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# Mining tortured abbreviations from the scientific literature

Alexandre Clause, Guillaume Cabanac, Pascal Cuxac, Cyril Labbé

► **To cite this version:**

Alexandre Clause, Guillaume Cabanac, Pascal Cuxac, Cyril Labbé. Mining tortured abbreviations from the scientific literature. 2023. hal-04311600v2

**HAL Id: hal-04311600**

**<https://hal.science/hal-04311600v2>**

Preprint submitted on 24 Sep 2024 (v2), last revised 6 Nov 2024 (v3)

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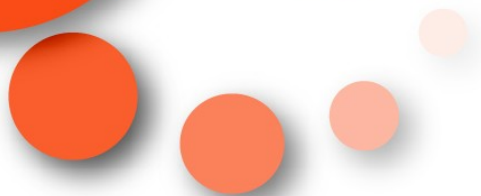
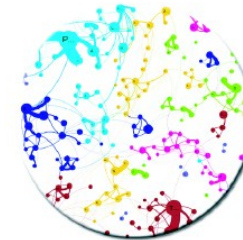


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CNRS - Toulouse INP - UT3 - UT Capitole - UT2

Institut de Recherche en Informatique de Toulouse



# Mining tortured abbreviations from the scientific literature

Alexandre Clause, Guillaume Cabanac, Pascal Cuxac, Cyril Labbé



UNIVERSITÉ  
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de Toulouse



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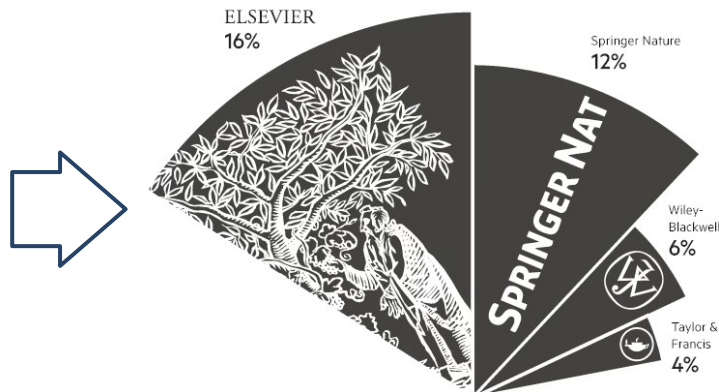
European Research Council  
Established by the European Commission



Publish or perish



Elsevier top of the league  
Global market share of journal articles by leading publishers, 2013 (%)



Source: company

<https://www.ft.com/content/93138f3e-87d6-11e5-90de-f44762bf9896>

voice recognition

deep neural network



Convolutional Neural Network. Artificial Neural Networks with numerous layers are termed as Deep Neural Networks or Deep Learning. It has been explored as one another key resource in recent years and has become quite well recognized in the literary community because of its efficiency to manage with huge amounts of data [17]. The most well-known **profound neural network** is the Convolutional Neural Networks (CNNs), which takes its name from operation of mathematical dimension from the matrixes termed convolution. Convolutional Neural Network (CNN) has various types of layers; it includes pooling, nonlinearity, and convolutional and fully connected layers. Convolutional Neural Network has pivotal outcomes over previous decades in an assortment of fields identified with **design** **acknowledgment** from picture handling to **voice acknowledgment** [ 8]. The significant part of CNN is to get theoretical highlights when information proliferates towards the more **profound layers**. For instance, in picture characterization, the edge may be distinguished in the principal layers, and afterward the less difficult shapes in the subsequent layers, and afterward the **more elevated level** **highlights**.

pattern recognition

deep layers

high-level features

[pubpeer.com/publications/99826B46D2BA62C9FA87CAF11AE0FD](http://pubpeer.com/publications/99826B46D2BA62C9FA87CAF11AE0FD)

Tortured phrases

spectral local linearization method



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## Scholarly articles for spectral local linearization method

A new **spectral local linearization method** for nonlinear ... - Motsa - Cited by 173

... conditions using **spectral local linearization method** - Sithole - Cited by 23

**Spectral methods** to solve nonlinear problems: A ... - Rai - Cited by 27

The spectral local linearization method. The unearthy neighborhood linearization technique (SLLM) can be used to unravel an arrangement of the non-comparable conditions. Within this method the criteria for logarithmic criteria are linearized using thoughts similar to the Gauss–Seidel approach.



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## Spectral methods to solve nonlinear problems: A review

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<https://web.archive.org/web/20240521113315/https://www.google.com/search?client=firefox-b-d&q=spectral+local+linearization+method#ip=1>

(snapshot taken on May 21, 2024)

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ScienceDirect.com

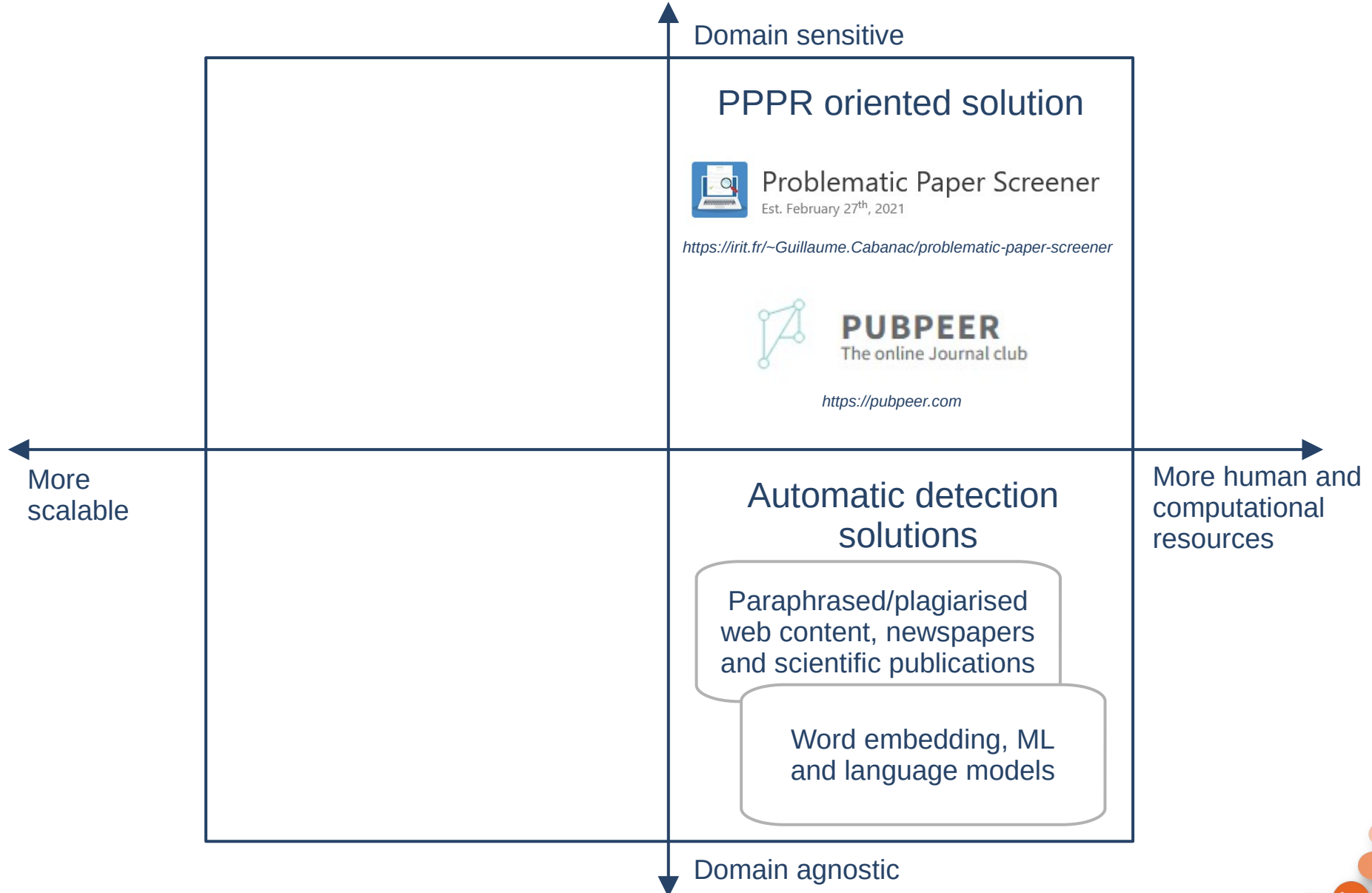
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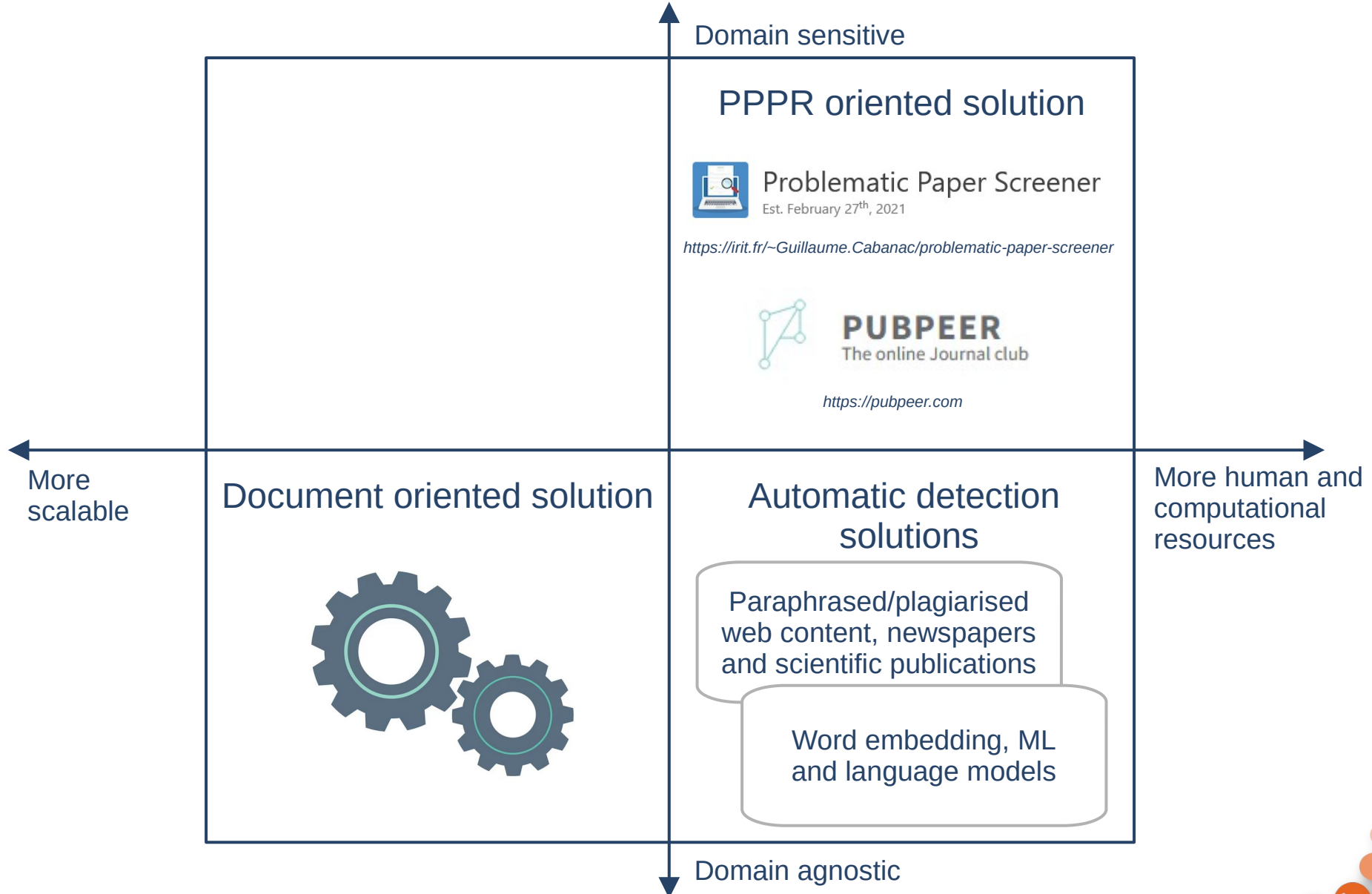
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<https://web.archive.org/web/20240521113315/https://www.google.com/search?client=firefox-b-d&q=spectral+local+linearization+method#ip=1>

(snapshot taken on May 21, 2024)

*Existing solutions*



*Existing solutions*

Proposed solution



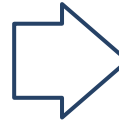
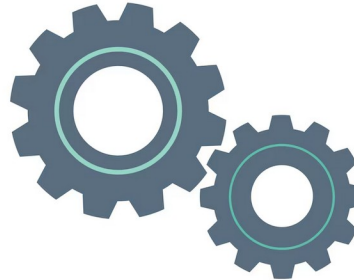
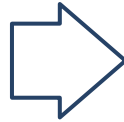
Draft



Preprint



Article



Submission (authors)

Editorial workflow (publishers)

Decision making (editors)

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Perceiving human appearances is quite possibly the most well-known issues in the field of computer acknowledgment. Numerous methodologies and strategies have been tried and applied on the theme, particularly neural organizations. This paper proposed another method that can be supplemented at the lower part of a neural organization engineering as far as face acknowledgment, called the information layer (CIL). To make more sure forecasts and arrangements, this information layer helps the profound learning model to indicate further discernible groups between various individuals (classes) by setting additional requirements on pictures of  $k$  similar individuals (inter-individual) while separating groups on pictures of  $n$  different individuals (between individual). This proposed obligation to the information layer improved the acknowledgment exactness on countenances by 2% [19].

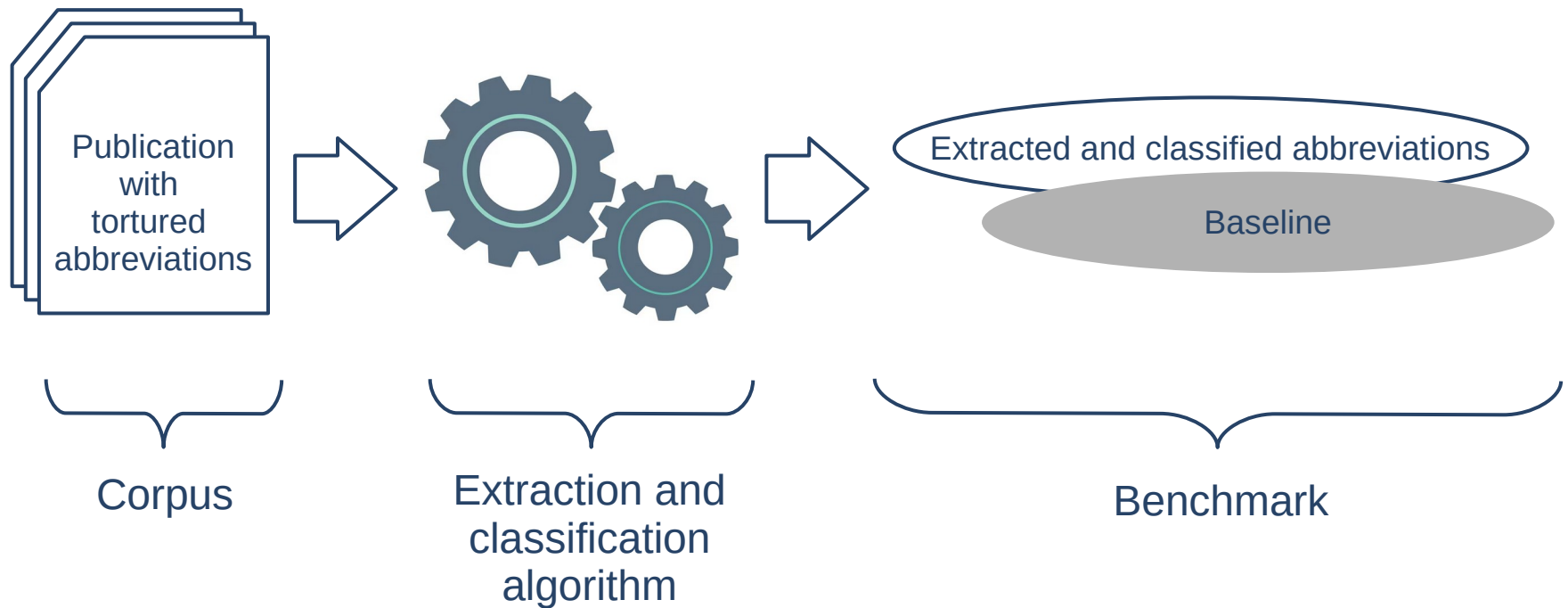
Face acknowledgment is critical to certifiable applications, for example, video observation, human machine connection and security frameworks. When contrasted with conventional AI (draw, net), profound learning based techniques have indicated better exhibitions regarding precision and speed of preparing in picture acknowledgment. This paper proposes an altered Convolutional Neural Network (CNN) design by adding two standardization activities to two of the layers. The standardization activity which is bunch standardization gave increasing speed of the organization. CNN design was utilized to extract particular face highlights and Softmax classifier was utilized to characters faces in the completely associated layer of CNN. In the trial part, Georgia Tech Database indicated that the proposed approach has improved the face acknowledgment exactness with better acknowledgment results [21].

Face pictures showing up in sight and sound applications such as secure payment systems through cloud [21] [22], informal organizations and computerized management ordinarily display emotional posture, brightening, and appearance varieties, bringing about significant execution debasement for conventional face acknowledgment calculations. This paper proposes a complete profound learning structure to the face and posture variations in the data. The proposed profound learning structure is made out of a bunch of extravagantly planned convolutional neural organizations (CNNs) and a three-layer stacked auto-encoder (SAE). The arrangement of CNNs separate correlated facial highlights from multi-dimensional information. At that point, these extracted highlights are connected to frame a high-dimensional component vector, whose measurements are compacted by SAE. The entity of the CNNs are prepared utilizing a subset of 2000 subject, from the face and posture CASIA-WebFace information base which comprises of 100000 face and posture images.

<https://pubpeer.com/publications/2432C53B542C6B29AF449894368D61>







*Bolster* Vector Machine (SVM) → *Support* Vector Machine (SVM)

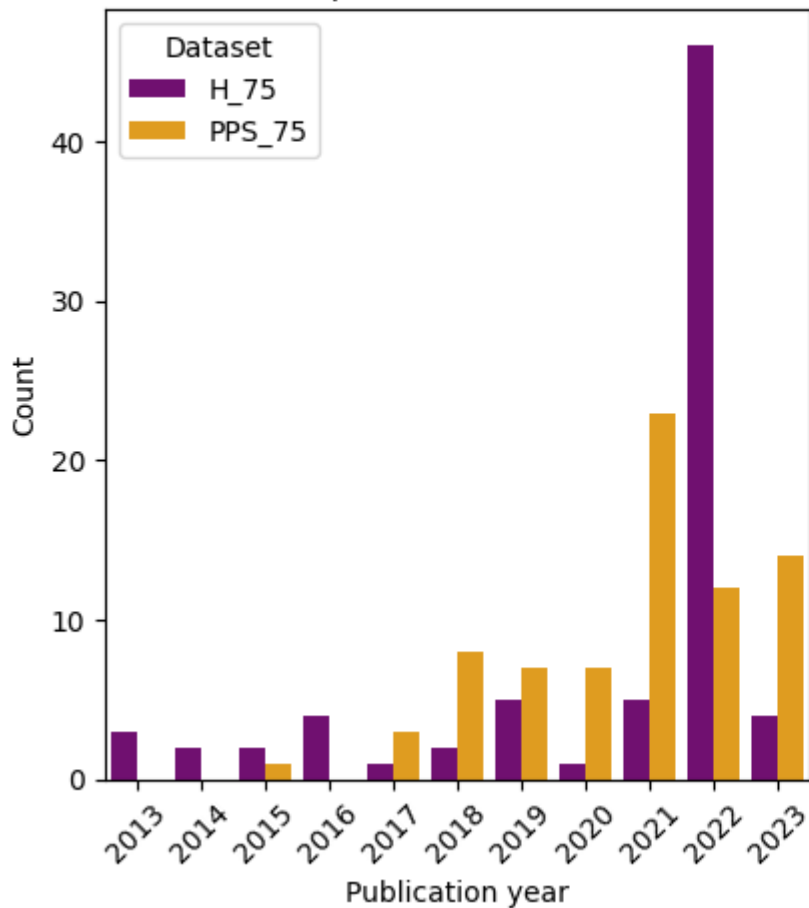
- **150** (PPS\_75, dev + H\_75, eval) open access **publications**
- **Published** between **2013** and **2023**
- Several **multidisciplinary** publications

Dataset → Class	PPS_75	H_75		
		H_G25	H_R25	H_T25
<b>Genuine</b>	608	345	179	124
<b>Invalid</b>	56	16	12	7
<b>Tortured</b>	480	17	96	87

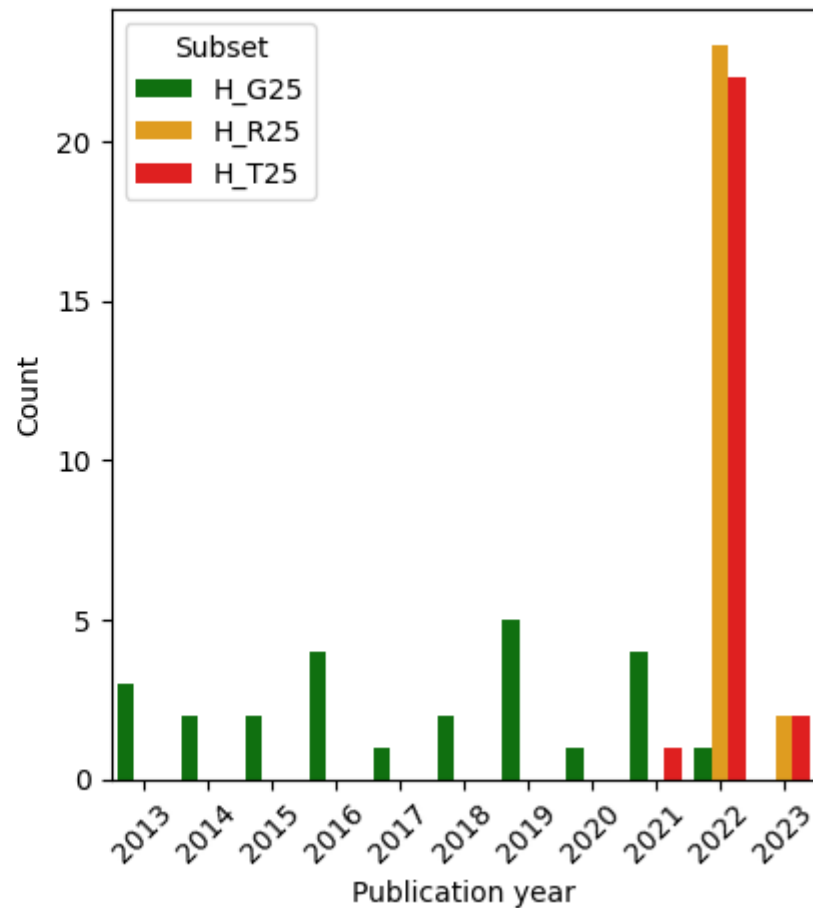
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## Publication year distributions

Between development and evaluation datasets

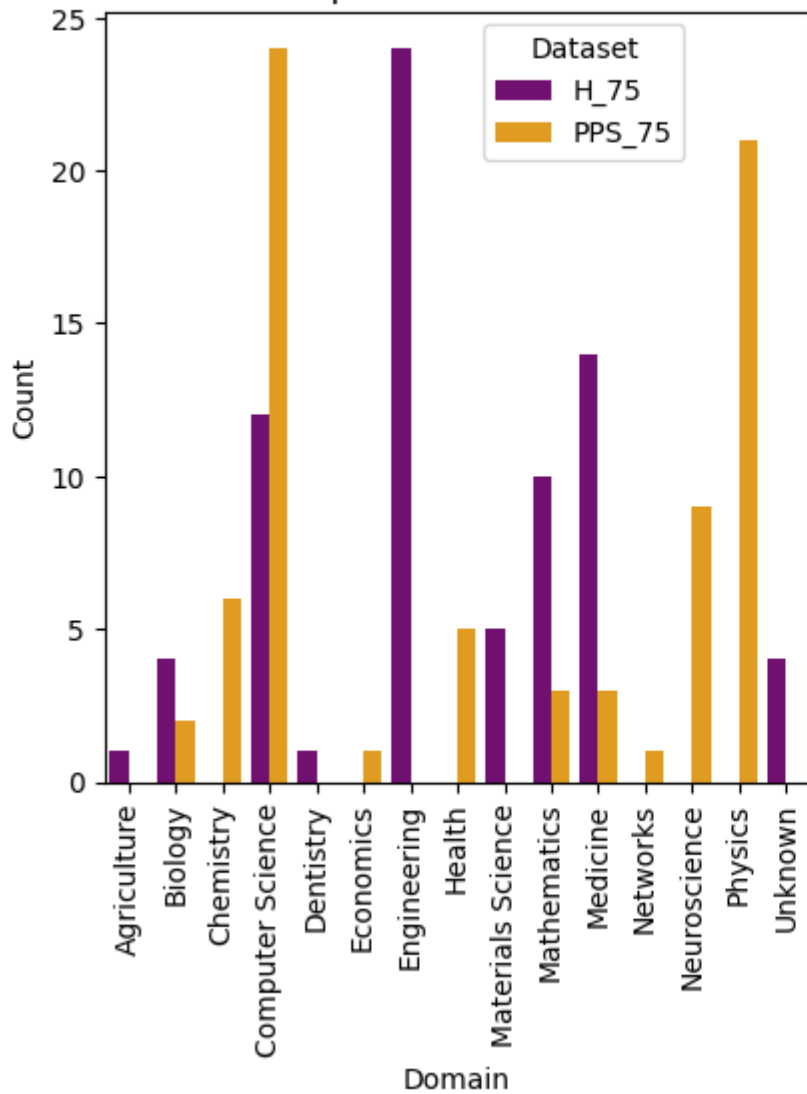


Between evaluation subsets

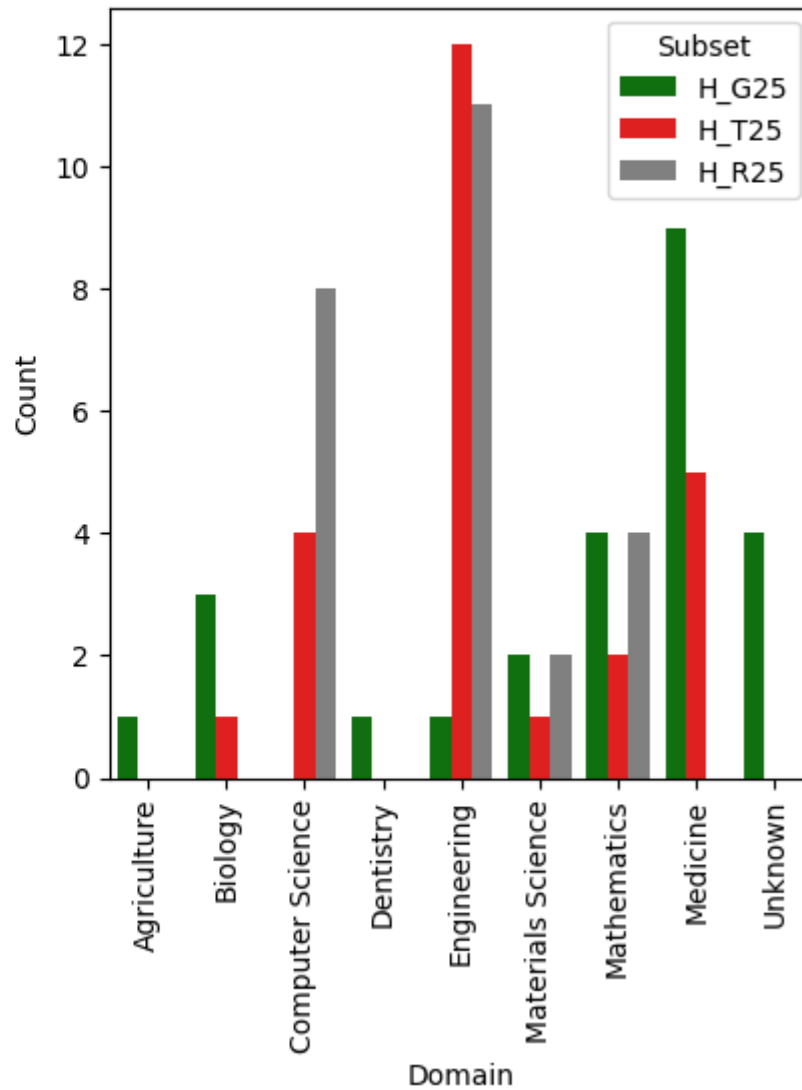


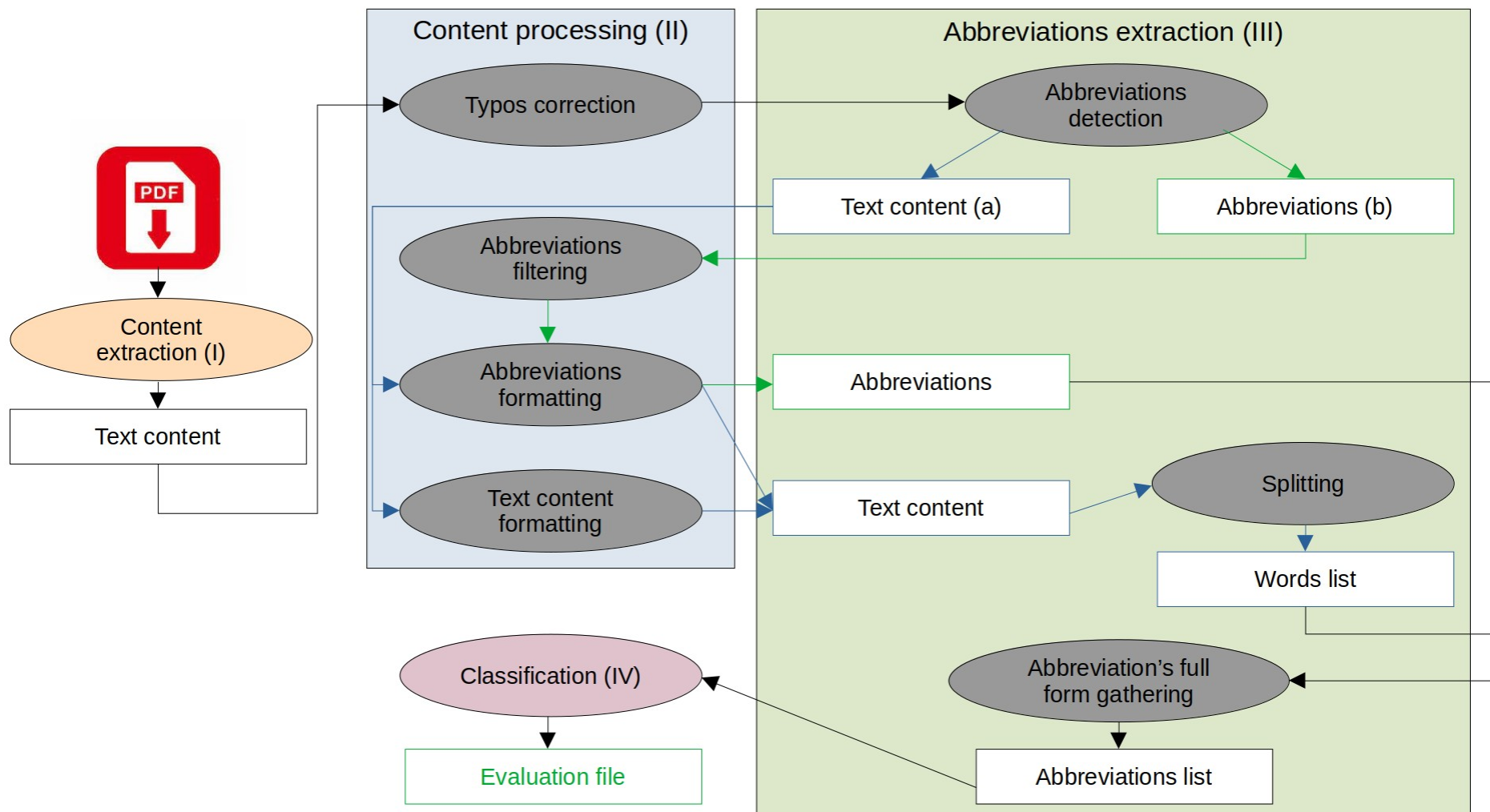
## Domains distributions

Between development and evaluation datasets



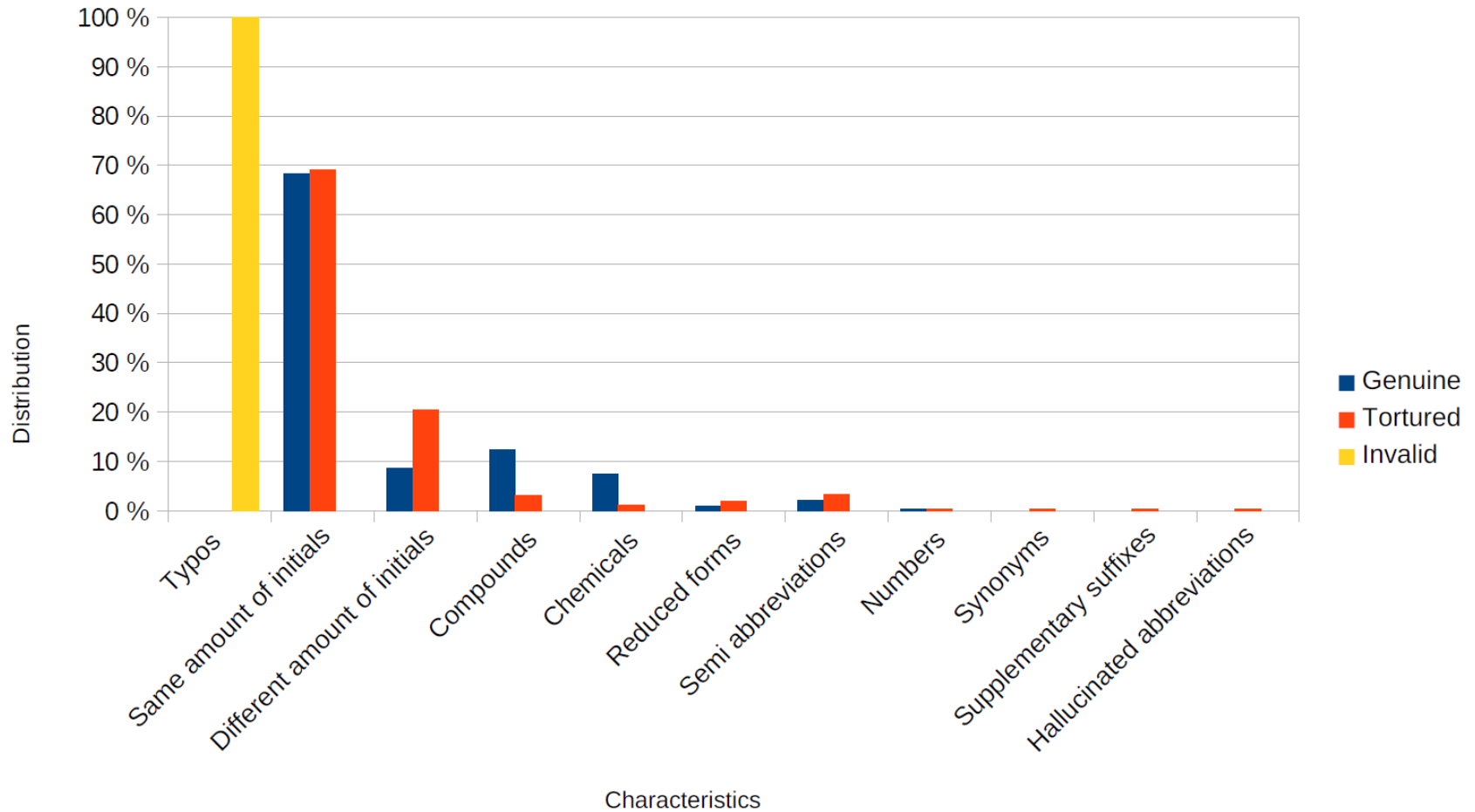
Between evaluation subsets







## Abbreviations characteristics distribution



Characteristic	Class	
	Genuine	Tortured
(1) Same amount of initials	<i>Hidden Markov Model (HMM)</i>	<i>Concealed Markov Display (HMM)</i>
(2) Different amount of initials	<i>Generalised Linear Model (GLM)</i>	<i>Summed Up Direct Models (GLM)</i>
(3) Compounds	<i>Multidrug Resistance (MDR)</i>	<i>Multidrug Safe (MDR)</i>
(3) Chemicals	<i>Diethylenetriamine Pentaacetic acid (DTPA)</i>	<i>Diethylenetriamine Pentaacetic ruinous (DTPA)</i>
(4) Reduced forms	<i>Residual neural Network (ResNet)</i>	<i>Lingering brain Organization (ResNet)</i>

Characteristic	Class
(1) Same amount of initials	// (1) no offset using <u>Hidden Markov Model</u> (HMM) using <u>Concealed Markov Display</u> (HMM) → <b>Genuine</b> → Next step
(2) Different amount of initials	
(3) Compounds	// (2) no offset <u>the Moroccan Agency of Press</u> (MAP) → <b>Genuine</b> <u>the Moroccan Organization of Press</u> (MAP) → Next step
(3) Chemicals	
(4) Reduced forms	// (1) 1 token offset <u>Hidden Markov Model</u> architecture (HMM) → <b>Genuine</b> <u>Concealed Markov Display</u> architecture (HMM) → Next step
	// (2) 1 token offset <u>Center for Disease Control and Prevention</u> (CDC) → <b>Genuine</b> <u>Center for Illness Control and Prevention</u> (CDC) → Next step
	// (3) <u>[...] Multidrug Resistance [...]</u> (MDR) → <b>Genuine</b> <u>[...] Multidrug Safe [...]</u> (MDR) → Next step
	// (4) <u>[...] Residual Network [...]</u> (ResNet) → <b>Genuine</b> <u>[...] Lingering Organization [...]</u> (ResNet) → <b>Tortured</b>

- **Recall (R):**  $TP / (TP + FN)$
- **Precision (P):**  $TP / (TP + FP)$
- **F-score (F1):**  $2 * (P * R) / (P + R)$
- **Invalid abbreviations are considered as genuine**

Abbreviations extraction		
	Annotation	Prediction
<b>TP</b>	Abbreviation	Abbreviation
<b>FP</b>	-	Abbreviation
<b>TN</b>	Abbreviation	-
<b>FN</b>	-	-

Abbreviations classification		
	Annotation	Prediction
<b>TP</b>	Tortured	Tortured
<b>FP</b>	Genuine	Tortured
<b>TN</b>	Genuine	Genuine
<b>FN</b>	Tortured	Genuine

Tortured abbreviations extraction		
	Annotation	Prediction
<b>TP</b>	Tortured	Tortured
<b>FP</b>	Genuine	Tortured
	Genuine	-
<b>TN</b>	-	Tortured
	Tortured	Genuine
<b>FN</b>	Tortured	-
	-	Genuine
<b>FN</b>	-	-

Dataset	Task								
	Abbreviations extraction			Abbreviations classification			Tortured abbreviations extraction		
	R	P	F1	R	P	F1	R	P	F1
PPS_75	<b>0.98</b>	0.66	0.79	<b>0.96</b>	<b>0.93</b>	<b>0.94</b>	0.66	<b>0.53</b>	<b>0.59</b>
H_75	0.82	0.83	0.82	0.91	0.49	0.63	0.61	0.27	0.38
H_G25	0.88	0.79	<b>0.83</b>	0.55	0.05	0.10	0.21	0.03	0.05
H_R25	0.79	<b>0.88</b>	<b>0.83</b>	0.93	0.71	0.81	<b>0.68</b>	0.45	0.54
H_T25	0.76	0.82	0.79	0.94	0.80	0.87	0.64	0.48	0.55



→ **Rework the filtering rules** (hallucinated and polysemic expressions)

- **Domain agnostic**
- **Scalable**
- **PDF-oriented**
- **No need for fingerprints**
- Found **185 new fingerprints** for the PPS  
(as of 04.06.2024, using 28 randomly selected **Hindawi** articles)

The case of **IOP Publishing**:

- Publications between **2017** and **2023**
- **3848 problematic** publications
- **10%** of problematic publications are **tortured**
- At least **7%** contain **tortured abbreviations**

Source: the PPS (consulted on May 21, 2024)

Hallucinated abbreviation: **Bolster Vector Machine (BVM)** → **Support Vector Machine (SVM)**

Polysemic expression: **Profound Learning** (tortured in CS, genuine in psychology)

Perspectives



Draft

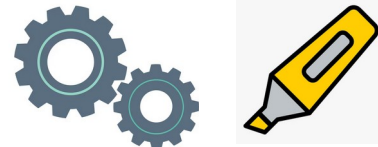


Preprint

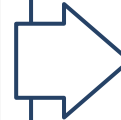


Article

Tortured Phrases Tool Kit (TPTK)



Tortured phrases extraction and highlighting



on IARPA's CS2 and NIST's IJB-A in both check and recognizable proof (for example search) and [9].

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Brood examinations show that consolidating RNN and 3D together can improve video-based feeling acknowledgment perceptibility [17].

Perceiving human appearances is quite possibly the most well-known issues in the field of computer vision. Numerous methodologies and strategies have been tried and applied on the theme, particularly neural organizations. This paper proposed another method that can be supplemented at the lower part of a neural organization engineering as far as face acknowledgment, called the **inattention layer (ILL)**. To make more sure forecasts and arrangements, this inattention layer helps the profound learning model to indicate further discernible groups between various individuals (classes) by setting additional requirements on pictures of faces. Similar to individual (item-individual) while preparing pictures, our pictures are taken from individual (between individual). This proposed obliged the inattention layer improved the acknowledgment exactness on countenances by 2% [19].

Face acknowledgment is critical to certifiable applications, for example, video observation, human machine connection and security frameworks. When contrasted with conventional AI (draw, net), profound learning based techniques have indicated better exhibitions regarding precision and speed of preparing in picture acknowledgment. This paper proposes an altered Convolutional Neural Network (CNN) design by adding two standardization activities to two of the layers. The standardization activity which is bunch standardization gave increasing speed of the organization. CNN design was utilized to extract particular face highlights and Softmax classifier was utilized to characterize faces in the completely associated layer of CNN. In the trial part, Georgia Tech Database indicated that the proposed approach has improved the face acknowledgment exactness with better acknowledgment results [21].

Face pictures showing up in sight and sound applications such as secure payment systems through cloud [21] [22], informal organizations and computerized management ordinarily display emotional posture, brightening, and appearance varieties, bringing about significant execution debasement for conventional face acknowledgment calculations. This paper proposes a complete profound learning structure to the face and posture variations in real-world data. The proposed profound learning structure is made out of a bunch of extravagantly planned convolutional neural organizations (CNNs) and a three-layer stacked auto-encoder (SAE). The arrangement of CNNs separates consecutive facial highlights from multi-dimensional information. At that point, these extracted highlights are connected to frame a high-dimensional component vector, whose measurements are compacted by SAE. The entropy of the CNNs are prepared utilizing a subset of 2000 subject, from the face and posture CASIA-WebFace information base which are prepared by the proposed approach.

<https://pubpeer.com/publications/2432C53B542C6B29AF449894368D61>

Submission (authors)

Editorial workflow (publishers)

Decision making (editors)

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Text length before: 775

775/10,000

In this technique, the learning process is based on semi-labeled datasets. Occasionally, generative adversarial networks (GANs) and DRL are employed in the same way as this technique. In addition, RNNs, which include GRUs and LSTMs, are also employed for partially supervised learning. One of the advantages of this technique is to minimize the amount of labeled data needed. On the other hand, One of the disadvantages of this technique is irrelevant input feature present training data could furnish incorrect decisions. Text document classifier is one of the most popular example of an application of semi-supervised learning. Due to difficulty of obtaining a large amount of labeled text documents, semi-supervised learning is ideal for text document classification task.

Text length after: 756



**Basic Spin**

In this strategy, the educational experience depends on semi-named datasets. Sometimes generative ill-disposed networks (GANs) and DRL are utilized similarly as this procedure. What's more, RNNs, which incorporate GRUs and LSTMs, are additionally utilized for somewhat managed learning. One of the upsides of this procedure is to limit how much named information required. On the other hand, One of the drawbacks of this procedure is insignificant info include present preparation information could outfit erroneous choices. Text report classifier is one of the most famous illustration of a utilization of semi-administered learning. Because of trouble of getting a lot of marked text reports, semi-regulated learning is great for text record order task.





# What is a paper mill?



*Paper mills, as the name suggests, are organizations that profit by producing and selling fake research papers to desperate scientists who are likely under pressure to publish. Lately, they even sell authorship and also target scholarly journals editors to ensure paper acceptance.*

#R3ReadToday# adapted from F. Joelsing, 2024  
Paper mills are bribing editors at scholarly journals



# Annex 3: PPPR using the PPS and PubPeer

- ▼ Detectors:
- 0 Annulled
- 1 Tortured**
- 2 SC1gen
- 3 Mathgen
- 4 SBIR
- 5 Suspect
- 6 Seek&Blastn
- 7 Problematic Cell Lines
- 8 Citejacked
- 9 Feet of Clay

1

Year	Doctype	Publisher	Venue	Title	Citations	Tips	Tortured Phrases	Assessor	PubPeer Users
2023	article	Wiley	<i>Computational Intelligence and Neuroscience</i>	Lung Cancer Classification in Histopathology Images Using Multiresolution Efficient Nets	3	11	bosom AND breast • component guide AND CNN • malignant growth AND cancer • bosom disease • completely associated layer • convolucional neural organization • equal calculation • forecast exactness • fully associated layer • neural organization • normal	Cabanac	Alexandre Clausse

2

#1 Alexandre Clausse comment accepted March 2024

3



This Hindawi article contains several **tortured phrases** that make some passages hard to parse. These typically result from an attempt to avoid plagiarism detection using a paraphrasing software. So far, the following have been spotted:

Tortured Phrases (found)	Established Phrases (expected)
bosom disease	breast cancer
bosom AND breast	breast
completely associated layer	fully connected layer (neural network)
component guide AND CNN	feature map
convolucional neural organization	convolucional neural network
equal calculation	parallel computing
forecast exactness	prediction accuracy
fully associated layer	fully connected layer (in a neural network)
malignant growth AND cancer	cancer
neural organization	neural network
cerebrum AND bosom	brain (tumor) AND breast (cancer)

Can the authors explain why they departed from the established phrases?

Sometimes the Colab is not assigning GPU to our notebook or cannot connect with the host, so we run it without GPU, and it takes many hours to train the model. Convolutional neural organizations (CNN) are neural organizations that are especially fit for picture classification. It has been, for instance, effectively utilized for picture classification orders [25–27]. A typical CNN design contains convolutional, pooling, and completely associated layers. Moderately novel procedures, for example, batch standardization [23],

How come these incorrect wordings survived proofreading by the coauthors, editors, referees, copy editors, and typesetters?

Flagged by the *Problematic Paper Screener*.

Characteristics	Class		
	Genuine	Tortured	Invalid
Typos	-	-	Tru_-Positive (TP)
Same amount of initials	<i>Pain Dysfunction Syndrome (PDS)</i>	<i>Concealed Markov Display (HMM)</i>	-
Different amount of initials	<i>Centers for Diseases Control and Prevention (CDC)</i>	<i>Summed Up Direct Models (GLM)</i>	-
Compounds	<i>Intraocular Pressure (IOP)</i>	<i>Multidrug Safe (MDR)</i>	-
Chemicals	<i>3-Aminopropyltriethoxysilane (3-APTES)</i>	<i>Diethylenetriamine Pentaacetic ruinous (DTPA)</i>	-
Reduced forms	<i>Residual neural Networks (ResNets)</i>	<i>Lingering brain Organization (ResNet)</i>	-
Semi-abbreviations	<i>Gabor-HOG (GHOG)</i>	<i>Non-straight ARMA models (NARMA)</i>	-
Numbers	<i>Three-Dimensional (3D)</i>	<i>Fifth-Age (5G)</i>	-
Synonyms	-	<i>Human PC Interface/Cooperation</i>	-
Supplementary suffixes	-	<i>PC Assisted Determination (CADx)</i>	-
Hallucinated abbreviations	-	<i>Bolster Vector Machine (BVM)</i>	-