

**TÜRKİYE CUMHURİYETİ**  
**YILDIZ TEKNİK ÜNİVERSİTESİ**  
**BİLGİSAYAR MÜHENDİSLİĞİ BÖLÜMÜ**



**YAPAY ZEKAYA GİRİŞ**  
**1.ÖDEV**

**Öğrenci Adı: Ali Albayrak**  
**Öğrenci NO: 20011910**

**Öğrenci Adı: Mahmut Alomeyr**  
**Öğrenci NO: 19011920**

Ders Yürütücüsü  
Prof.Dr. Mehmet Fatih AMASYALI  
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## ● Çözüm Anlatımı

Bu, çanta kelimeler yaklaşımını kullanan bir duygu analizi için basit bir Genetik Algoritma'nın kod uygulamasıdır.

### Kod sınıfları

Kod üç sınıftan oluşur:

**-DataPreProcessor:** girdi verilerini önceden işler ve kelime dağılımı olarak kullanılmak üzere bir kelime kümesi oluşturur.

**-Individual:** tek bir aday çözümü temsil eder (bir dizi pozitif ve negatif kelime) ve eğitim verilerindeki doğruluğuna göre fitness skoru hesaplar.

**-Population:** aday çözümlerinin bir popülasyonunu temsil eder ve genetik algoritmayı, seçim, çaprazlama ve mutasyonu içeren şekilde uygular.

### Çalışma şekli

Burada uygulanan Genetik Algoritma şöyle çalışır:

1-Rastgele bireylerin bir popülasyonu oluşturulur.

2-Her bir bireyin *fitness* değeri, pozitif ve negatif kelimelerinin nasıl duygu sınıflandırması yapabileceğine bağlı olarak hesaplanır.

3-Populasyon fitness değerine göre azalan sırayla sıralanır.

4-Yeni bir populasyon, en yüksek performans gösteren bireyleri (fitness değerine dayalı olarak) seçerek ve genetik operatörler (çaprazlama ve mutasyon) uygulayarak yeni bireyler oluşturularak oluşturulur.

5-İşlem belirli bir nesil sayısı için tekrarlanır.

## • Bulgular

```
pop_sizes = [50,150,250]
```

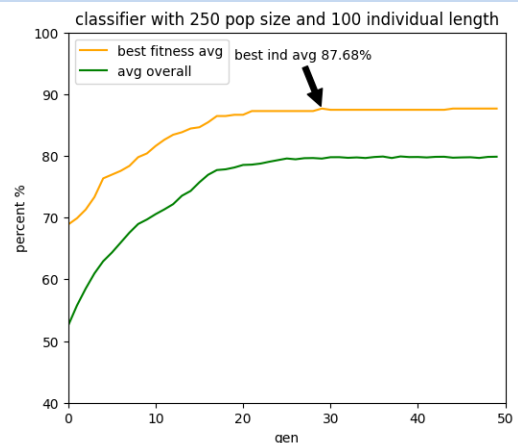
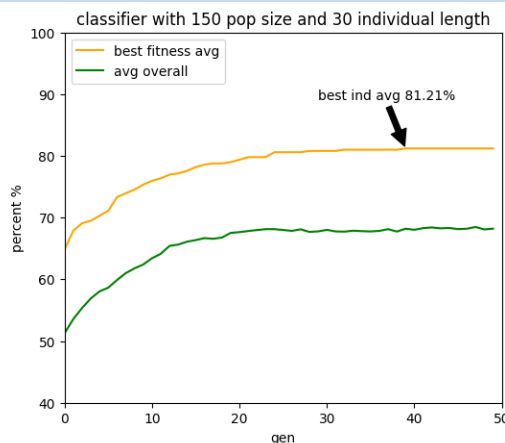
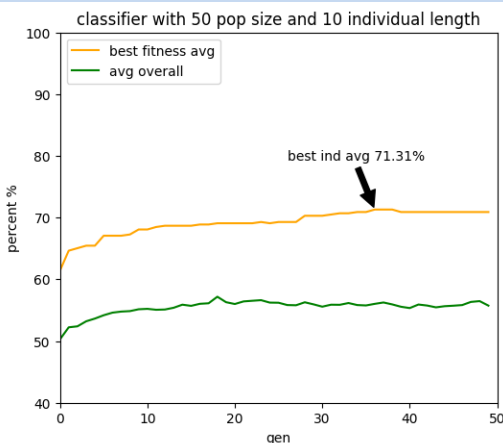
```
ind_lens = [10,30,100]
```

kodda pop\_size ve ind\_len değerleri için 3 tane farklı değer kullanıldı

**mutation\_rate:**

mu\_prob adlı değişkene sabit değer verilmedi. fit ortalama değeri ile ters orantılı dinamik olarak hesaplanıyor

## 1- Ortalama Grafikleri



Burda 5 farklı veri kümesini 3 farklı durumdaki izlediği performans ortalaması var.

Best ind avg: En iyi bireylerin fit değerleri ortalaması

## 2- Jenerasyonlar takip tablosu

Önemli Not: Burada sadece bir örnek resim var kalan tablolar zip dosyası içindeki “**jenerasyon\_tablolari.txt**” adlı dosya’da bulunuyor.

Dataset 3

pop created

classifier with 50 pop size and 10 individual length

gen 1 => Max fit: 0.595959595959596, avg: 0.499595959595960, mu prob: 0.300000000000000
gen 2 => Max fit: 0.646464646464647, avg: 0.529090909090909, mu prob: 0.350404040404040
gen 3 => Max fit: 0.646464646464647, avg: 0.537171717171717, mu prob: 0.320909090909091
gen 4 => Max fit: 0.646464646464647, avg: 0.533333333333333, mu prob: 0.312828282828283
gen 5 => Max fit: 0.686868686868687, avg: 0.544444444444444, mu prob: 0.316666666666667
gen 6 => Max fit: 0.686868686868687, avg: 0.543434343434343, mu prob: 0.305555555555556
gen 7 => Max fit: 0.686868686868687, avg: 0.545454545454545, mu prob: 0.306565656565657
gen 8 => Max fit: 0.686868686868687, avg: 0.534747474747474, mu prob: 0.304545454545455
gen 9 => Max fit: 0.686868686868687, avg: 0.526868686868687, mu prob: 0.315252525252526
gen 10 => Max fit: 0.707070707070707, avg: 0.539999999999999, mu prob: 0.323131313131313
gen 11 => Max fit: 0.707070707070707, avg: 0.546666666666666, mu prob: 0.310000000000000
gen 12 => Max fit: 0.707070707070707, avg: 0.548484848484848, mu prob: 0.303333333333334
gen 13 => Max fit: 0.707070707070707, avg: 0.544040404040404, mu prob: 0.301515151515152
gen 14 => Max fit: 0.707070707070707, avg: 0.561414141414141, mu prob: 0.305959595959596
gen 15 => Max fit: 0.707070707070707, avg: 0.559191919191919, mu prob: 0.288585858585859
gen 16 => Max fit: 0.707070707070707, avg: 0.551717171717171, mu prob: 0.290808080808081
gen 17 => Max fit: 0.707070707070707, avg: 0.545252525252525, mu prob: 0.298282828282829
gen 18 => Max fit: 0.707070707070707, avg: 0.536161616161616, mu prob: 0.304747474747475
gen 19 => Max fit: 0.707070707070707, avg: 0.545454545454545, mu prob: 0.313838383838384
gen 20 => Max fit: 0.707070707070707, avg: 0.532727272727273, mu prob: 0.304545454545455
gen 21 => Max fit: 0.707070707070707, avg: 0.533939393939394, mu prob: 0.317272727272727
gen 22 => Max fit: 0.707070707070707, avg: 0.538787878787879, mu prob: 0.316060606060606
gen 23 => Max fit: 0.707070707070707, avg: 0.535151515151515, mu prob: 0.311212121212121
gen 24 => Max fit: 0.707070707070707, avg: 0.536161616161616, mu prob: 0.314848484848485
gen 25 => Max fit: 0.707070707070707, avg: 0.536161616161616, mu prob: 0.313838383838384
gen 26 => Max fit: 0.707070707070707, avg: 0.537575757575758, mu prob: 0.313838383838384
gen 27 => Max fit: 0.707070707070707, avg: 0.525454545454546, mu prob: 0.312424242424242
gen 28 => Max fit: 0.707070707070707, avg: 0.534343434343434, mu prob: 0.324545454545454
gen 29 => Max fit: 0.707070707070707, avg: 0.537171717171717, mu prob: 0.315656565656566
gen 30 => Max fit: 0.707070707070707, avg: 0.540808080808080, mu prob: 0.312838283828283
gen 31 => Max fit: 0.707070707070707, avg: 0.526060606060606, mu prob: 0.309191919191920
gen 32 => Max fit: 0.707070707070707, avg: 0.532727272727273, mu prob: 0.323939393939394
gen 33 => Max fit: 0.707070707070707, avg: 0.537373737373737, mu prob: 0.317272727272727
gen 34 => Max fit: 0.707070707070707, avg: 0.546464646464646, mu prob: 0.312626262626263
gen 35 => Max fit: 0.707070707070707, avg: 0.543030303030303, mu prob: 0.303535353535354
gen 36 => Max fit: 0.707070707070707, avg: 0.538181818181818, mu prob: 0.306969696969697
gen 37 => Max fit: 0.707070707070707, avg: 0.537575757575757, mu prob: 0.311818181818182
gen 38 => Max fit: 0.707070707070707, avg: 0.550505050505050, mu prob: 0.312424242424243
gen 39 => Max fit: 0.707070707070707, avg: 0.530303030303030, mu prob: 0.299494949494950
gen 40 => Max fit: 0.707070707070707, avg: 0.537777777777777, mu prob: 0.319696969696970
gen 41 => Max fit: 0.707070707070707, avg: 0.527676767676768, mu prob: 0.312222222222223
gen 42 => Max fit: 0.707070707070707, avg: 0.545050505050505, mu prob: 0.322323232323232
gen 43 => Max fit: 0.707070707070707, avg: 0.527272727272727, mu prob: 0.304949494949495
gen 44 => Max fit: 0.707070707070707, avg: 0.534141414141414, mu prob: 0.322727272727273
gen 45 => Max fit: 0.707070707070707, avg: 0.535353535353535, mu prob: 0.315858585858586
gen 46 => Max fit: 0.707070707070707, avg: 0.525454545454546, mu prob: 0.314646464646465
gen 47 => Max fit: 0.707070707070707, avg: 0.536565656565656, mu prob: 0.324545454545454
gen 48 => Max fit: 0.707070707070707, avg: 0.544040404040404, mu prob: 0.313434343434344
gen 49 => Max fit: 0.707070707070707, avg: 0.537979797979798, mu prob: 0.305959595959596
gen 50 => Max fit: 0.707070707070707, avg: 0.531717171717172, mu prob:

- yorumlar:

Grafik ve Tablolardan gördük ki :

1- pop\_size (popülasyon büyüklüğü) arttıkça aynı nesil’de çok sayı’da child üretildiği için aynı nesilde fit değeri hızlı bir şekilde büyümesi’ne sebep olur.

fakat bu büyük sayıyı üretmek için gerken süre çok fazla artar.

2- ind\_len (birey'in kelime listeleri uzunluğu) daha çok ortalama değeri etkiler yani ind\_len arttıkça ulaşılabilir maksimum ortalama genellikle artar bu da max fit değeri artması'na sebep olur.

## ● En iyi 5 kelime setleri

NOT:Kelime setlerine zip dosyasının içindeki “**best\_word\_lists.txt**” adlı dosyadan ulaşabilirsiniz.

>DATASET 3<=====									
---POS WORDS-----									
gertrude	hugerabbitsharkinvisible	man	crap		hoot	arent	population	course	yearsold
suggests	mustsee	entity		fail	difficult		superb	carandiru	cheaper
voice	yearsold	costume		vessel	depardieu		subzero	70s	manners
floor	ronald	shown		allen	warrior		featurelength	tenney	brother
agree	horehounds	material		influence	john		likable	turnofthecentury	lethal
football	concludes	realm		bleak	lambert		skerritt	tenney	worth
safety	coming	buttheadthe		respectable	twoday		stealth	marlowe	multitude
pieces	twists	minimum		unwatched	charlies		football	stockler	barrels
principally	enrichedthe	wishes		roddenberry	festivals		released	landfill	manipulator
anne	vodka	nephew		yeoman	newspaper		spent	english	nude
internet	pleasantly	comics		fruitful	south		brow	standup	unfolds
hits	content	marshall		two	officer		foggy	liked	performance
wonderful	means	pursued		residents					
-----NEG WORDS-----									
sexploitative	okayand	gay		festival					
handles	spoken	looks		explosive	spent	protagonist	philosophy	inside	
gritty	hugely	remaining		drug	vengeance	lonnrot	confined	bogged	
fraction	entertainment	vengeance		sensationalistic	characterisations	shrink	blowing	computerassistant	
reasons	fong	item		bad	overly	assistance	whileheath	blockbuster	
love	basically	recruited		science	characters	selfdefeating	speak	eyres	
benefit	lanethey	distorting		came	againso	depardieu	wrath	main	
lennon	scenerythe	touched		inside	calls	exception	hillton	contrivance	
consistent	bores	eagle		unprepared	artfilm	teenoriented	lyric	treat	
ps	arthur	filming		misery	arts	like	forget	enabled	
hall	barrelmy	dragging		nyu	pretending	covered	tanner	offjudge	
explained	prostitute	explained		porn	roar	blockbuster	sept	senior	
blooming	brackish	prevent		maternal	impervious	highlander	cater	reynolds	

>DATASET 4<=====									
---POS WORDS-----									
dreaded	awesome	monica		talented	help	sexy	killed	cargo	
nob	proved	reach		intact	industry	censor	villains	nice	
snot	queensbury	mcarthur		restraining	undresses	trapped	junkie	sanctimonious	
cloud	gameagain	subintelligent		immediately	delightfully	stereotypes	famously	send	
phenom	battle	easy		thanks	picture	national	claudie	quitting	
thankfully	behaviors	killer		abedded	lover	jia	viewpoints	begin	
clue	outa	stateoftheart		tunes	encounters	unqualified	authors	discriminationthat	
production	countless	project		bigname	charm	universe	arise	reno	
lowe	yakking	selfhatred		continues	themselvesthis	earn	luxury	ultimately	
pointedly	humiliating	lift		trick	success	walks	masses	roots	
cameron	heartbreak	thousands		spectacular	budgetcharacters	animated	family	words	
commutes	shriverhe	scan		great	continually	alist	hangover	doctors	
heroic	hairstyles	heroic		connection					
-----NEG WORDS-----									
showing	screaming	aha		buy					
military	obvious	funniest		subsequent	realand	freshmanits	hearts	severe	
glorious	sincerely	encounters		ripper	enraging	cuba	record	carl	
donner	okayruby	psychoscapeshaw		havent	listed	frightening	auteur	810	
wasted	ball	proceeds		dylan	eat	marara	touch	outside	
welldone	unleashed	desecration		changed	dumbingdown	fire	rhymes	sister	
hissy	america	owl		adam	flocking	50	nowadays	uhm	
catch22	macarthur	recap		dmytryk	passionate	try	attitude	uncles	
agent	multiplayer	attenborough		message	wann	kevin	hot	ripley	
confused	horrific	time		neil	spaghetti	greatly	looks	40	
gets	cuties	hecht		conversational	relevance	current	keanu	exposition	
served	centres	itunlike		saucy	adviser	freedom	risk	mr	
oh	marry	wow		approach	household	assert	school	crappy	

>DATASET 5<=====									
---POS WORDS-----									
pathology	delivered	ofeverything		reasons	nicks	sub	reveal	dates	
dvd	handful	wedding		shots	person	accustomed	era	firth	
releasing	sadness	author		fancy	hbo	island	incestuous	mention	
rich	rrating	strengthened		zero	mess	sing	pearl	afoot	
grit	trilogy	entire		alice	aroundfrank	levine	reservations	harrowingly	
spoiler	cartoon	score		spans	axe	ruggles	stitched	disney	
14	toothbrush	brosnam		susan	basic	routine	naughtons	permission	
number	thoroughly	sequence		given	dynamism	altman	peeing	imaginationshudders	
engaged	dictionary	lowbudget		setup	brosnam	boy	got	sparkly	
awakes	hourdouglas	producer		conroy	cutesy	visually	nosofunny	thisamerican	
constructed	mouthed	taste		sadness	participate	hollywoodjoe	protagonist	pulp	
abundance	wandering	workdont		wouldve	dalton	stops	real	fashionpoor	
thinks	sufficiently	dangle		amounts					
-----NEG WORDS-----									
misha	refusedthe	tend		amusing					
melting	dinosaur	worries		winners	mole	bullys	decided	resurrecting	
camilla	followed	broth		tasty	ian	collar	postman	automobile	
normally	usual	sheeple		fire	daughter	connections	bus	smoke	
inside	include	laughter		television	rotten	structure	felson	explain	
offers	left	despondent		produced	large	cheap	pimp	reels	
haphazard	hold	boston		carries	pose	cassie	decent	rich	
rapist	substandard	triangle		spago	cole	kennedy	denver	superiority	
manhattanites	hidden	asylum		ceremonial	frustrated	safegood	huh	trial	
expect	foley	patrioticwhy		excuse	gears	digger	sadly	doses	
tempted	whenrobert	whinneys		forced	ignored	modern	caused	peak	
builds	knew	perfecto		downtime	graphics	divorce	abba	heroin	
opinion	dislikes	probably		dooh	exceptional	body	improvisedand	simplified	



=====>DATASET 1<=====							
-----POS WORDS-----							
sister	xerox	amazing	laziest	kingdom	feature	accented	dollars
shut	monkey	requiem	amber	jaunted	brendan	keen	sent
mehehe	later	hrs	moreso	trail	continued	suggested	shower
classic	baffles	ebola	950	obviously	sad	assured	exploitation
hitchcock	wayact	specifics	beginning	reviews	tainted	hi	levene
videos	quiet	personalitylouis	brooks	sacrifice	glued	dawson	guttural
kept	wayact	stage	downhillthe	overthetop	fights	apparently	possession
insights	minutethe	refreshing	20	space	arrest	endthe	site
r	directed	preston	inhabits	land	tamblyn	sequence	frye
causes	havent	wartime	bowser	heroine	broke	lord	evening
shouldnt	convent	kidnaps	pigs	bat	injuries	pivotal	direction
gets	news	cerebral	leave	negative	centuries	great	boss
hooked	lithgows	decade	useful				
-----NEG WORDS-----							
accepted	hated	posterity	hairraising				
disneyland	follow	find	maggot	talent	guesthosts	davies	1936
mafia	finally	fo	trade	ingenuity	bug	eveningtwo	gem
boring	pretty	ryans	hellish	alabama	primary	fiery	beauty
aint	dmytryk	sold	bad	36th	stupid	class	forgettable
responsible	audienceid	obligation	upuh	anands	matured	camera	horrible
aspects	chromedalbino	took	bond	grey	breed	affairfulcis	documentary
evilness	pvc	worldfest	puts	oneliners	hold	disbelief	dangerfield
keitel	pigs	deathmention	mincing	website	crimes	seriously	chippindalemaybe
slowed	sums	cry	appreciation	headsins	going	exists	trailer
daredevil	version	einstein	continuing	continuous	sparring	girolamo	laziest
boundaries	forward	universal	mukhsin	limbalsamatore	unclear	mission	tipoff
revealed	worries	smalltime	degenerates	nekromantik	past	garner	seminaked

=====>DATASET 2<=====							
-----POS WORDS-----							
godfather	lauren	lampoon	associate	tribute	wealthy	rain	solvers
safety	missions	filmsfun	displays	job	sin	russians	persuasive
fools	ned	uncut	cars	screwing	chuckle	mrs	crucial
scouser	australian	tomorrow	greavesgnter	ravages	animation	causing	eddie
california	makes	leftleaning	college	sidewalk	dance	guardian	interesting
presumably	story	event	pacing	kumar	dramatic	filmmaker	wakes
ricky	slower	harvey	damn	corny	scope	outthis	hilarious
pang	pulse	equipmentdespite	miserably	seven	mothers	toooverall	concordes
rene	conan	line	bravely	kong	radioevangelist	props	demon
vohrer	flattering	fairly	propagandist	supposedly	believes	pleasegirls	salt
expand	baron	walked	roles	face	gay	lady	shower
physical	great	apply	tension	fans	fulci	vixen	storydriven
torments	80s	thinlydisguised	paranoid				
-----NEG WORDS-----							
rex	depiction	uneearthed	edward				
wouldbe	breach	itll	audience	subplot	allow	jewish	tvshow
sadists	high	heard	conclusion	frustration	guignol	danesh	suit
bad	enthusiasm	breckin	peer	eddy	july	likes	disregarded
faultless	confront	walter	transcend	meet	french	terrible	flashes
modestly	1969things	tapes	apparently	masterpiecewait	britishgaumont	exciting	hot
asking	2hrs	wielding	bottin	behave	hate	soderberghs	fatally
boring	budgeted	hand	flit	sum	landing	interpretation	despair
airwaves	unfunny	elliott	blue	chips	strained	agree	recommend
lindy	woodworking	endings	superior	commentary	kibbutz	obviously	sht
beaty	bother	swimmer	patriotism	ophuls	wretched	hustons	rains
twice	elicited	gripping	whatnot	pink	land	tops	daring
realized	slopped	mills	lucky	cattle	green	bits	goodthis

## ● Video linki

youtube: <https://youtu.be/dAwjUeDqlxg>