Genetic Algorithm (GA)

A GA finds a solution of fixed length, using your criteria to decide which are better. The algorithm starts with randomly generated solutions, forming the so-called initial population, and gradually hones in on better solutions over time.

It is mimicking Darwinian evolution, utilizing a population of solutions, and using the suitability criteria to mirror natural selection. It also makes small changes, from time to time, imitating genetic mutation.

The algorithm makes new population over time. It uses your criteria to pick some better solutions and uses these to generate or breed new solutions. The new solutions are made by splicing together parent solutions.

There are many ways to select parent solutions, tournament and roulette wheel being common.

GA is an evolutionary algorithm. Two parents are spliced together to make new solution. Some numbers come from one parent and some from the other. This is called crossover, using a simplified model of genetic recombination during sexual reproduction where parent’s strands of DNA splice together when living creatures breed.

The GA also uses mutation. The crossover and mutation operations keep some variety in the population. Remember, you don’t have time to try all the numbers, but want to try as many as possible to increase the chance of finding something that works. The crossover and mutation operations take care of that for us.

A GA is a type o guided random search, or heuristic search, using these to find improved solutions, using this loop:

​ generation = random\_tries()​

for a while:​

generation = get\_better(generation)

This form crops up again and again. This is often described as a random heuristic search. Something random happens and is improved guided by a heuristic, fitness function, or some other way to refine the guesses.

There are many ways to decide when to stop searching. You can stop after a pre-chosen number of attempts or epochs; you can keep going until every pair is good enough, or you can stop if you find one solution that works. It all depends on the problem you are trying to solve.

**HOW TO GET BETTER**

The GA uses a heuristic to assess items in the current population or generation. Some of the better pairs are used to make a new generation of solutions. The driving idea here is the survival of the fittest, inspired by Darwinian evolution. Finding fitter parents might make fitter children.

**LET’S FIRE SOME CANNONS**

The GA starts with a *generation* of *random\_tries*. The GA selects parents from each *generation* to breed new solutions by *crossover*. It then has a new *generation* and will perform *mutation* on a few of the pairs to keep some variety.

You can try crossover or mutation by themselves, but the combination allows the GA to explore more and makes it more likely to find a good solution more quickly. Let’s begin by making the first generation, then create and use a fitness function to crossover, making new solutions. You can then mutate these once in a while, and your GA will find some suitable candidates.

Todos los ejercicios de numpy para el Domingo (tarea 2, nombre del archivo), antes de que termine el día.

Todos los ejercicios de lectura 9 para el lunes (tarea 3, nombre del archivo) , antes de que termine el día.

Ejercicio de algoritmos de genéticas, antes de la clase de Miercoles.

MERCADOS:

FOREX

DEUDA

DEUDAS

EL PESO MEXICANO ES ENTREGABLE => UNA MODENA SUSTENTIBLE PARA MERCADOS EMERGENTES.

EVENTO ESTRUCUTRAL => AFECTA A LA MODENA Y TE DA VARIABILIDAD.

DONALD TRUMP =>

***VOTABILIDADES => MODELOS COREGRESIVOS.***

**KERNEL => CADA DATO TIENE SU DISTRIBUCIÓN => ES DECIR LA DISTRIBUCIÓN REAL DE CADA ACCTIVO**

***VARIABILIDAD***

***MODELOS FOTO REGRESIVOS PARA HACER PROYECCIONES.***

***MODELOS AUTOREGREVISOS.***

***VOTALIDADES A TRAVES DE MODELOS AUTOREGRESIVOS.***

***4 MOMENTOS CENTRALES:***

***MEDIA***

***VARIANZA => Sigma cuadrada.***

***SESGO***

***CURTOSIS => Que tan dispersos están los datos a través de la media.***

***Modelos autoregresivos.***

***Persistencia***

***Diferencia estadística***

***Tasas de intereses => en términos anuales***

* ***Interés efectivo***
* ***Interés simple***
* ***Compuesta***
* ***Compuesta efectiva***

***Tasa de vencimiento.***

***Temas que se vieron:***

* ***Kernels***
* ***Volatilidad***
  + ***JPM***
  + ***Garch(1,1)***
  + ***LR Test***
* ***Simulación mote Carlo***
* ***Vasceck***
  + ***Fudgea Fades***