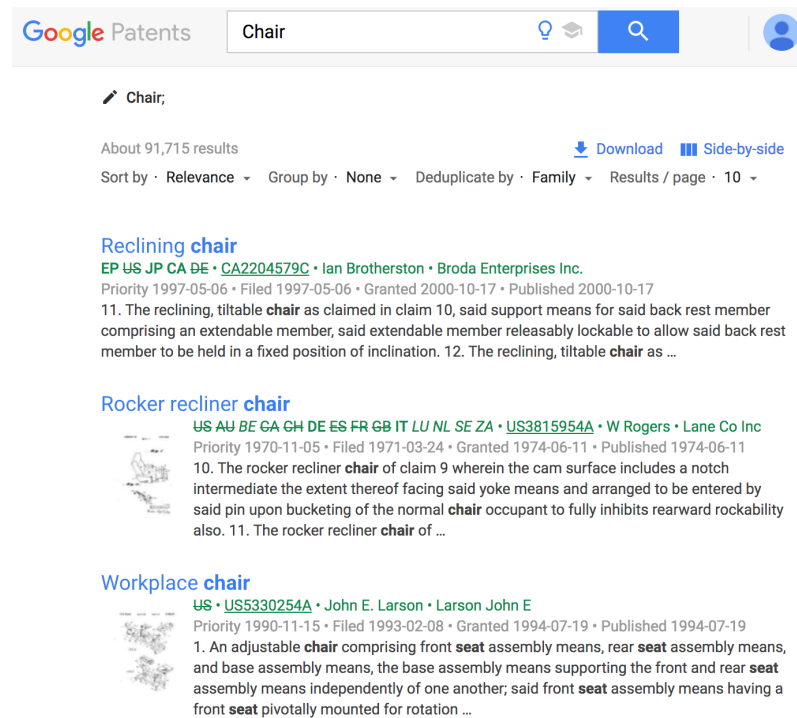


LaSPAM's Patent Search System

Compare with Similar Services

[Google Patent]



The screenshot shows the Google Patents search interface. At the top, the search bar contains the word "Chair". Below the search bar, there are icons for a lightbulb, a graduation cap, and a magnifying glass. To the right of the search bar is a user profile icon. Below the search bar, the text "Chair," is displayed. Underneath, it says "About 91,715 results". To the right of this text are links for "Download" and "Side-by-side". Below this, there are sorting options: "Sort by · Relevance", "Group by · None", "Deduplicate by · Family", and "Results / page · 10". The first search result is titled "Reclining chair" and includes the patent number "EP US JP CA DE · CA2204579C" and the inventor "Ian Brotherston · Broda Enterprises Inc.". The second result is titled "Rocker recliner chair" and includes the patent number "US AU BE CA CH DE ES FR GB IT LU NL SE ZA · US3815954A" and the inventor "W Rogers · Lane Co Inc". The third result is titled "Workplace chair" and includes the patent number "US · US5330254A" and the inventor "John E. Larson · Larson John E".

Chair,

About 91,715 results

Download Side-by-side

Sort by · Relevance · Group by · None · Deduplicate by · Family · Results / page · 10

Reclining chair
EP US JP CA DE · CA2204579C · Ian Brotherston · Broda Enterprises Inc.
Priority 1997-05-06 · Filed 1997-05-06 · Granted 2000-10-17 · Published 2000-10-17
11. The reclining, tiltable **chair** as claimed in claim 10, said support means for said back rest member comprising an extendable member, said extendable member releasably lockable to allow said back rest member to be held in a fixed position of inclination. 12. The reclining, tiltable **chair** as ...

Rocker recliner chair
US AU BE CA CH DE ES FR GB IT LU NL SE ZA · US3815954A · W Rogers · Lane Co Inc
Priority 1970-11-05 · Filed 1971-03-24 · Granted 1974-06-11 · Published 1974-06-11
10. The rocker recliner **chair** of claim 9 wherein the cam surface includes a notch intermediate the extent thereof facing said yoke means and arranged to be entered by said pin upon bucketing of the normal **chair** occupant to fully inhibits rearward rockability also. 11. The rocker recliner **chair** of ...

Workplace chair
US · US5330254A · John E. Larson · Larson John E
Priority 1990-11-15 · Filed 1993-02-08 · Granted 1994-07-19 · Published 1994-07-19
1. An adjustable **chair** comprising front **seat** assembly means, rear **seat** assembly means, and base assembly means, the base assembly means supporting the front and rear **seat** assembly means independently of one another; said front **seat** assembly means having a front **seat** pivotally mounted for rotation ...

Use common search methods for patent searches

Why we developed patent search system?

- You don't have to do complicated search expression
 - Similar patents can be identified
 - You can search by patent Image
 - You can be provided with a visualization service
-

LaSPAM's provides ...

1. Text Search

Word Cloud

Show words related to keywords searched

Landscaping & DataTable

Result of patent clustering of searched keywords

2. Image Search

Related patents

Results of patent related to image searched

Similar Image

Results of patent related to image searched

Who uses this system?

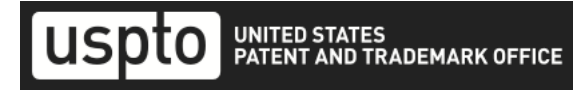
- To search for similar patents
- Who wants to see the similarity between a patent
- To find a patent ID from the patent pictures you have

Deep Patent Embedding based Patent search & Landscaping service

Dataset

: PatentsView API
(supported by the US Patent and Trademark Office)

* LaSPAM used data since 2001 and type='utility'



[Data Table used for Text Search]

- Patent : Data concerning granted patents
- Patent Assignee : Crosswalk between patent and assignee tables
- CPC current : Current CPC classification data for all patents
- WIPO & WIPO field : WIPO technology classification

DataTable

Patent

Patent ID	type	country	date	title	abstract	kind
10000000	utility	US	2018.6.19	Coherent LADAR using intra-pixel quadrature detection	A frequency modulated (coherent) laser ...	B2
10000001	utility	US	2018.6.19	Injection molding machine and mold thickness control method	The injection molding machine includes a fixed platen, a moveable ...	B2
10000002	utility	US	2018.6.19	Method for manufacturing polymer film and co-extruded film	The present invention relates to: a method for manufacturing a polymer film ...	B2

Patent ID : patent this record corresponds to (Patent ID)
type : category of patent

- defensive publication : 509
- design : 613951
- plant : 26802
- reissue : 18736
- statutory invention registration : 2258
- TVPP : 3
- utility : **6426469**

country : country in which patent was granted (always US)
date : date when patent was granted
title : title of patent
abstract : abstract text of patent
kind : WIPO document kind codes

Use since 2001 and type = 'utility' 4,201,248 rows of 5,992,136 rows

DataTable

Patent Assignee

patent ID	assignee ID
10000000	341194
10000001	133905
10000002	385861

Patent ID : patent_number

Assignee ID : unique assignee id generated
(by the disambiguation algorithm)

CPC Current

Patent ID	Section ID	Subsection ID	Group ID	Subgroup ID	category
10000000	G	G01	G01S	G01S7/4863	inventional
10000000	G	G01	G01S	G01S7/4865	inventional
10000000	G	G01	G01S	G01S7/4914	inventional

Patent Id : patent number

Section ID : CPC section

Subsection ID : CPC subsection ID

Group ID : group ID

Subgroup ID : subgroup ID

category : CPC category

DataTable

WIPO & WIPO Field - WIPO technology classification

Patent ID	Field ID	Sector title	Field title
10000038	1	Electrical engineering	Electrical machinery, apparatus, energy
10000058	1	Electrical engineering	Electrical machinery, apparatus, energy
10000097	1	Electrical engineering	Electrical machinery, apparatus, energy

Patent ID : patent number

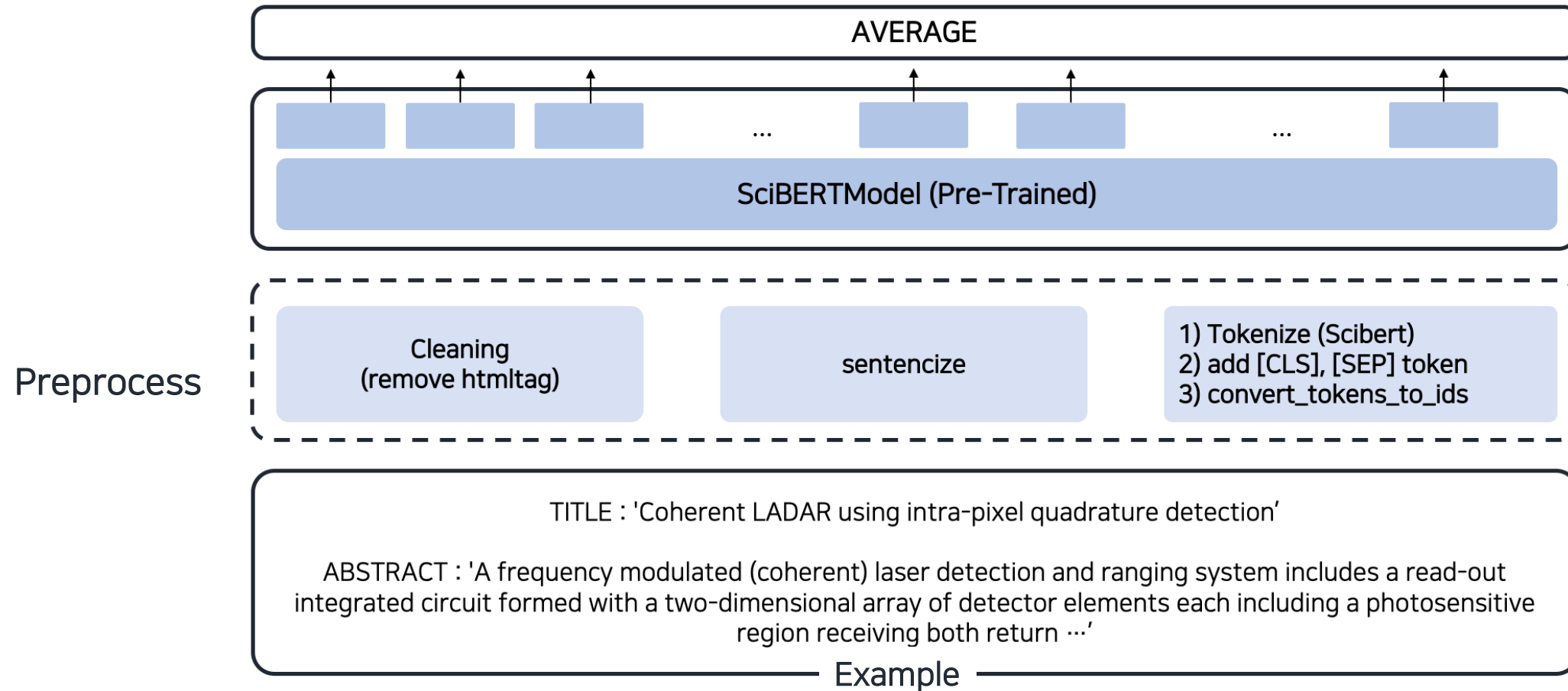
Field ID : WIPO technology field id as derived from crosswalk

Sector title : WIPO technology sector title

Field title : WIPO technology field title

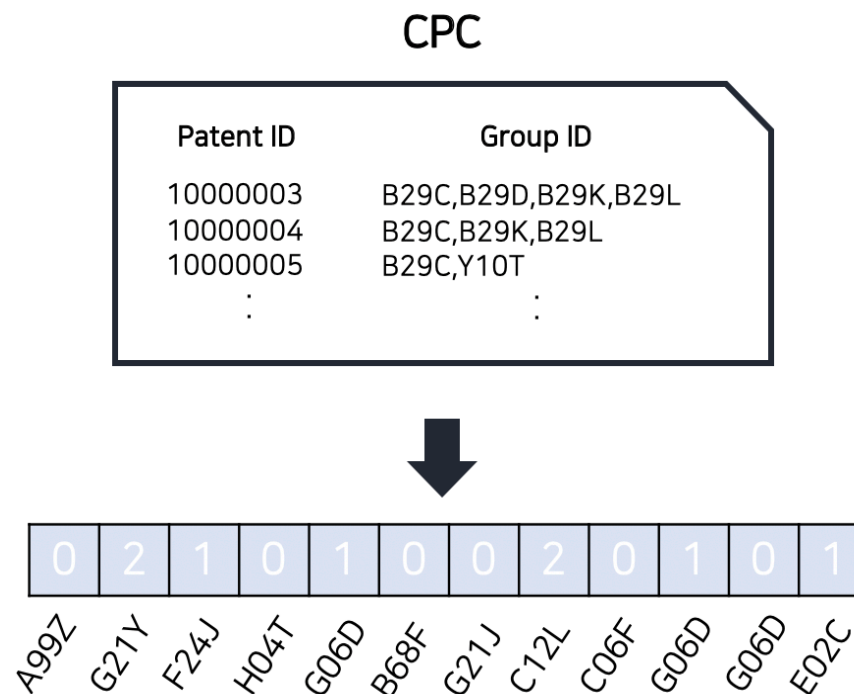
Text Preprocess

for Patent Embedding Model



Metadata Preprocess for Patent Embedding Model

- CPC : bag of words
 - Features : Patent ID, Group ID
- Assignee : bag of words
 - Features : Patent ID, Assignee ID
- WLPO : bag of words
 - Features : Patent ID, WIPO Sector Title
 - Apply argmax for categorical classification

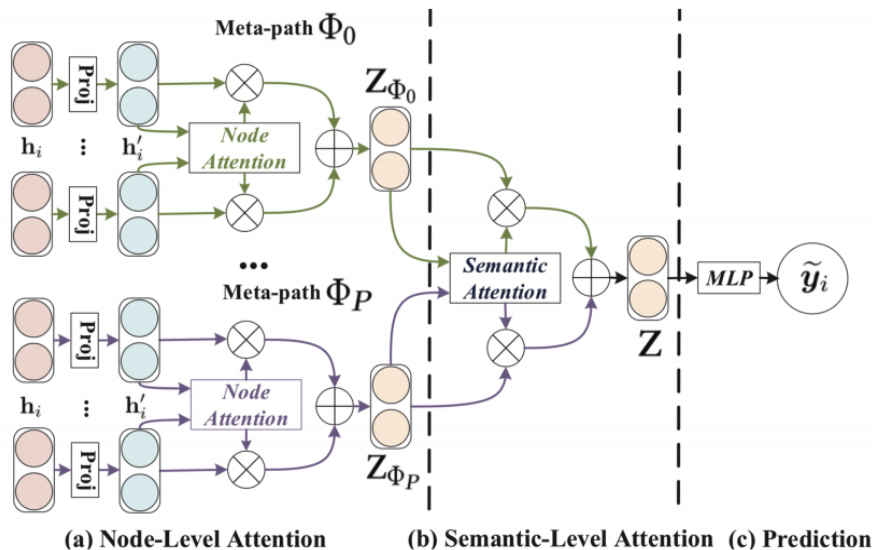


[Example]

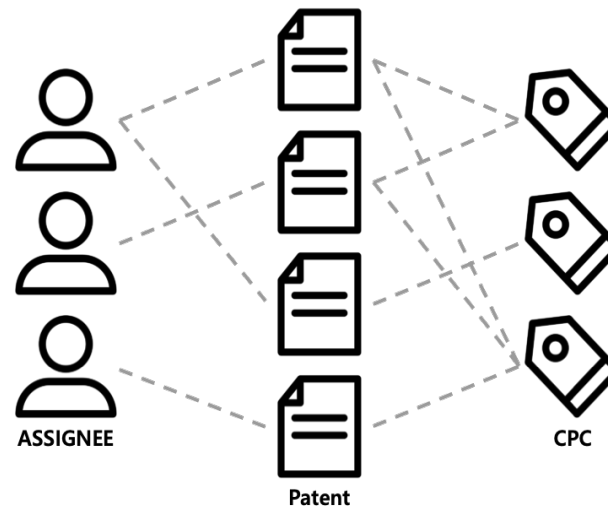
Patent Embedding Model

What algorithm is used?

HAN (heterogeneous attention network)



[Heterogeneous Graph for Patent]



Model Results

- Train Micro f1 : 0.8963
- Train Macro f1 : 0.8313

- Deep Graph Library (DGL)
- Pytorch

Deep Image Representation Vector based Image search service

Dataset

: PatentsView API
(supported by the US Patent and Trademark Office)

* LaSPAM used data since 2001 and type='utility'

PatentsView^{USPTO}

uspto UNITED STATES
PATENT AND TRADEMARK OFFICE

[Data Table used for Image Search]

- Patent : Data concerning granted patents
 - CPC current : Current CPC classification data for all patents
- + crawled thumbnail **image data** of Patent ID

ex) **Images (5)**

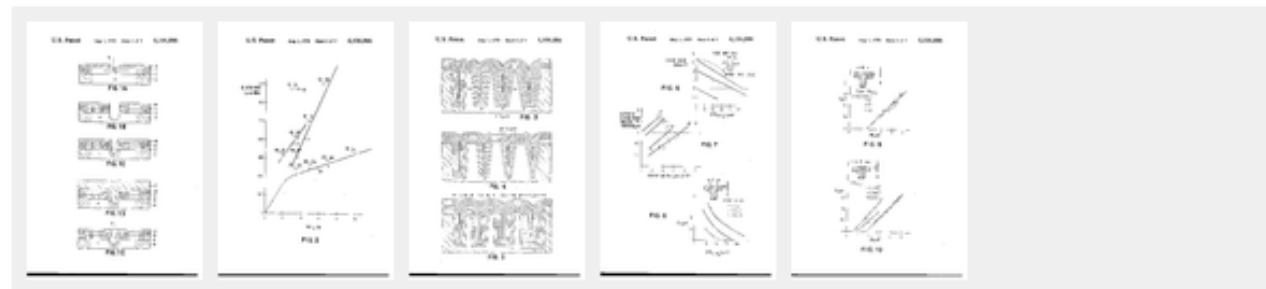
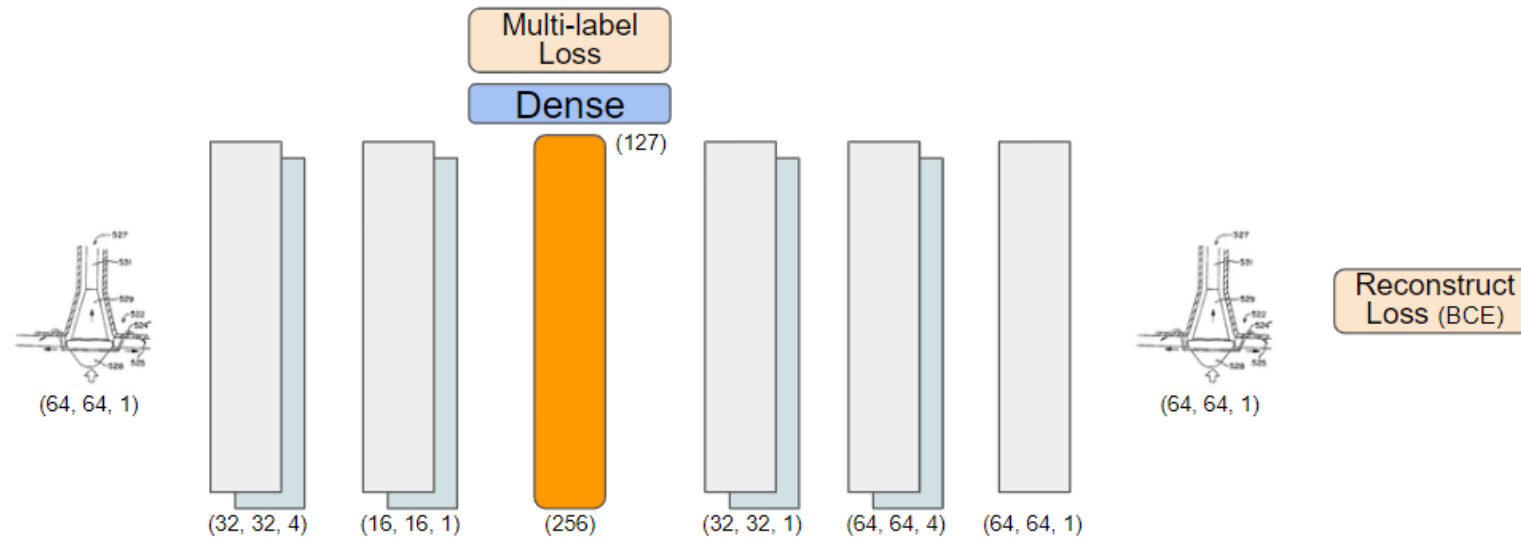


Image Search Algorithm - Model

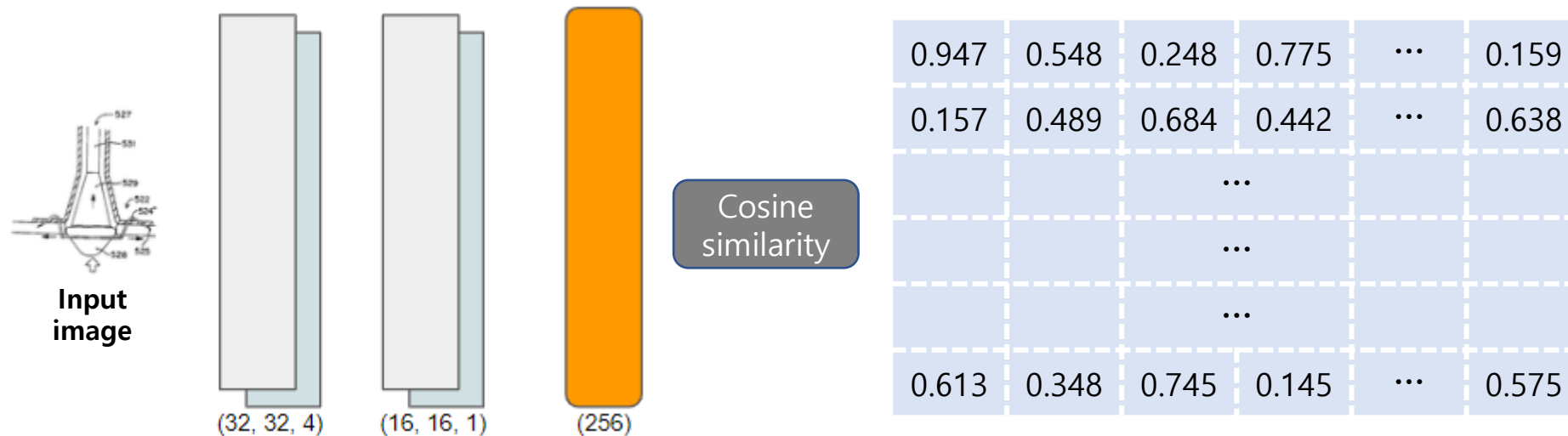
Convolutional – Deconvolutional Autoencoder



- Resize to 64 * 64 images crawled from Google patents thumbnail
- Encoder consist of conv – maxpool and Decoder consist of deconv – upsample
- Embedding layer occurs 3-digit cpc code(127 labels)
classification loss with Dense – Sigmoid Layer
(To induce embedding values to have informations about the cpc code.)

Image Search Algorithm - Searching

Convolutional – Deconvolutional Autoencoder

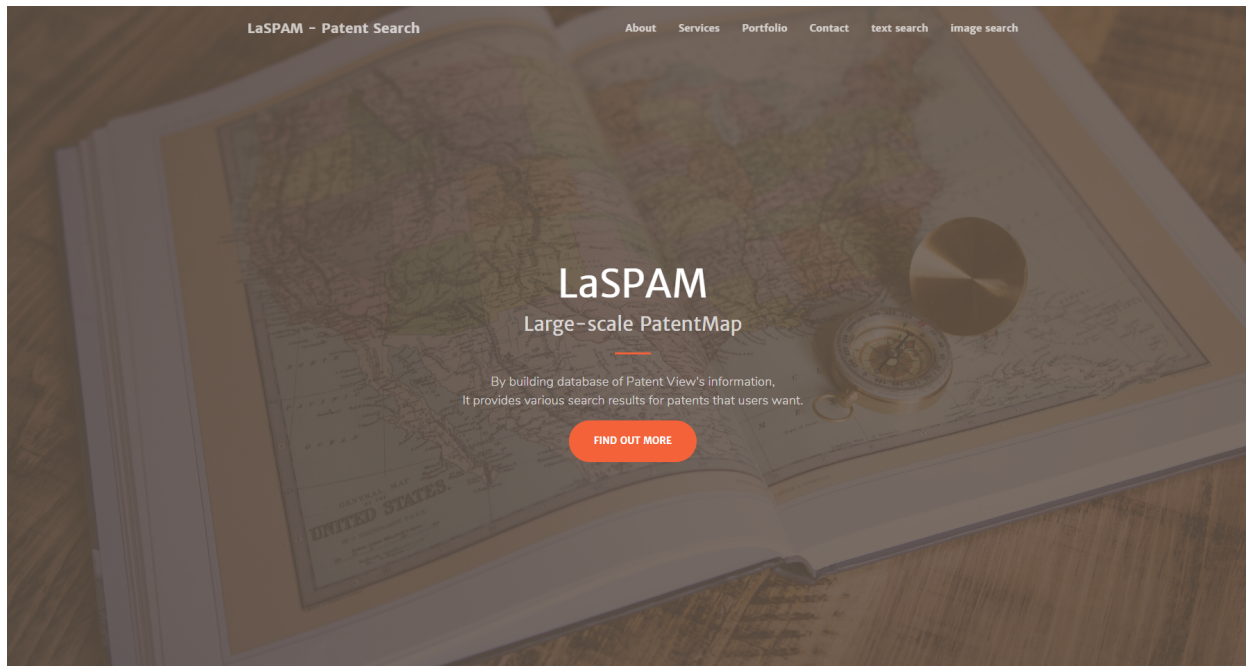


- CPC code classification(Multi-label classification) Precision : 0.116
- Top-5 accuracy with searched patents : 0.99

LaSPAM's Patent Search System

LaSPAM's Patent Search

<http://laspam.com>



Patent Search Service



Text Search

Deep patent embedding based
patent search & landscaping



Image Search

Deep image representation
vector based image search



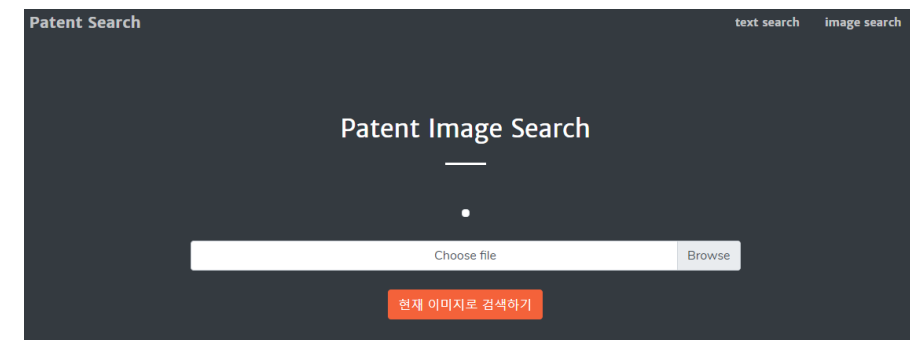
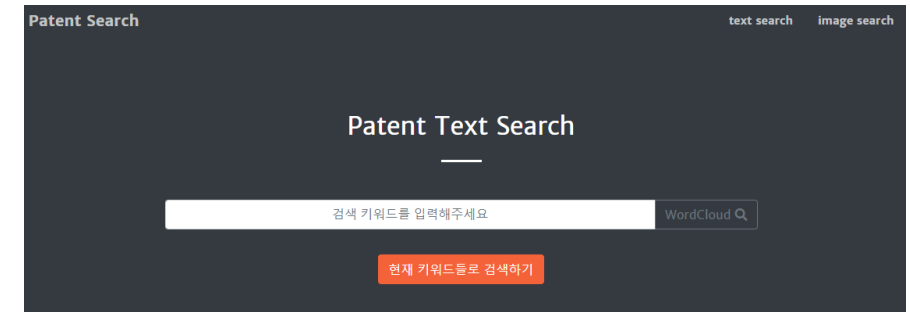
Visualization

Deep patent embedding based
WordCloud, Patent Map



Patent Database

By building database of patent
information



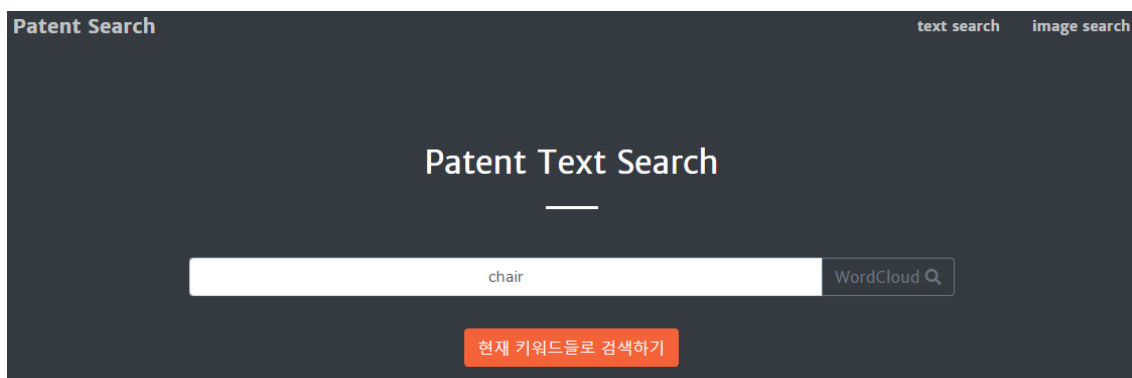
LaSPAM's Patent Search

: Patents Text Search

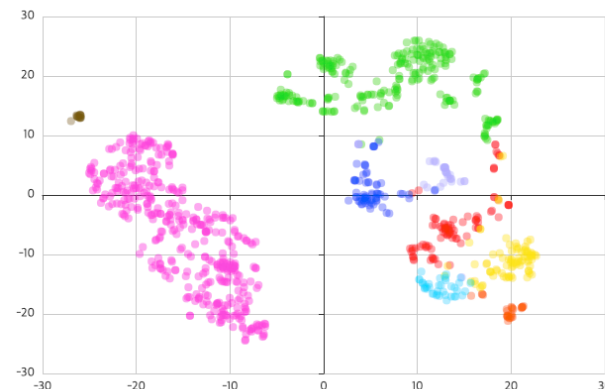
Deep Embedding based

Patent Search & Landscaping

[Demonstration]



[Patent Landscape]



[WordCloud]



LaSPAM's Patent Search

: Patents Image Search

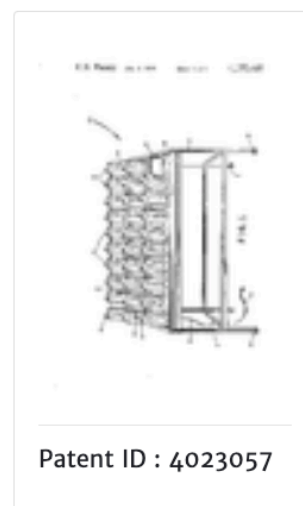
Deep Image Representation

Vector based Image Search

[Demonstration]



Results



Electronic votive lights

Electronically timed and electrically operated lamps are utilized in place of traditional candles. Actuation of a switch, located on each lamp holder, illuminates that lamp for an accurately timed predeterm...

Google Patents

Patent ID : 4023057



Electronic votive lights

Electronically timed and electrically operated lamps are utilized in place of traditional candles. Actuation of a switch, located on each lamp holder, illuminates that lamp for an accurately timed predeterm...

Google Patents

Patent ID : 4248563



Electronic votive lights

Electronically timed and electrically operated lamps are utilized in place of traditional candles. Actuation of a switch, located on each lamp holder, illuminates that lamp for an accurately timed predeterm...

Google Patents

Patent ID : 4261002

Thank you
