League of Legends

Processamento e Recuperação de Informação

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Collection

- Deleted some information from both the champions.csv and items.csv that would not be relevant, such as extensive numerical fields

- Compacted some columns into a single one. For exemple a champion can have multiple skins that are now a single array of skins

- Converted both the champions.csv and the items.csv files to json

- Imported them both to Solr using the post command for both

Indexation

- Fields that we decided to indexed for champions:
    - name
    - title
    - tags
    - lore
    - allytips
    - enemytips
    - Skins
    - All of the spells and their description
    - Passive and respective description

Indexation

- Fields that we decided to indexed for items:
  - name
  - plaintext
  - tags

Tokenizers and Filters

- Tokenizer : we used the solr.StandardTokenizerFactory in all the indexed fields as we see it as a simple yet efective tokenizer.

- Filters:
    - ASCIIFoldingFilterFactorySummary
    - LowerCaseFilterFactory
    - NGramTokenizerFactory
    - ClassicFilterFactory
    - EnglishPossessiveFilterFactory

Information Retrieval

Champions with a certain name

Query – (Name: eUréli'õn)

"key":[136],
"name":"Aurelion Sol",
"title":"The Star Forger",
"tags__001":["Mage"],
"partype":["Mana"],
"info__difficulty":[7],
"spells__Q":"Starsurge",
"spells__Q_description":"Aurelion Sol creates an expanding disk, which explodes to stun and damage enemies when it moves too far away from him.",
"spells__W":"Celestial Expansion",
"spells__W_description":"Aurelion Sol pushes his stars farther out, increasing their damage and speed.",
"spells__E":"Comet of Legend",
"spells__E_description":"Aurelion Sol takes off flying for a long distance.",
"spells__R":"Voice of Light",
"spells__R_description":"Aurelion Sol projects a blast of pure starfire, damaging and slowing all enemies caught in it and knocking nearby enemies back to a safer distance
"passive__name":"Center of the Universe",
"passive__description":"Stars orbit Aurelion Sol, dealing magic damage when they hit an enemy.",
"skins":"['Ashen Lord Aurelion Sol', 'Mecha Aurelion Sol', 'Storm Dragon Aurelion Sol']",
"allytips":"[\"You can use Comet of Legend's flight to grow Starsurge to massive proportions.\", 'Save Voice of Light to use as a defense against\ melee opponents if you ne
"enemytips":"[\"Try to get inside his orbit, since his stars can't hurt you up close.\", 'His stars disappear while stunned or silenced, giving you an easy opportunity to
"id":"b9fe3e61-cb99-49f4-975b-16c5717172b2",
"lore":"\n\n\nAurelion Sol once graced the vast emptiness of the celestial realm with wonders of his own devising, but was tricked by the Aspects of Targon into revealing

Information Retrieval

Champions with a certain tag (ex: Fighter) and whose lore has present at least one of 2 specific regions (ex: Demacia or Ionia)

Query – Fighter && lore:(Demacia || Ionia)

```
"key":[86],
"name":"Garen",
"title":"The Might of Demacia",
"tags__001":["Fighter"],
"tags__002":["Tank"],
"partype":["None"],
"info__difficulty":[5],
"spells__Q":"Decisive Strike",
"spells__Q_description":"Garen gains a burst of Move Speed, breaking free of all slows affecting him. His next attack strikes a vital area of his foe, dealing bonus damage and silencing th
"spells__W":"Courage",
"spells__W_description":"Garen passively increases his armor and magic resist by killing enemies. He may also activate this ability to give him a shield and tenacity for a brief moment fol
"spells__E":"Judgment",
"spells__E_description":"Garen rapidly spins his sword around his body, dealing physical damage to nearby enemies.",
"spells__R":"Demacian Justice",
"spells__R_description":"Garen calls upon the might of Demacia to attempt to execute an enemy champion.",
"passive__name":"Perseverance",
"passive__description":"If Garen has not recently been struck by damage or enemy abilities, he regenerates a percentage of his total health each second.",
"skins":"['Sanguine Garen', 'Desert Trooper Garen', 'Commando Garen', 'Dreadknight Garen', 'Rugged Garen', 'Steel Legion Garen', 'Rogue Admiral Garen', 'Warring Kingdoms Garen', 'God-King
"allytips":"[\"Garen's regeneration greatly increases if he can avoid receiving damage for several seconds.\", 'Judgment deals maximum damage when only hitting a single target. For effecti
"enemytips":"['Stack armor items to lower the large amount of physical damage that Garen deals out.', 'Try to run away from Garen as your health gets lower, as he can execute you quickly w
"id":"11d445ad-6257-44d7-8ca3-44ec6f63e2ec",
"lore":"\r\n\r\n\r\n\r\nA proud and noble soldier, Garen fights at the head of the Dauntless Vanguard. He is popular among his fellows, and respected well enough by his enemies—not least as a
```

Information Retrieval

Champions which have a phrase or expression or something related to it in their lore

Query – (lore: "City of Progress")

```
"key":[51],
"name":"Caitlyn",
"title":"the Sheriff of Piltover",
"tags__001":["Marksman"],
"partype":["Mana"],
"info__difficulty":[6],
"spells__Q":"Piltover Peacemaker",
"spells__Q_description":"Caitlyn revs up her rifle for 1 second to unleash a penetrating shot that deals physical damage (deals less damage to subsequent targets).",
"spells__W":"Yordle Snap Trap",
"spells__W_description":"Caitlyn sets a trap to find sneaky yordles. When sprung, the trap reveals and immobilizes the enemy champion for 1.5 seconds, granting Caitlyn an empowered Headsho
"spells__E":"90 Caliber Net",
"spells__E_description":"Caitlyn fires a heavy net to slow her target. The recoil knocks Caitlyn back.",
"spells__R":"Ace in the Hole",
"spells__R_description":"Caitlyn takes time to line up the perfect shot, dealing massive damage to a single target at a huge range. Enemy champions can intercept the bullet for their ally.
"passive__name":"Headshot",
"passive__description":"Every few basic attacks, or against a target she has trapped or netted, Caitlyn will fire a headshot dealing bonus damage that scales with her critical strike chanc
"skins":"['Resistance Caitlyn', 'Sheriff Caitlyn', 'Safari Caitlyn', 'Arctic Warfare Caitlyn', 'Officer Caitlyn', 'Headhunter Caitlyn', 'Lunar Wraith Caitlyn', 'Pulsefire Caitlyn', 'Pool P
"allytips":"[\"Make use of her Yordle Snap Traps by placing them pre-emptively to ensure that you'll have one off of cooldown during combat.\", 'Avoid using Ace in the Hole in large team m
"enemytips":"['Keep behind allied minions if Caitlyn is harassing you with Piltover Peacemaker (it deals less damage with each subsequent target).', \"You can intercept Ace in the Hole's m
"id":"04c4b215-47ba-46e6-9664-3532e1cf8644",
"lore":"\r\n\r\n\r\nA determined and skilled investigator, Caitlyn is one of the sheriffs of Piltover, the City of Progress. She is a fiercely intelligent woman with a strong sense of just
```

Information Retrieval

Champions who must have a given tag (ex: Assassin) and have one of a set of words (ex: dash, jump, blink, teleport or mobility in one of their abilities).

"key":[246],
"name":"Qiyana",
"title":"Empress of the Elements",
"tags__001":["Assassin"],
"tags__002":["Fighter"],
"partype":["Mana"],
"info__difficulty":[8],
"spells__Q":"Elemental Wrath / Edge of Ixtal",
"spells__Q_description":"Qiyana swings her weapon, dealing damage with a bonus effect based on her element.",
"spells__W":"Terrashape",
"spells__W_description":"Qiyana dashes to a location and enchants her weapon with an element. Her attacks and abilities deal bonus damage while her weapon is enchanted. ",
"spells__E":"Audacity",
"spells__E_description":"Qiyana dashes to an enemy, damaging them.",
"spells__R":"Supreme Display of Talent",
"spells__R_description":"Qiyana sends out a shockwave that detonates whatever elements she hits with it, stunning and damaging nearby enemies.",
"passive__name":"Royal Privilege",
"passive__description":"Qiyana's first basic attack or ability against each enemy deals bonus damage.",
"skins":"['Battle Boss Qiyana', 'True Damage Qiyana', 'True Damage Qiyana Prestige Edition', 'Battle Queen Qiyana']",
"allytips":"[]",
"enemytips":"[]",
"id":"161755d0-4252-4c23-9ec6-bfa9a6aa55a8",
"lore":"\r\n\r\n\r\n\r\nIn the jungle city of Ixaocan, Qiyana plots her own ruthless path to the high seat of the Yun Tal. Last in line to succeed her parents, she faces those who stand in her

Evaluation
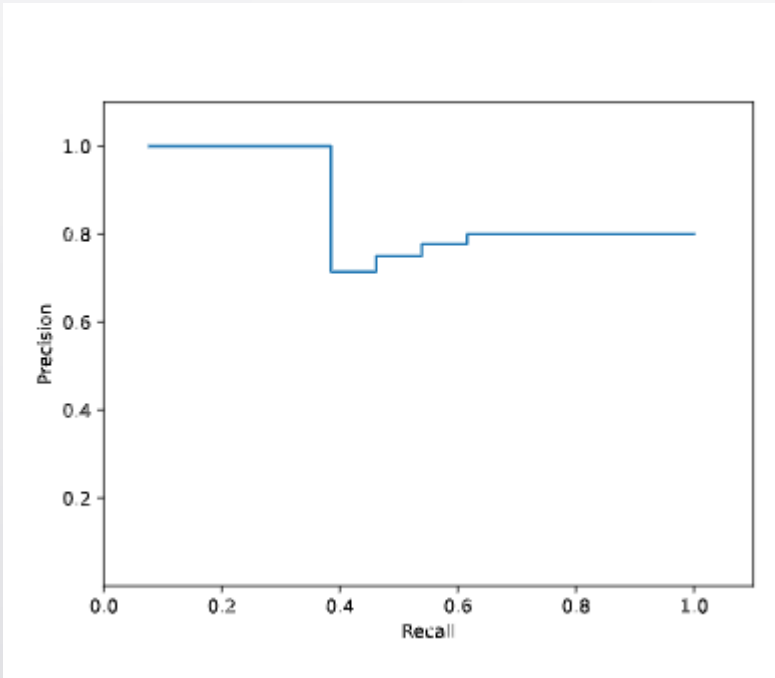
(Fighter && lore:(Demacia || Ionia))
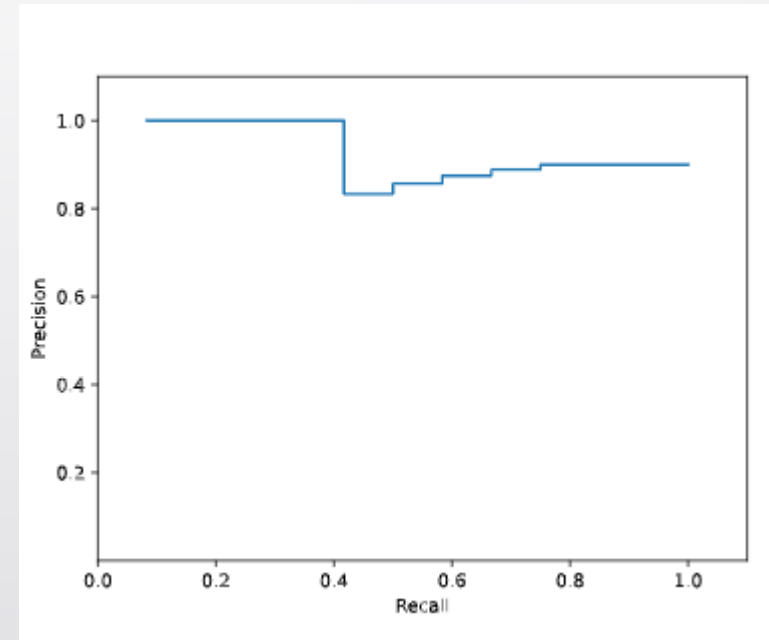
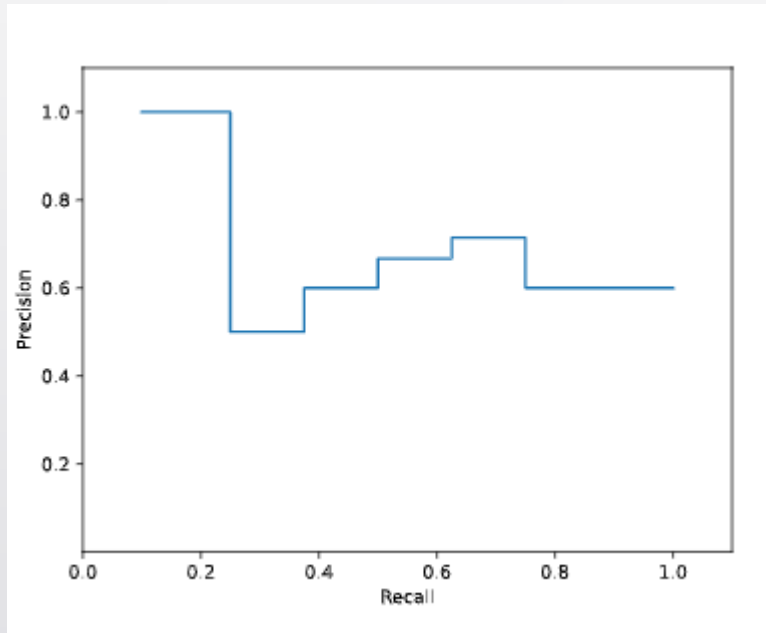Fighter && lore:(Demacia^3 || Ionia^6)

Evaluation

	0	1
0	Metric	Value
1	Average Precision	0.897266
2	Precision at 10 (P@10)	0.8

	0	1
0	Metric	Value
1	Average Precision	0.939374
2	Precision at 10 (P@10)	0.9

Without weights

With weights

Evaluation

(lore: "City of Progress")
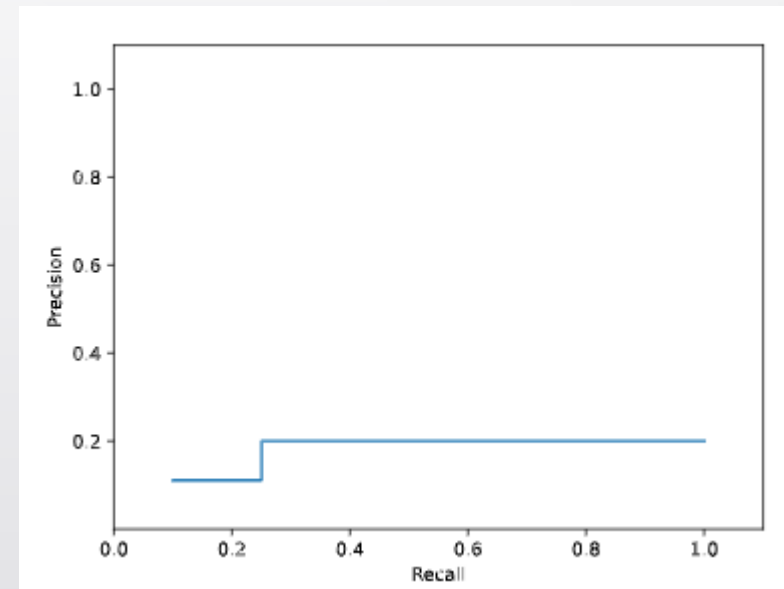
(lore: City^2 of Progress)

Evaluation

	0	1
0	Metric	Value
1	Average Precision	0.729365
2	Precision at 10 (P@10)	0.6

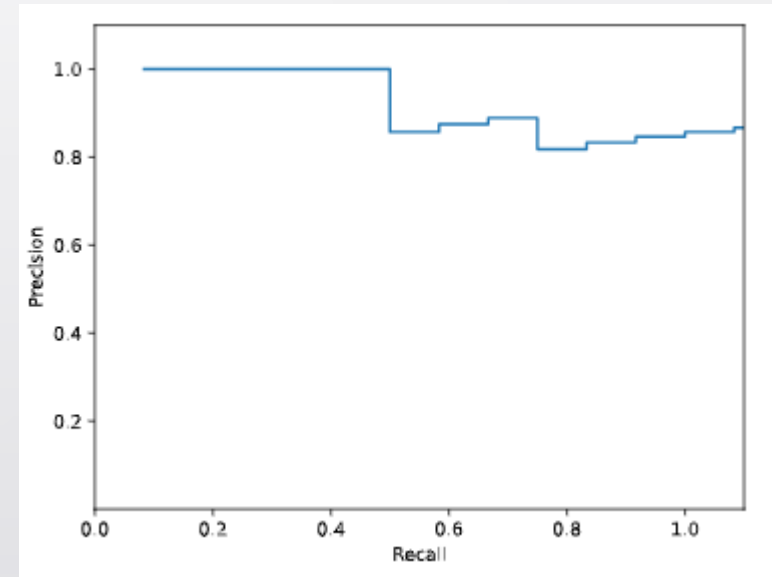|	0	1
0	Metric	Value
1	Average Precision	0.31433
2	Precision at 10 (P@10)	0.2

Without weights

With weights

Evaluation

Champions who must have a given tag (ex: Assassin) and have one of a set of words (ex: dash, jump, blink, teleport or mobility in one of their abilities).
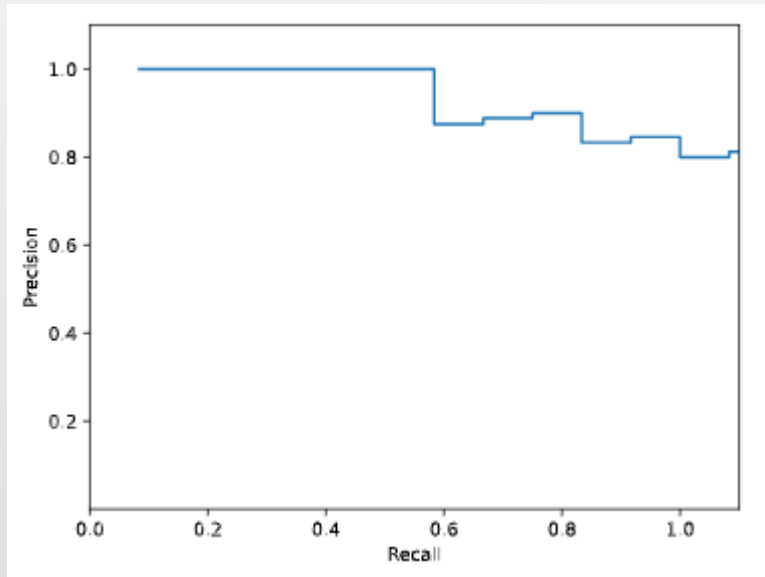
Without weights

With weights

Evaluation

	0	1
0	Metric	Value
1	Average Precision	0.900678
2	Precision at 10 (P@10)	0.9

	0	1
0	Metric	Value
1	Average Precision	0.900867
2	Precision at 10 (P@10)	0.9

Without weights

With weights

Future Work

- Use vocabulary based filter

- NLP (Neuro-linguistic programming) could be applied regarding the lore in order to extract and search more effectively for complex queries, this could be done by resorting to a filterbased on NER (Name Entity Recognition)

- Improve queries by adding correct weights