Búsqueda por Ascenso de Colinas

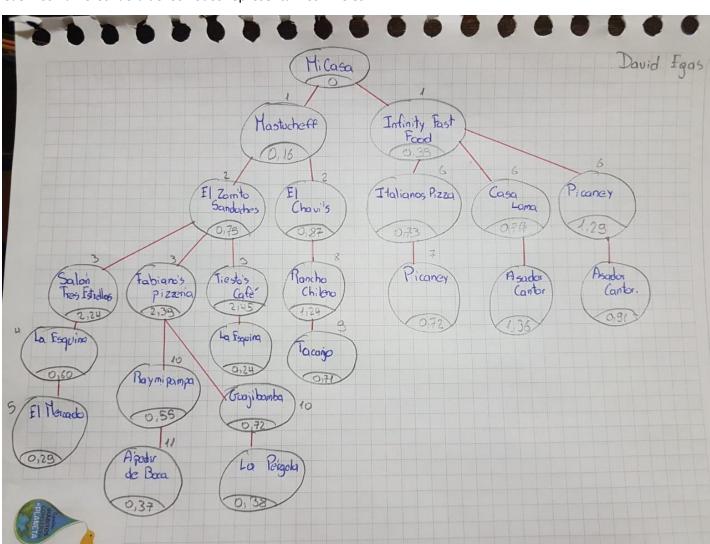
Nombre: David Egas

1. Gráfica de niveles hecha en Google maps sobre restaurantes.



2. Árbol y desarrollo a mano del algoritmo por Ascenso de Colinas

OJO: Los números fuera de los nodos representan los niveles.



UPS

obotieil (L	9: Mi Casa	, Mastuchers			
2) Visitade	os: Milasa	, Mastuchef	, El Zarrita	Zanduches	
3) Visitado	s: Mi (050,	Mastucket, 1	El Zom to Sandu	dies, Saloh Fres	Estellas
4) Visitados	. Hi Casa, Ha	stuckef, El Zo	ncito Sanduches	, Salon Fres Edicille	os, La Feguin
5) Visitados		uchef, FlZom	Ho Sanduches, (2)	balon Tres Estrellas	, la Esquina
	El Mercado				
6) Visitados		istuchet, Elz	orrito Sanduchos,	Salon Tres Estell	los, la Espir
6) Visitados	. H. Casa, Ha	stucket, E12 (1) Infinity Face (1)	(2)		los, la Espi (4)
	Hi Casa, Ha	(1) Infinity Face Food (1)	(2)	(3)	(4)
	Hi Casa, Ha Los El Hercodo (5) Hi Casa, Most	(1) Infinity Face Food (1)	o Sanduhes, Sala		(4)
	Hi Casa, Ha io) El Hercodo (5) Hi Casa, Most (0) El Mercodo (5)	Infinity Face Food (1) School, El Zorrita Infiniti Fost Food (1)	o Sanduhes, Sala (2) The lianos Pizza (6)	(3)	La Esquina (4)

UPS

UP						
3) Visitados	4: Milasa, M	instribet, El Zi	auto Sorderla	ns, Salón Ta	estation (3)	, la fsquing (4)
	El Mercodo,	Infinity Fost; Food (1)	1 tal acros (5)	, Picaney (7)		
obdieil/ (OL	s: Milasa, M	astuckoff, El Zo	reito Sáeducho (2)	os, Salob Tre	s Estelos,	La Esquina
	El Mercado (3)	, Infinity Fast, Food	Italiano- Pizza (6)	Picaney, !	El Chouis (2)	
4) Visitado	s. M. Casa, H	lastwheft, E) (Portito Sonder	hes, Solón Tr	es Estrellas (3)	, La fisquina
	(5)	(1)	Pi220	(7)	(2)	(8)
12) Visitado		stuckeff, Fl Zon				Rancho Chileno (8) La Esquing
12) Visitado	s: Milato, Ma	stuckeff, El Zon	ito Sanduchos (2)	, Solon Tres	Estrellas,	La Esquing
12) Visitado	s: Milato, Ma (o) El Mercado (3)		ito Sanduchos (2)	, Solon Tres	Estrellas,	La Esquing
	s: Milato, Ma El Mercado (3) Tacanjo (3)	stuckeff, El Zon	Pizza (6)	Picaney, El	Estrellas, (2) Chavis, R	La Esquing (4) oncho (hikeno (8)

UPS

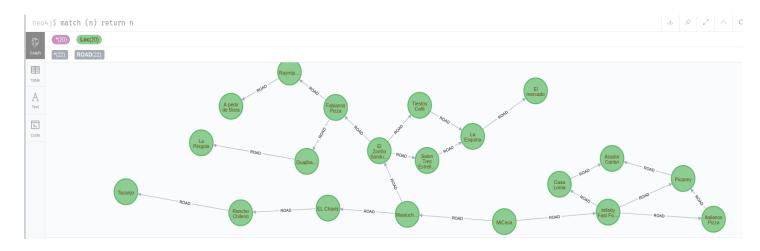
	Fl Merrodo , In	finity Fost, Food	Palians, Rione Pizza (7)	y, 11 Chours,	Parcha (hila
	To canjo, (9)	Fabiano's Pizzeria	Raymipampa (10)		
5) Visitados			Zorrib Sanduches, 5		
	FI Harado, 2	Infinity fast, -	Halionos, Picane Pizza (7)	y, El Chavis,	Rancho (A)
	Tampo, F	abiano's , Pizzeria ,	Raymipompa, [A	pedir de Baca	
	li Cosa, Masluch Nædir de Boca		Sanduhas, Fabio	nos Pizza, Ray	ini, pampa

3. Creación de los Nodos y conexiones para Neo4j

```
CREATE (a:Loc {name: 'MiCasa'}),
   (b:Loc {name: 'Mastucheff'}),
    (c:Loc {name: 'Infinity Fast Food'}),
    (d:Loc {name: 'El Zorrito Sanduches'}),
    (e:Loc {name: 'EL Chavis'}),
   (f:Loc {name: 'Italianos Pizza'}),
    (g:Loc {name: 'Casa Loma'}),
    (h:Loc {name: 'Picaney'}),
    (i:Loc {name: 'Salon Tres Estrellas'}),
    (j:Loc {name: 'Fabianos Pizza'}),
    (k:Loc {name: 'Tiestos Café'}),
    (I:Loc {name: 'Rancho Chileno'}),
    (m:Loc {name: 'Asador Cantor'}),
   (n:Loc {name: 'La Esquina'}),
    (o:Loc {name: 'Raymipampa'}),
    (p:Loc {name: 'Tacanjo'}),
    (q:Loc {name: 'El mercado'}),
    (r:Loc {name: 'A pedir de Boca'}),
    (s:Loc {name: 'Guajibamba'}),
   (t:Loc {name: 'La Pérgola'}),
    (a)-[:ROAD {cost: 0.16}]->(b),
   (a)-[:ROAD {cost: 0.35}]->(c),
    (b)-[:ROAD {cost: 0.75}]->(d),
    (b)-[:ROAD {cost: 0.87}]->(e),
    (c)-[:ROAD {cost: 0.73}]->(f),
   (c)-[:ROAD {cost: 0.74}]->(g),
    (c)-[:ROAD {cost: 1.29}]->(h),
   (d)-[:ROAD {cost: 2.24}]->(i),
   (d)-[:ROAD {cost: 2.39}]->(j),
   (d)-[:ROAD {cost: 2.45}]->(k),
   (e)-[:ROAD {cost: 1.24}]->(I),
    (f)-[:ROAD {cost: 0.72}]->(h),
    (g)-[:ROAD {cost: 1.36}]->(m),
   (h)-[:ROAD {cost: 0.91}]->(m),
    (i)-[:ROAD {cost: 0.60}]->(n),
```

```
(n)-[:ROAD {cost: 0.29}]->(q),
(j)-[:ROAD {cost: 0.55}]->(o),
(j)-[:ROAD {cost: 0.72}]->(s),
(o)-[:ROAD {cost: 0.37}]->(r),
(s)-[:ROAD {cost: 0.38}]->(t),
(k)-[:ROAD {cost: 0.24}]->(n),
(I)-[:ROAD {cost: 0.71}]->(p);
```

Resultado:



4. Consulta en busca de la ruta óptima:

Nodo Inicio: Mi Casa

Nodo meta: A pedir de Boca

Consulta para ver los notos que se deben visitar:

```
MATCH (start:Loc {name: 'MiCasa'}), (end:Loc {name: 'A pedir de Boca'})
  CALL gds.alpha.shortestPath.write({
      nodeQuery: 'MATCH(n:Loc) WHERE NOT n.name = "c" RETURN id(n) AS id',
      relationshipQuery: 'MATCH (n:Loc)-[r:ROAD] -> (m:Loc) \ RETURN \ id(n) \ AS \ source, id(m) \ AS \ target, r.cost \ AS \ weight', relationshipQuery: 'MATCH (n:Loc)-[r:ROAD] -> (m:Loc) \ RETURN \ id(n) \ AS \ source, id(m) \ AS \ target, r.cost \ AS \ weight', relationshipQuery: 'MATCH (n:Loc)-[r:ROAD] -> (m:Loc) \ RETURN \ id(n) \ AS \ source, id(m) \ AS \ target, r.cost \ AS \ weight', relationshipQuery: 'MATCH (n:Loc)-[r:ROAD] -> (m:Loc) \ RETURN \ id(n) \ AS \ source, id(m) \ AS \ target, r.cost \ AS \ weight', relationshipQuery: 'MATCH (n:Loc)-[r:ROAD] -> (m:Loc) \ RETURN \ id(n) \ AS \ target, r.cost \ AS \ weight', relationshipQuery: 'MATCH (n:Loc)-[r:ROAD] -> (m:Loc) \ RETURN \ id(n) \ AS \ target, r.cost \ AS \ weight', relationshipQuery: 'MATCH (n:Loc)-[r:ROAD] -> (m:Loc) \ RETURN \ id(n) \ AS \ target, r.cost \ AS \ weight', r
      startNode: start,
      endNode: end,
      weightProperty: 'weight',
      writeProperty: 'sssp'
 })
{\tt YIELD\ nodeCount,\ totalCost}
```

RETURN nodeCount,totalCost

Resultado:



Consulta con los costos y los nombres de todos los nodos visitados hasta la meta:

```
MATCH (start:Loc {name: 'MiCasa'}), (end:Loc {name: 'A pedir de Boca'})

CALL gds.alpha.shortestPath.stream({

nodeQuery:'MATCH(n:Loc) RETURN id(n) AS id',

relationshipQuery:'MATCH(n:Loc)-[r:ROAD]->(m:Loc) RETURN id(n) AS source, id(m) AS target, r.cost as weight',

startNode: start,

relationshipWeightProperty: 'weight',

endNode: end

})

YIELD nodeld, cost

RETURN gds.util.asNode(nodeld).name As name, cost
```

Resultado:

name	cost
"MiCasa"	0.0
"Mastucheff"	0.16
"El Zorrito Sanduches"	0.91
"Fabianos Pizza"	3.3000000000000000
"Raymipampa"	3.8500000000000000
"A pedir de Boca"	4.220000000000001