



Improving the Way We Ask 'What Do You Do?'

An Enabler of Self-Serve for Commercial
Lines Property/Casualty Insurance

Presented by

Marc-André Desrosiers, MBA, FCAS, Actuarial Expert

Marion Grégoire-Duclos, FCAS, Actuarial Consultant

William Léchelle, Ph.D. Student

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Problem Re-Statement

What's do you do?

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How can a non-expert user efficiently select their activity code out of a taxonomy of > 1000 codes, for insurance purposes?



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The Team



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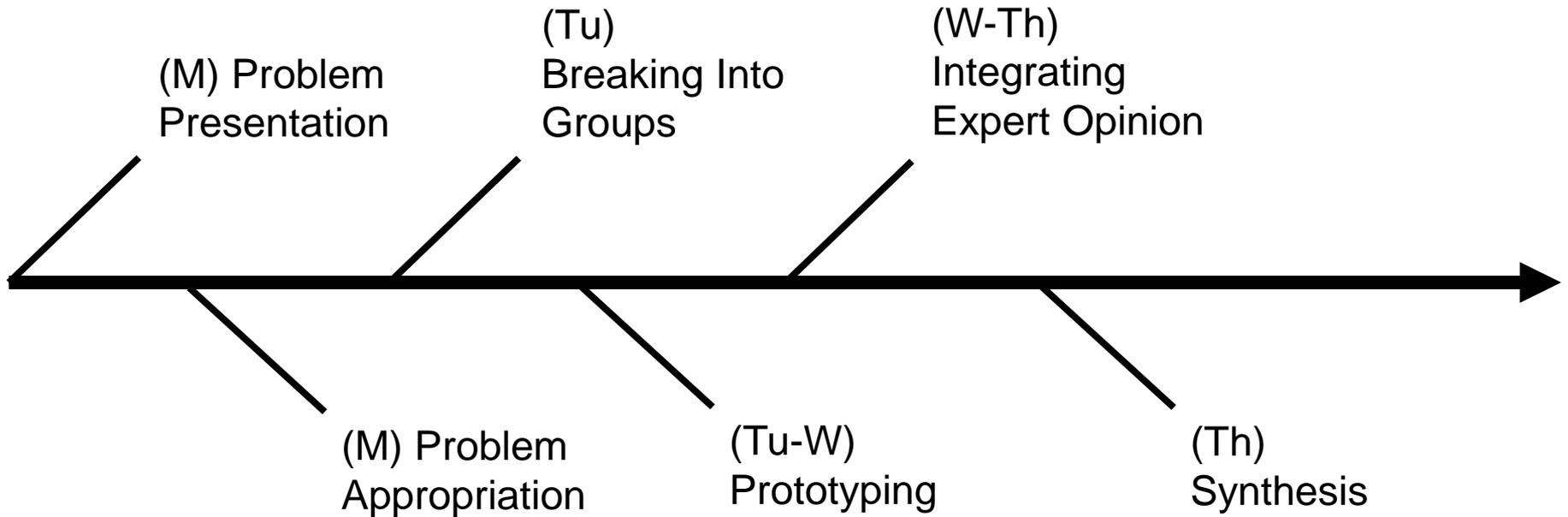


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The Timeline

What's do you do?

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An Academic Point-of-View



- No training data
- Business intelligence not tailored to NLP
- User-friendliness is the goal
- No evaluation data



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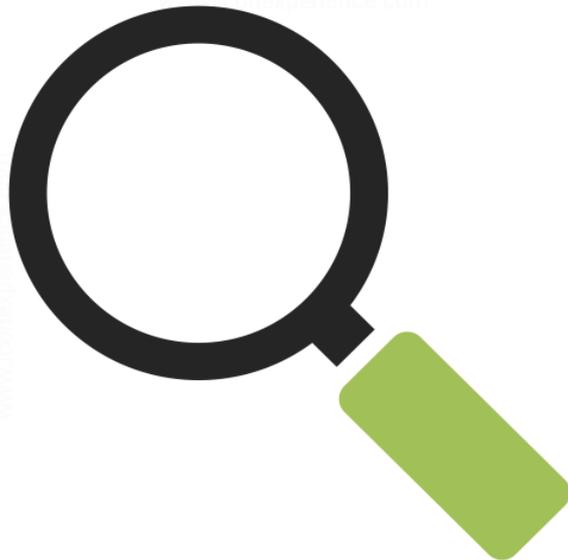
Taskforce Creation

What's do you do?

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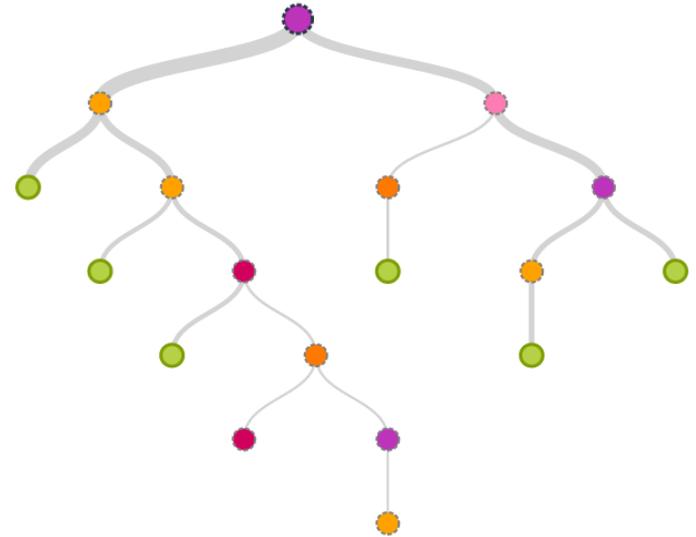


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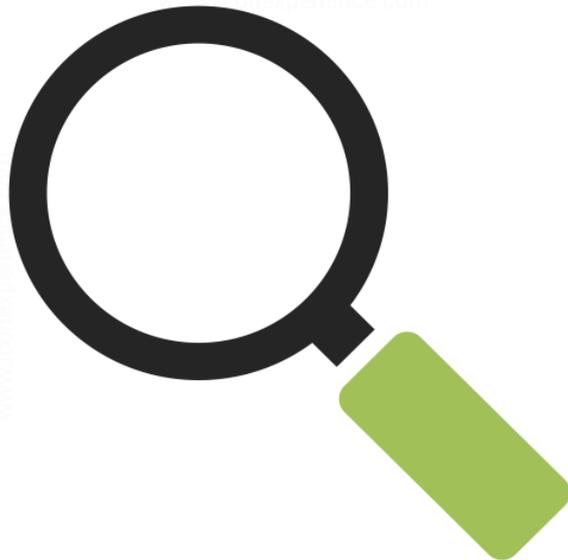
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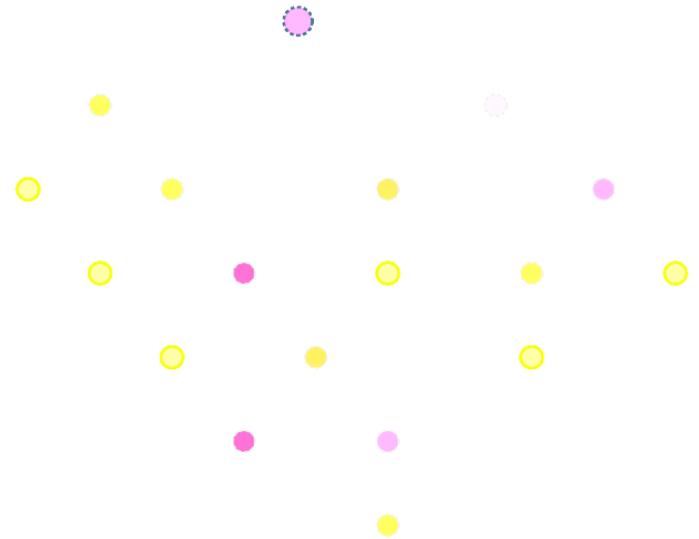


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What do you do?

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What do you do?

Act. Code	Act. Code Label
7297a00	Beauty parlours - no tanning beds- no laser therapy

Activity labels are augmented with:

- Expert documents
- Relevant **Wikipedia** articles (e.g. “Barber”)
- **10 relevant web pages** found through **Bing** (e.g. www.beautysalon.com/aboutus.html)



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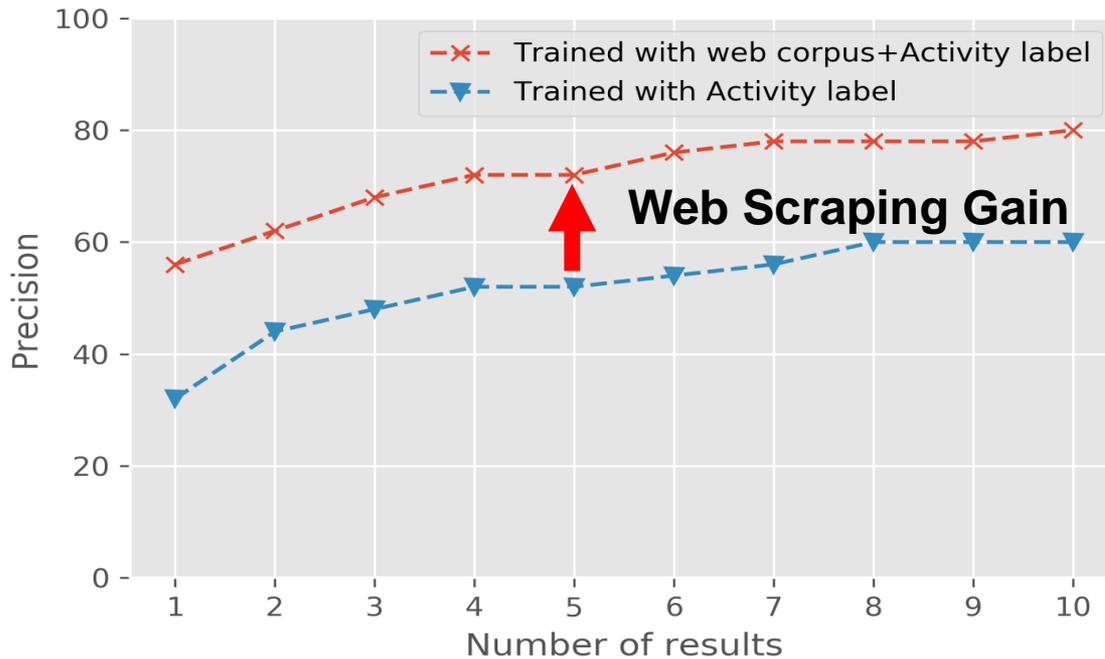
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What's do you do?

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“I have a nail salon”



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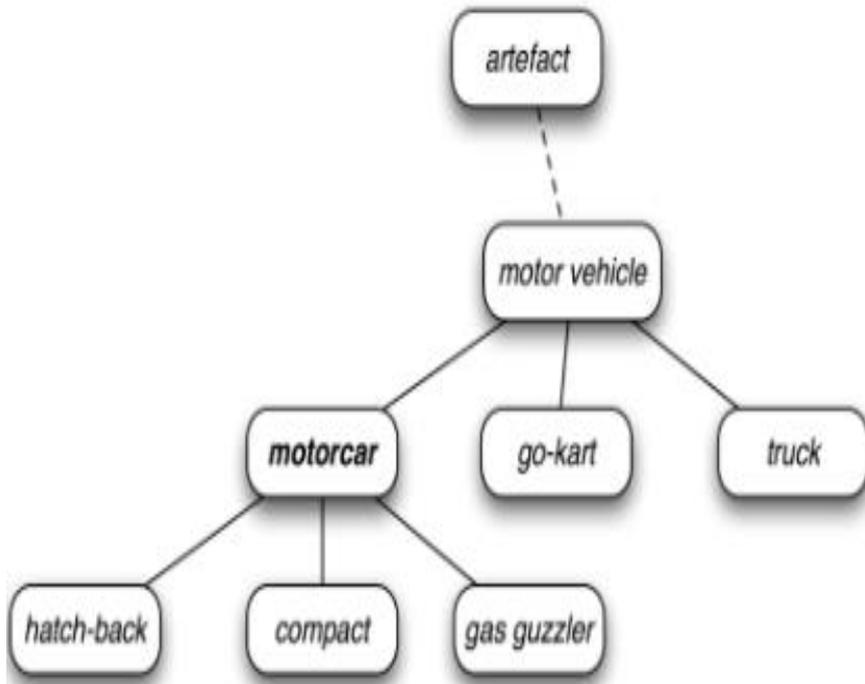
Keyword Generation

What's do you do?

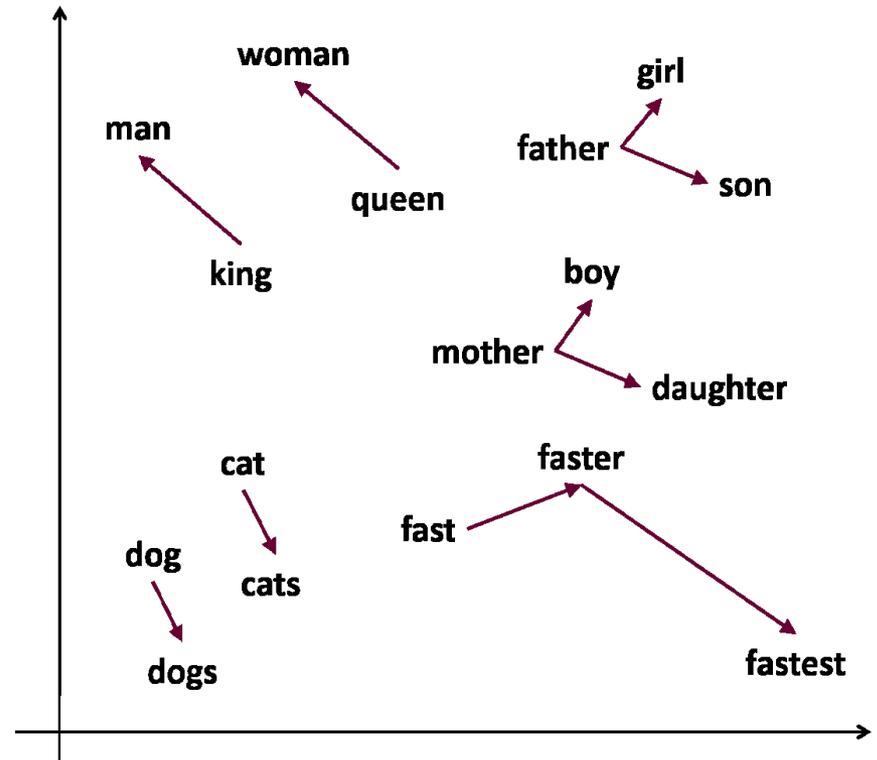
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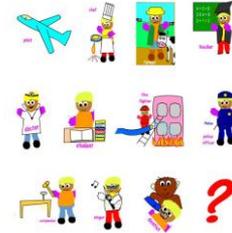


WordNet



Word2Vec





Keyword Generation

Activity Code - Description
2011a00 - Cheese Manufacturing

WordNet

Word2Vec

brie
camembert
cheddar
cottage cheese
pot cheese
farm cheese
farmer's cheese
yoghurt
whey
curd
mozzarella
dream up
fabrication
manufacture
manufacturing
formation
shaping
create



cheese
industrial
butter
cheddar
milk
industries
cheeses
factories
automotive
manufacturing
manufacture
manufacturers
cottage cheese
bacon
mozzarella
manufactures
products
machinery



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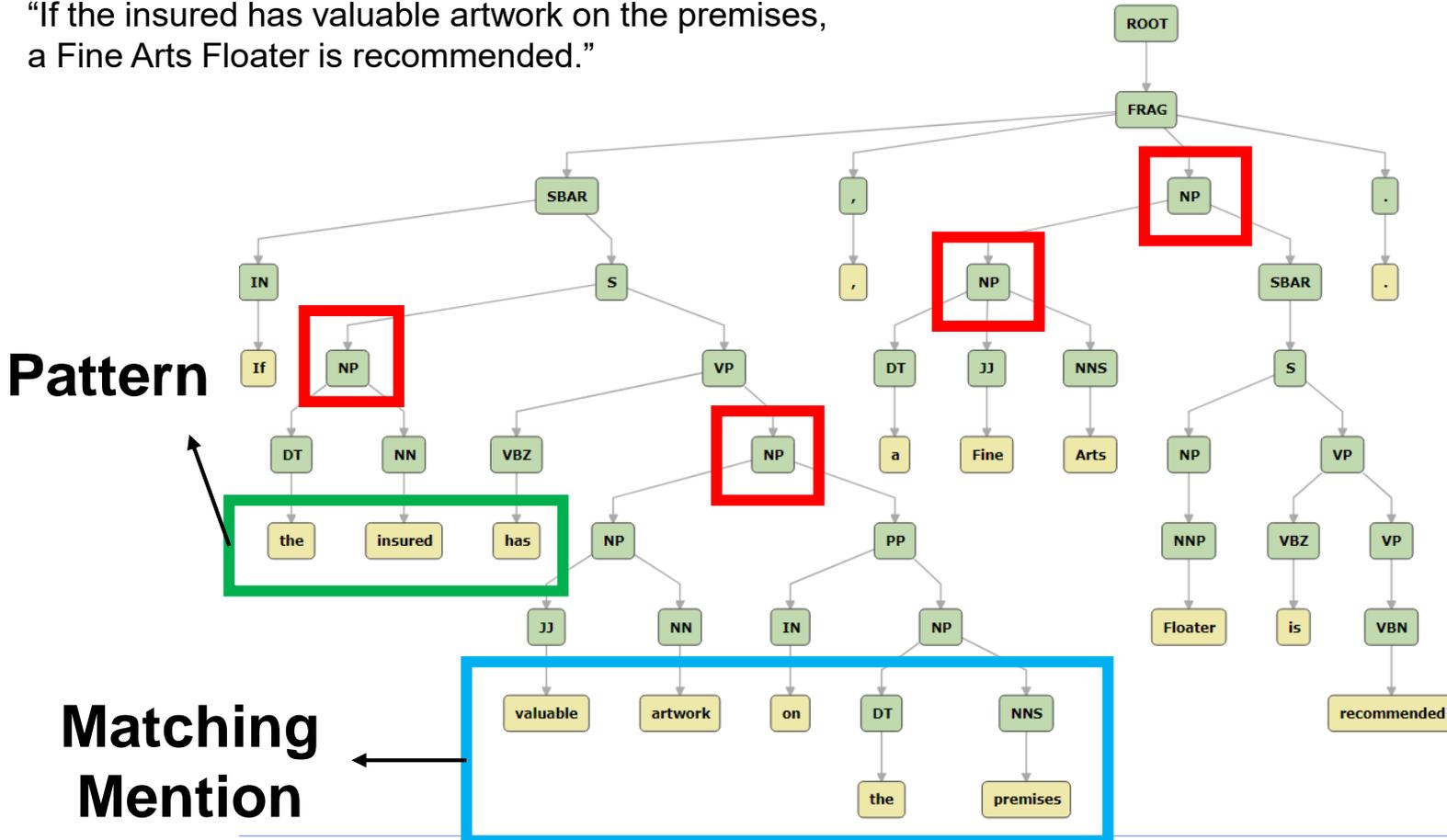


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Text Parsing

An example of a sentence in expert text:
"If the insured has valuable artwork on the premises,
a Fine Arts Floater is recommended."



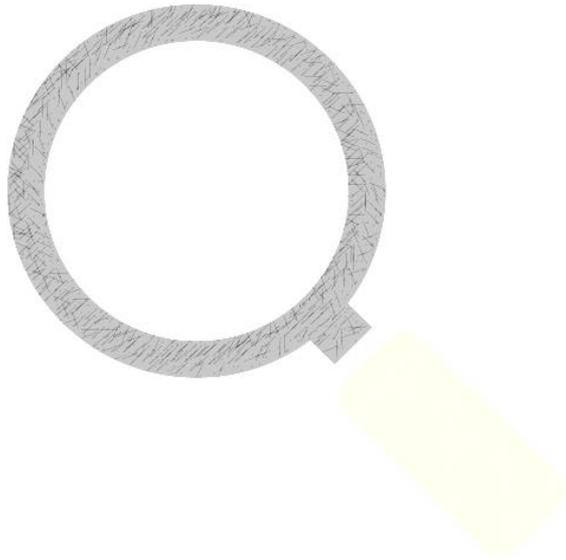
Taskforce Creation

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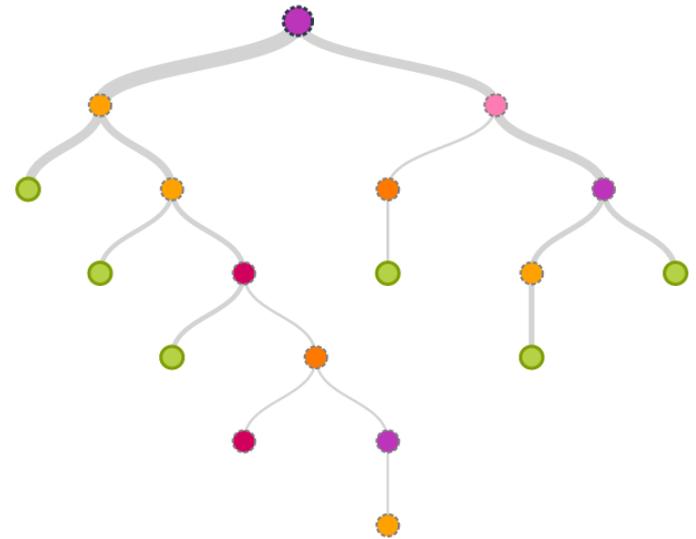


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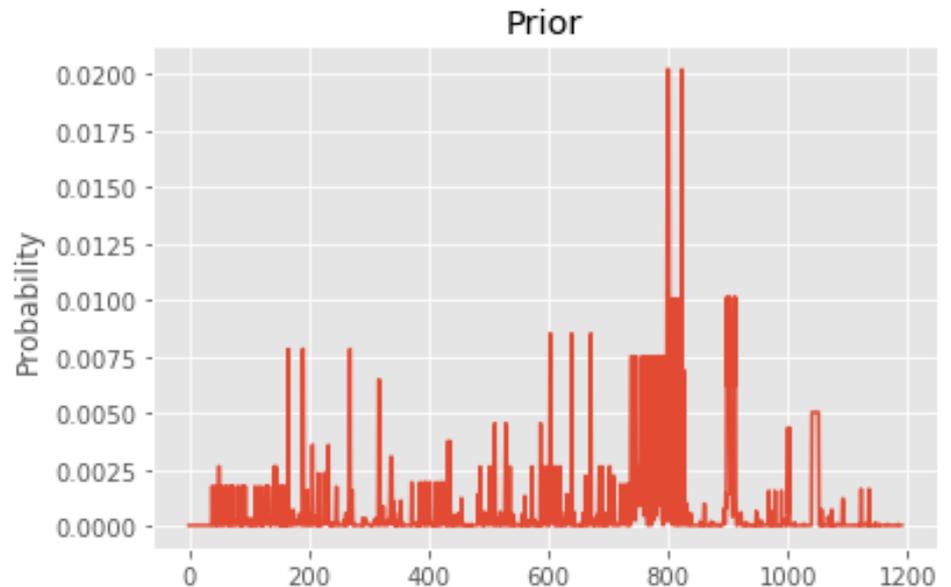


Decision Tree

With a prior distribution of activity codes

1. Ask question that has most entropy
2. Update likelihoods with answer

Until user feels confident with an answer in a shortlist



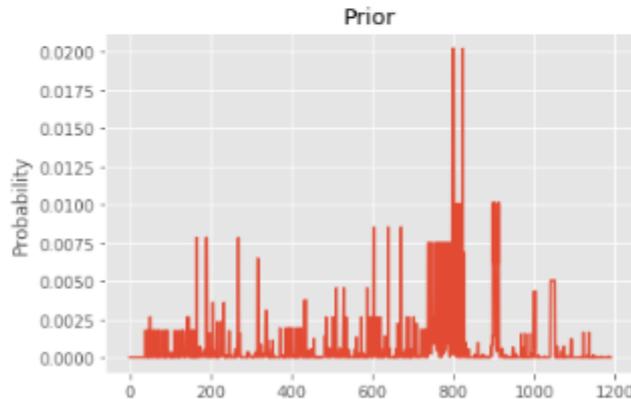
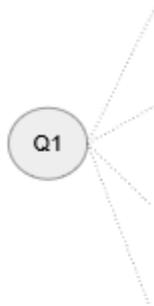


Decision Tree

Question

Answer

What is your field?



My top guesses are:

- 2.02% Building, over 6 units/suites
- 2.02% Building, 1 or 2 units/suites
- 2.02% Building, 3 to 6 units/suites
- 2.02% Residential condominium
- 1.01% Fast food restaurant - licensed
- 1.01% Family restaurant - licensed
- 1.01% Pizzeria - licensed, incl deep frying
- 1.01% Pizzeria, no deep frying - licensed
- 1.01% Fine cuisine restaurant - licensed
- 1.01% Condominiums - No mercantile



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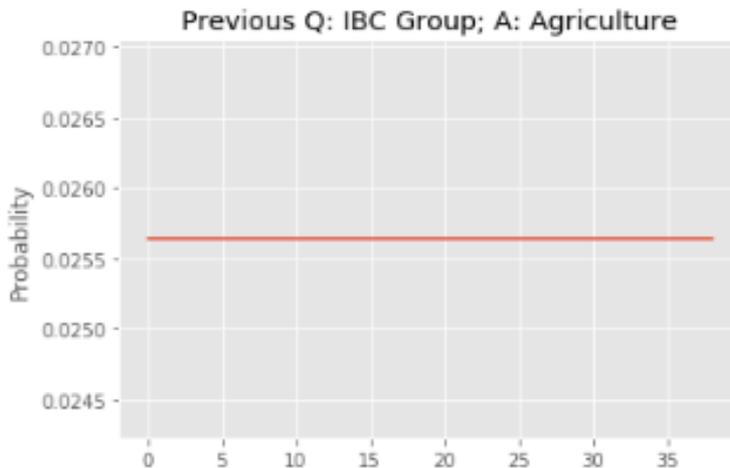
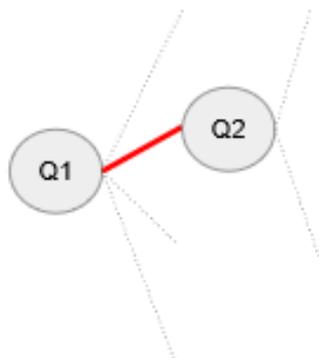
Question

Answer

What is your field?

Agriculture

Does it involve farm?

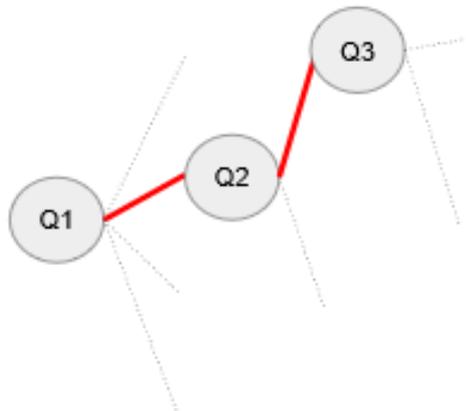


My top guesses are:

- 2.56% Agriculture, N.O.C.
- 2.56% Mushroom farms
- 2.56% Greenhouses
- 2.56% Hog farms
- 2.56% Horse farms - breeders
- 2.56% Horse farms - No breeding/board.
- 2.56% Horse farms w board - No breeding.
- 2.56% Livestock or cattle dealer
- 2.56% Mixed farms (small exposures)
- 2.56% Nurserymen, florist



Decision Tree



Question

What is your field?

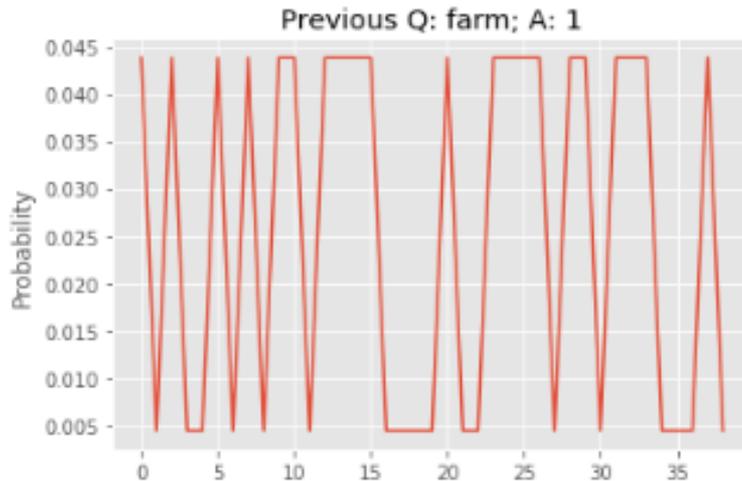
Does it involve farm?

Does it involve custom?

Answer

Agriculture

Yes



My top guesses are:

- 4.39% Agriculture, N.O.C.
- 4.39% Custom Harrowing, Rock Picking
- 4.39% Horse farms - breeders
- 4.39% Hog farms
- 4.39% Mixed farms (small exposures)
- 4.39% Fur farms
- 4.39% Mushroom farms
- 4.39% Other than animal farms - NOC
- 4.39% Peat plants (farming)
- 4.39% Dairy farming

...



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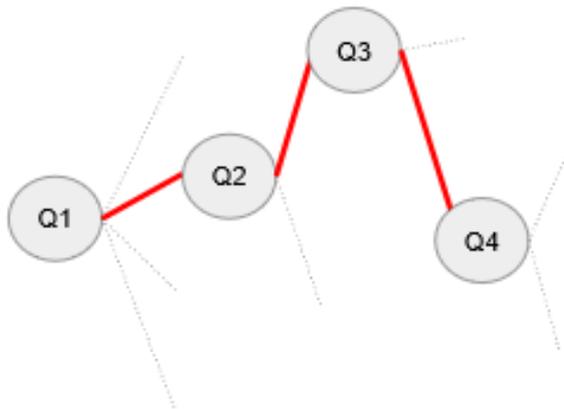
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Question

Answer

What is your field?

Agriculture

Does it involve farm?

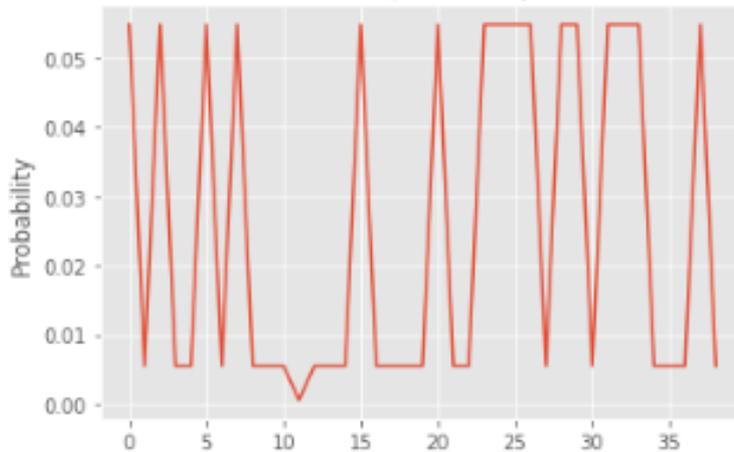
Yes

Does it involve custom?

No

Does it involve horse?

Previous Q: custom; A: 0



My top guesses are:

- 5.49% Agriculture, N.O.C.
- 5.49% Peat plants (farming)
- 5.49% Fur farms
- 5.49% Horse farms - breeders
- 5.49% Horse farms - No breeding/board.
- 5.49% Horse farms w board - No breeding.
- 5.49% Dairy farming
- 5.49% Mixed farms (small exposures)
- 5.49% Mushroom farms
- 5.49% Other than animal farms - NOC

...



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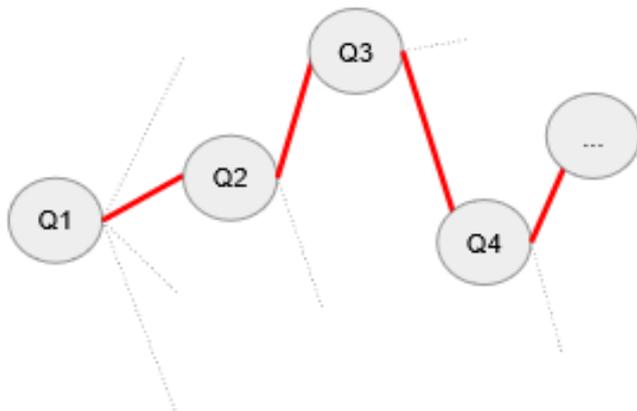
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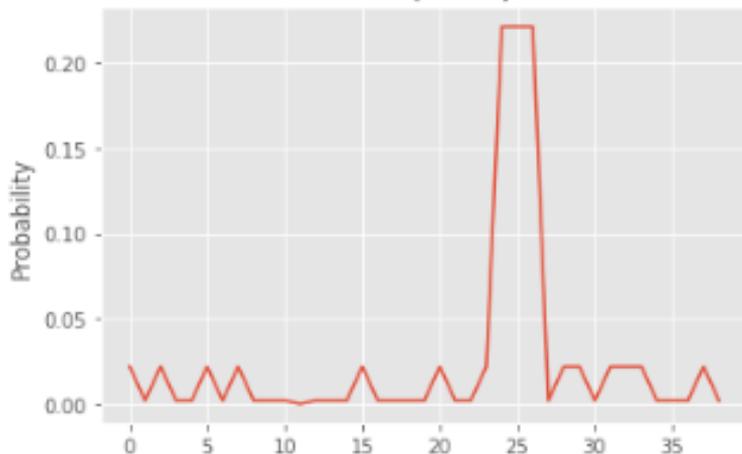
Question

- What is your field?
- Does it involve farm?
- Does it involve custom?
- Does it involve horse?
- ...

Answer

- Agriculture
- Yes
- No
- Yes
- ...

Previous Q: hors; A: 1



My top guesses are:

- 22.12% Horse farms - breeders
- 22.12% Horse farms - No breeding/board
- 22.12% Horse farms w board - No breeding
- 2.21% Agriculture, N.O.C.
- 2.21% Peat plants (farming)
- 2.21% Fur farms
- 2.21% Dairy farming
- 2.21% Mixed farms (small exposures)
- 2.21% Mushroom farms
- 2.21% Other than animal farms - NOC
- ...