally     |
|      work       |      ones       |
|      much       |      onlyi      |
|    superfast    |       but       |
|      setup      |       who       |
|       use       |      poor       |
+-----------------+-----------------+
```
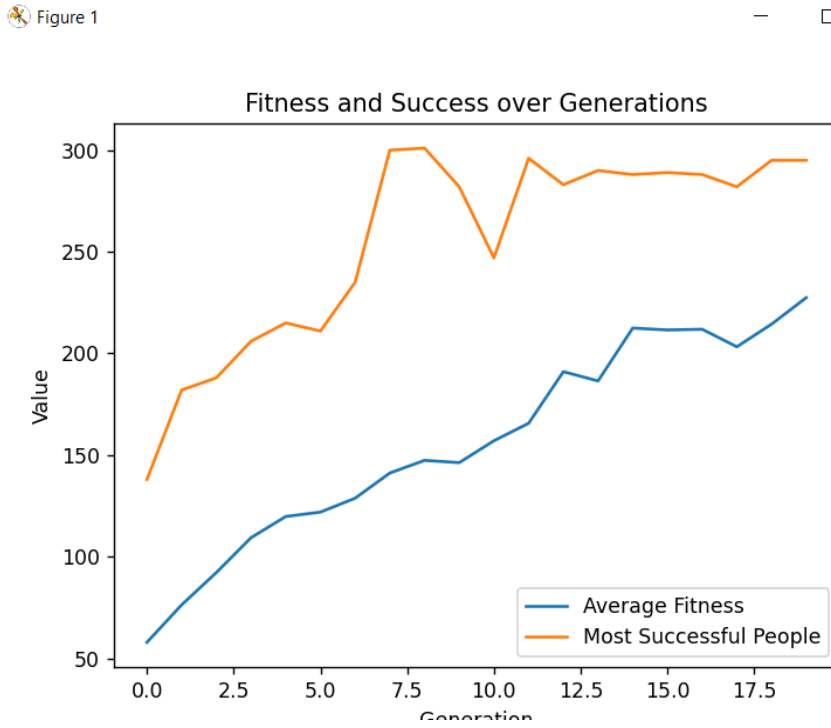
Evrim:

```
Generation:  1
Max fitness:  138
Generation:  2
Max fitness:  182
Generation:  3
Max fitness:  188
Generation:  4
Max fitness:  206
Generation:  5
Max fitness:  215
Generation:  6
Max fitness:  211
Generation:  7
Max fitness:  235
Generation:  8
Max fitness:  300
Generation:  9
Max fitness:  301
Generation:  10
Max fitness:  282
Generation:  11
Max fitness:  247
Generation:  12
Max fitness:  296
```

```
Generation:  13
Max fitness:  283
Generation:  14
Max fitness:  290
Generation:  15
Max fitness:  288
Generation:  16
Max fitness:  289
Generation:  17
Max fitness:  288
Generation:  18
Max fitness:  282
Generation:  19
Max fitness:  295
Generation:  20
Max fitness:  295
```

Son popülasyonun evrimden sonraki fitness değeri en yüksek birey:

Positive Words	Negative Words
droid	colored
very	loads
for	comfortably
bluetooth	startac
hands	average
fantastic	never
much	messes
good	crawl
kindle	this
can	two

Grafik:

Figure 1

Fitness and Success over Generations

Birey sayısının artması daha düzgün bir şekilde fitness değerinin düzenli bir şekilde artışını sağlıyor

ÖRNEK 6

BİREY SAYISI: 50

HER BİREYİN ELEMAN SAYISI: 50

JENERASYON SAYISI: 20

Birey sayısını ve eleman sayısını iyice artırıp sonucu gözlemliyoruz.

İlk popülasyonun evrimden önceki en yüksek fitness değerine sahip birey:

```
+--------------------+----------------------------+
| Positive Words     |      Negative Words        |
+--------------------+----------------------------+
|        mail        |           puff             |
|      wirefly       |         forever            |
|         buy        |          could             |
|        this        |        anything            |
|      buttons       |          wires             |
|      relative      |        beautiful           |
|        wild        |        fulfills            |
|      contract      |          audio             |
|       great        |          money             |
|        two         |        rocketed            |
|        that        |          might             |
|      working       |        unreliable          |
|        bars        |         aspect             |
|      feature       |         messes             |
|       looses       |         renders            |
|       during       |         indoors            |
|      unknown       |         override           |
|        its         |          both              |
|     motorolas      |          love              |
|       slide        |         design             |
|       smell        |         bitpim             |
|      lightly       |          file              |
|        pay         |          clip              |
|         at         | palmtopcameracellphone     |
|         os         |        recommended         |
+--------------------+----------------------------+
```
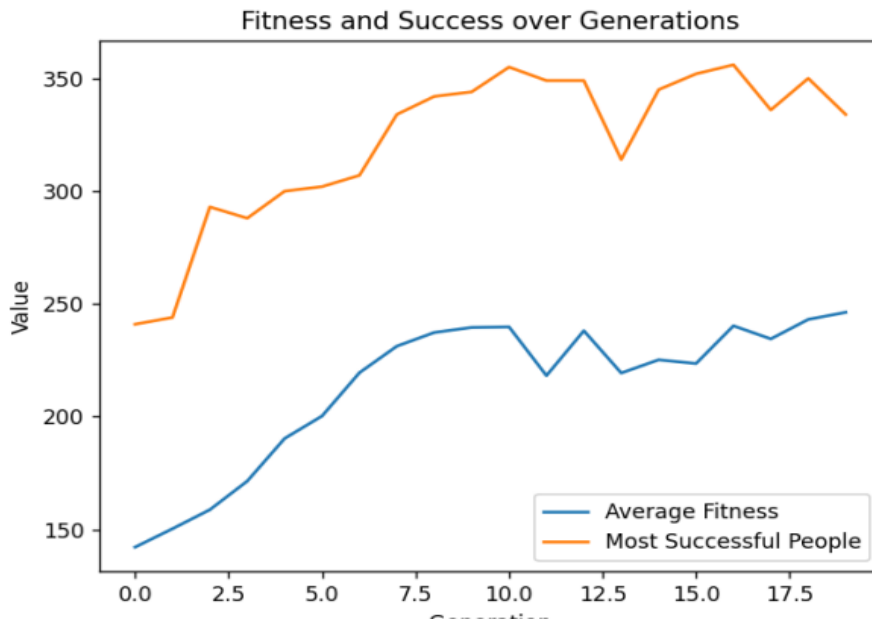
Evrim:

```
Generation:  1
Max fitness:  241
Generation:  2
Max fitness:  244
Generation:  3
Max fitness:  293
Generation:  4
Max fitness:  288
Generation:  5
Max fitness:  300
Generation:  6
Max fitness:  302
Generation:  7
Max fitness:  307
Generation:  8
Max fitness:  334
Generation:  9
Max fitness:  342
Generation:  10
Max fitness:  344
Generation:  11
Max fitness:  355
Generation:  12
Max fitness:  349
Generation:  13
Max fitness:  349
Generation:  14
Max fitness:  314
Generation:  15
Max fitness:  345
Generation:  16
Max fitness:  352
Generation:  17
Max fitness:  356
Generation:  18
Max fitness:  336
Generation:  19
Max fitness:  350
Generation:  20
Max fitness:  334
```

Son popülasyonun evrimden sonraki fitness değeri en yüksek birey:

Positive Words	Negative Words
mail	inconspicuous
ride	toneoverall
buy	fond
this	display
buttons	elsewhere
hoping	verizons
replaced	than
contract	any
great	every
loudglad	swivel
that	upandcoming
store	starts
bars	originally
quality	apparently
message	seemed
leather	large
buzzing	upandcoming
dont	worthless
recommend	shouldnt
with	earbuds
overnight	stars
amazed	buying
sizes	fun
design	center
people	stop

Grafik:

Fitness and Success over Generations

Fitness başarısı yükselse de çalışma hızı çok düşüyor