



HAL
open science

A Clustering Based Article Template Recommendation System for Newspaper Editors

Sebastian Gallardo, Bruno Génuit, Dorian Mazauric, Pierre Kornprobst

► **To cite this version:**

Sebastian Gallardo, Bruno Génuit, Dorian Mazauric, Pierre Kornprobst. A Clustering Based Article Template Recommendation System for Newspaper Editors. Journées Scientifiques Inria Chile, Inria Chile, Dec 2024, Santiago (Chile), Chile. ⟨hal-05524022⟩

HAL Id: hal-05524022

<https://inria.hal.science/hal-05524022v1>

Submitted on 23 Feb 2026

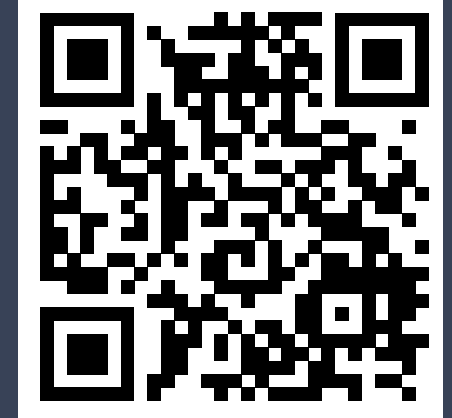
HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons CC BY 4.0 - Attribution - International License

Inria



A Clustering Based Article Template Recommendation System for Newspaper Editors

About my thesis

Making newspapers layout dynamic: Study of a new combinatorial/geometric packing problem.

Supervisors:

Pierre Kornprobst, Université Cote d'Azur, Inria
Dorian Mazauric, Université Cote d'Azur, Inria



Funding:

Demain un Autre Jour, through a CIFRE Contract



Started in June 2023

Layout exploration and optimization



Magnification algorithm to improve readability



Multiple page layouting "from scratch"/ personalized



About my thesis

Making newspapers layout dynamic: Study of a new combinatorial/geometric packing problem

Sup
Pi
Do
Fu
De
La
O



te d'Azur, Inria
d'Azur, Inria



CIFRE Contract



ation algorithm
ve readability

Multiple page layouting
"from scratch"/
personalized



About my thesis

Making newspapers layout dynamic: Study of a new combinatorial/geometric packing problem

Sup
Pi
Do
Fu
De
La
O



te d'Azur, Inria
d'Azur, Inria



CIFRE Contract



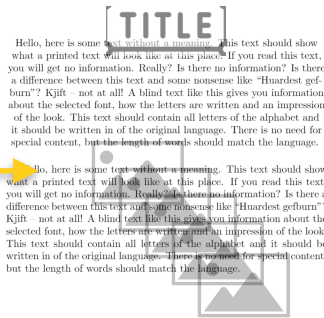
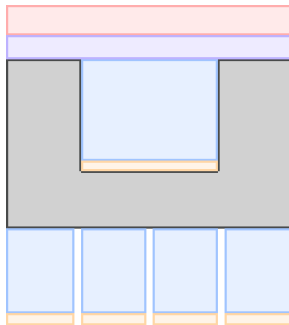
ation algorithm
ve readability

Multiple page layouting
"from scratch"/
personalized



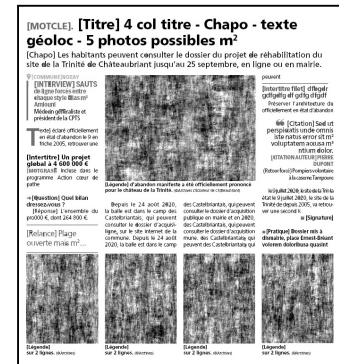
Context - From printed to digital newspapers

From layout driven



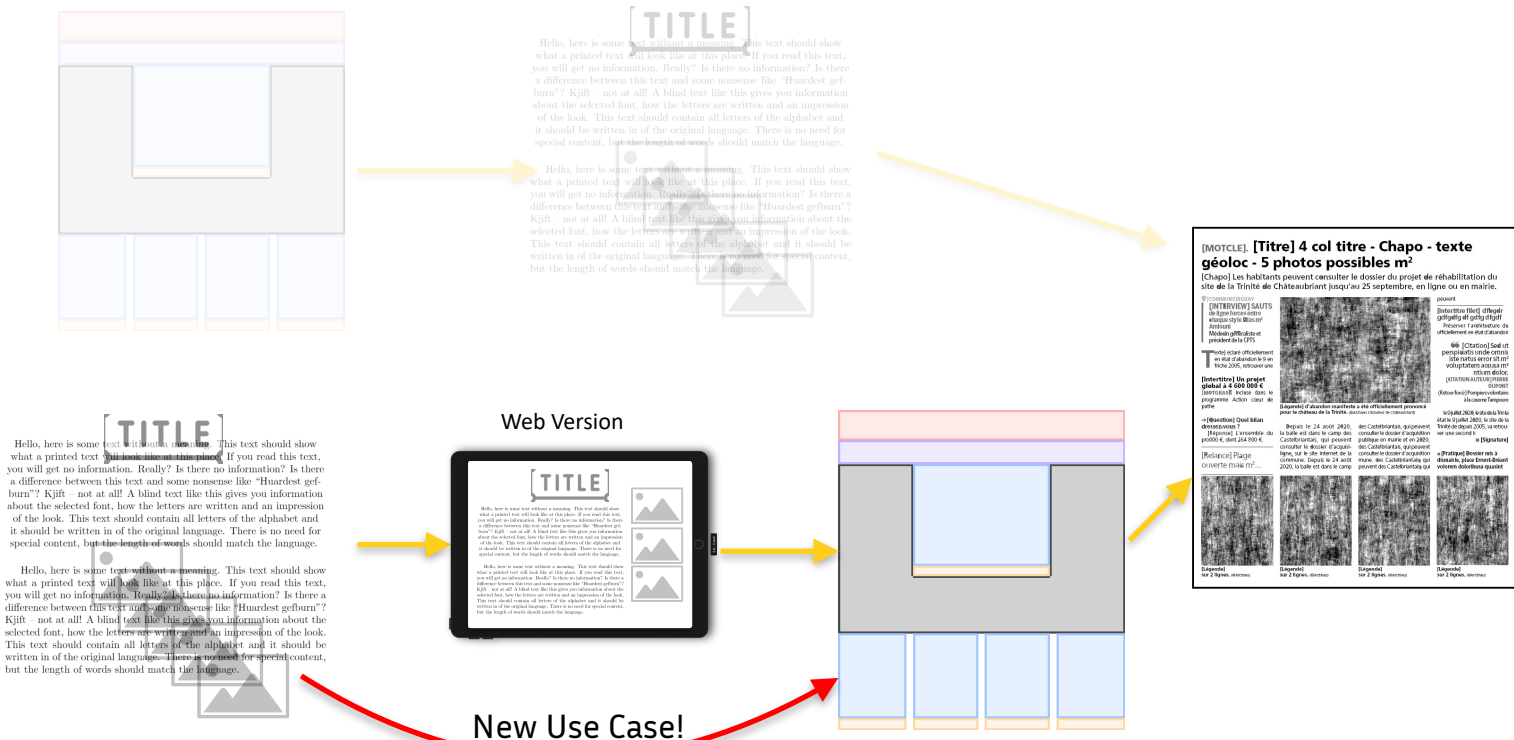
Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest geburn"? Kjift - not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

lo, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest geburn"? Kjift - not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.



Context - From printed to digital newspapers

From layout driven to content driven distribution



"As a journalist, I want to quickly select the best template for the article I just wrote so that I can put it into production efficiently"

Our proposal - Template Recommendation System (TRS)

In this domain, we noticed the following challenges...

- Assist journalists in selecting article templates among dozens of options
- Recommendations would be not only relevant to the article's content but also diverse in structure
- Recommendations should promote the usage of unpopular templates
- Lack of article templates dataset, with their inner structure annotations (i.e. shape and position of each element)

Our proposal - Template Recommendation System (TRS)

... and made the following contributions:

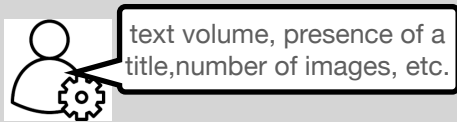
- Assist journalists in selecting article templates among dozens of options
- Recommendations would be not only relevant to the article's content but also diverse in structure
- Recommendations should promote the usage of unpopular templates
- Lack of article templates dataset, with their inner structure annotations (i.e. shape and position of each element)
- **A recommendation framework focused on template selection in CMS environments**
- A novel clustering-based approach that **maximizes novelty and diversity**
- **The application of a graph-matching neural network** specifically trained to assess structural similarity between templates.
- **The release of a new dataset** of real newspaper templates

TRS - Method Overview

1. Catalog of templates \mathcal{T}

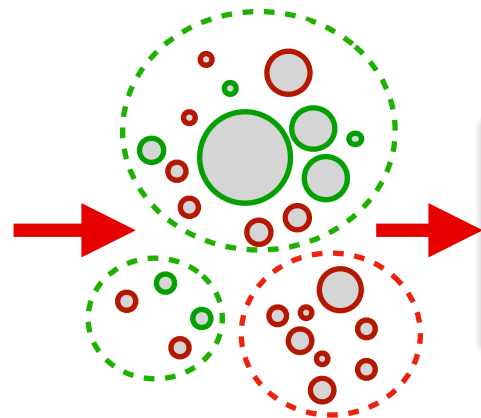


2. Requirements given by the written content



3. Template historical usage

id	usage
3142	4864
1456	3946
725	3830
12	3732
3107	2960
1526	2070
1527	2018
2858	1714
8389	1342
4574	1069
35098	856
1482	805



Clustering of templates based upon shape and content, using a graph-matching neural network to measure similarity.

Recommender algorithm
Choosing templates per cluster based on usage and similarity

Input

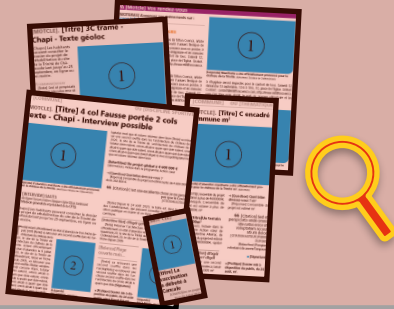
Offline Phase

Online Phase

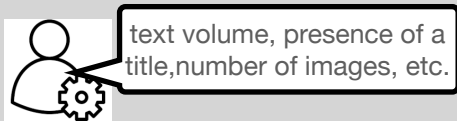
Output

TRS - Method Overview

1. Catalog of templates \mathcal{T}

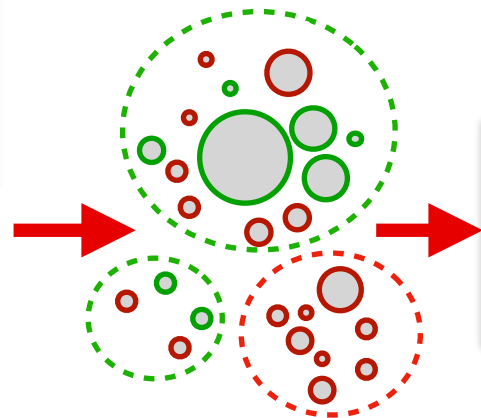


2. Requirements given by the written content



3. Template historical usage

id	usage
3142	4864
1456	3946
725	3830
12	3732
3107	2960
1526	2070
1527	2018
2858	1714
8389	1342
4574	1069
35098	856
1482	805



Clustering of templates based upon shape and content, using a graph-matching neural network to measure similarity.

Recommender algorithm
Choosing templates per cluster based on usage and similarity

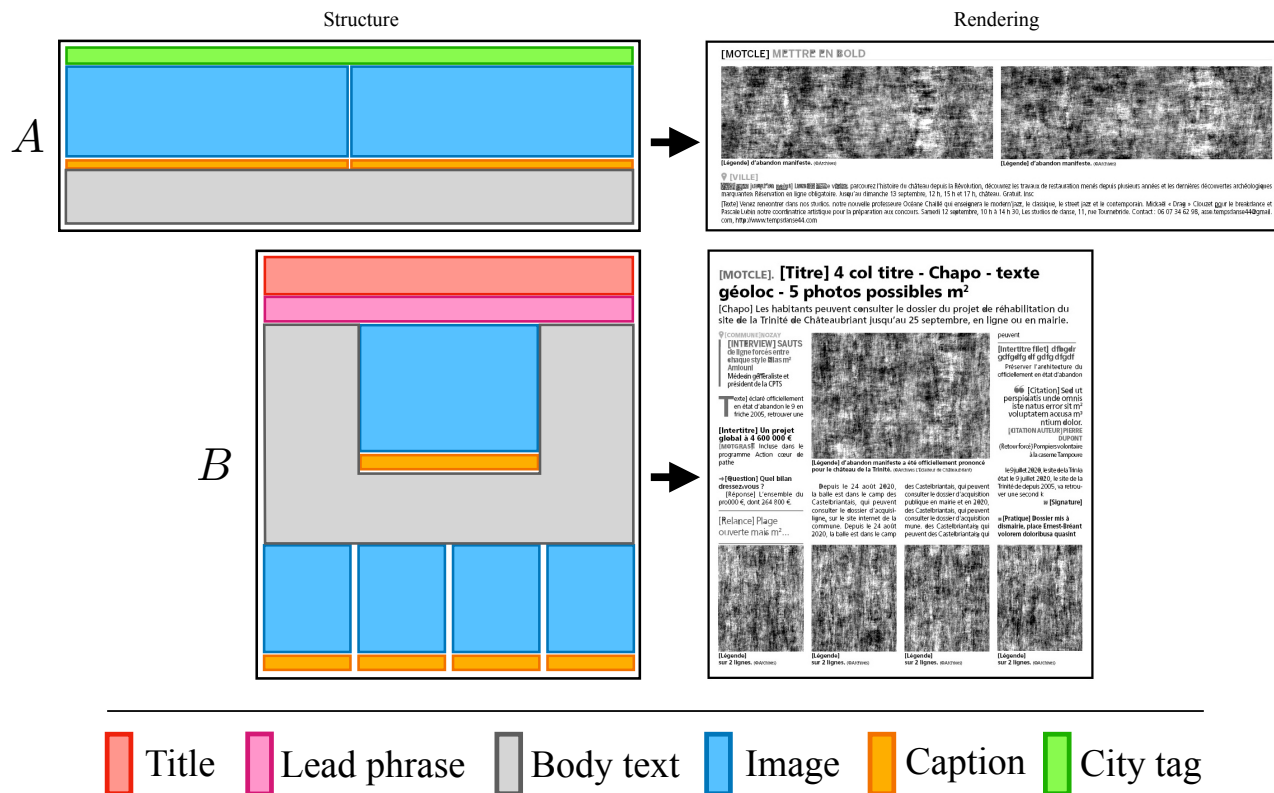
Input

Offline Phase

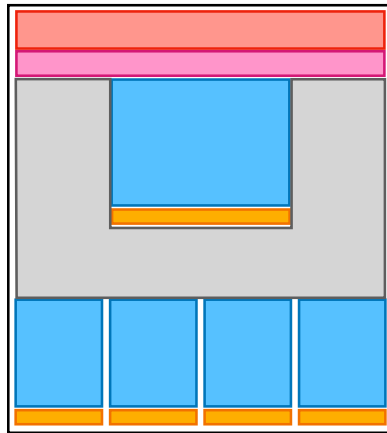
Online Phase

Output

Definition of Template



Definition of Template



```
1  {
2    "id": "4",
3    "mmWidth": 172.0,
4    "mmHeight": 189.0,
5    "nbImages": 5,
6    "nbCol": 4,
7    "blocks": {
8      "496": {
9        "coordinates": [
10         [45.0, 32.0],
11         [127.0, 32.0],
12         [127.0, 92.0],
13         [45.0, 92.0]
14       ],
15       "xy": [45.0, 32.0],
16       "width": 82.0,
17       "height": 60.0,
18       ...

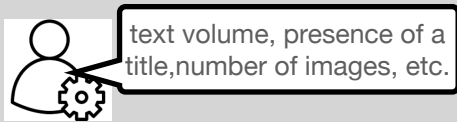
```

TRS - Method Overview

1. Catalog of templates \mathcal{T}

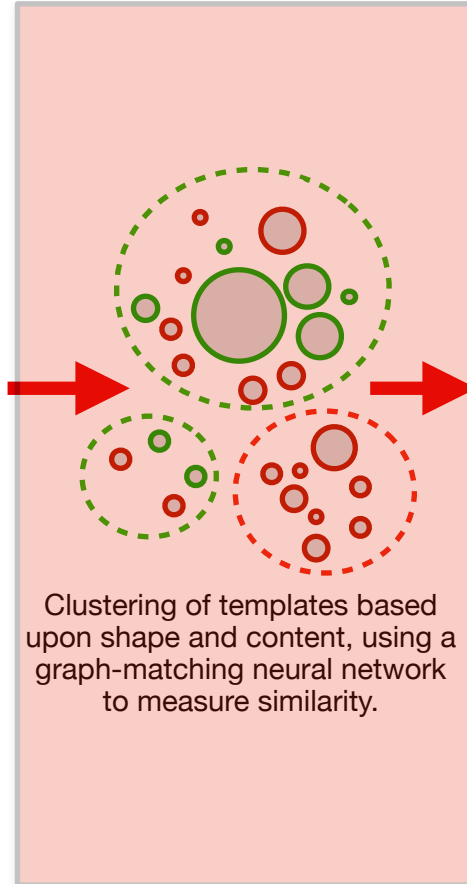


2. Requirements given by the written content



3. Template historical usage

id	usage
3142	4864
1456	3946
725	3830
12	3732
3107	2960
1526	2070
1527	2018
2858	1714
8389	1342
4574	1069
35098	856
1482	805



Recommend algorithm
Choosing templates per cluster based on usage and similarity

Input

Offline Phase

Online Phase

Output

Similarity measure

How do we compute a distance between two templates?

IoU
based metric

[Motcle] En bref

[MOTGRAS] Annoncez vos événements sur :
www.infocale.fr

[VILLE]

[Texte] Lors de cette visite, parcourez l'histoire du château depuis la Révolution, découvrez les travaux de restauration menés depuis plusieurs années et les dernières découvertes archéologiques marquantes. Réservation en ligne obligatoire. Jusqu'au dimanche 13 septembre, 12h, 15h et 17h, château. Gratuit. Inscription avant le 13 septembre.

[Texte] Venez rencontrer dans nos studios, notre nouvelle professeure Odéane Chaillé qui enseignera le modern jazz, le classique, le street jazz et le contemporain. Mikaeli « Ding » Clozet pour le bénévolat et Pascale Luthin notre coordinatrice. Ateliers pour la préparation aux concours. Samedi 12 septembre, 10h à 14h 30, Les studios de danse, 11, rue Toumehoué. Contact : 06 07 34 62 98, asso.tempestades44@gmail.com, <http://www.tempestades44.com>

[VILLE]

[Texte] En vue de la situation sanitaire actuelle, celle-ci se déroulera en visioconférence. Vendredi 30 octobre, 18 h, Institut de formation en soins infirmiers, 1, rue François-Périmé

[Texte] Le cercle collégial de Châteaubriant, organise de septembre à juin des ateliers de dances, de chœurs traditionnels. Les ateliers auront lieu les vendredis deux fois par mois. Inscriptions ouvertes. Contact : 06 18 41 42 70, 06 18 45 52 99, cerclecollégial.chateaubriant@gmail.com

[Texte] Les cours se déroulent le mardi, mercredi, jeudi et vendredi, voir les horaires et les tarifs sur le site. Vous pouvez découvrir et 25, 25, rue de Couëré. Payant. Contact : 06 07 04 33 77, contact@pauinsepennegues.com, pauinsepennegues.com

[Texte] Venez découvrir la Langue des signes française (LSF). Des ateliers pour débutants de 15 h à 16 h ou de 19 h 15 à 20 h 15 si assez jeunes. Fin juillet 2021, la Citézenne. Payant. Contact : 06 98 59 53 32, babya-signe@orange.fr, babya-signe.fr

[Texte] Union nationale de familles et amis de personnes malades et/ou handicapées psychiques, organise un accès téléphonique et grille de repère 31 octobre, 9 h à 19 h, Gratiuit. Contact : 02 51 83 17 73, 44@unafam.org, unafam.org

[Texte] Découvrez vos ancêtres, construisez votre arbre généalogique. L'association Aïah propose un atelier pratique. Échange d'informations, place Emers-Briant. Gratuit. Contact : 06 11 86 86 98.

[Texte] Pour les personnes concernées par un proche qui a des troubles. Solidarités du Département, place Saint-Nicolas. Contact : 02 51 83 17 73, 44@unafam.org, unafam.org

[Légende] d'abandon manifeste, ouverts

[Motcle] Vos rendez-vous

[Légende] Manifesta a été officiellement prononcé pour le château de la Trinité. ouverts, L'acteur de Châteaubriant

[MOTGRAS] Annoncez vos événements sur :
www.infocale.fr

[RELANCE]ARTS PLASTIQUES

[Texte] Conquereuil. Portes ouvertes. Bi Tiffon Cuenca, artiste peintre « Regards croisés ». Venez découvrir l'univers féérique de l'artiste peintre Bi Tiffon Cuenca, cela se passera sous un porche, à l'air libre mais abrité, le port du moulin obligatoire et les mesures d'hygiène seront respectées pour le confort de tous. Samedi 12, dimanche 13 septembre, 10 h à 19 h, 10, place de l'Église. Gratuit. Contact : contact@bitiffoncuenca.com, <http://www.bitiffoncuenca.com>

[Texte] Conquereuil. Portes ouvertes. Bi Tiffon Cuenca, artiste peintre « Regards croisés ». Venez découvrir l'univers féérique de l'artiste peintre Bi Tiffon Cuenca, cela se passera sous un porche, à l'air libre mais abrité, le port du moulin obligatoire et les mesures d'hygiène seront respectées pour le confort de tous. Samedi 12, dimanche 13 septembre, 10 h à 19 h, 10, place de l'Église. Gratuit. Contact : contact@bitiffoncuenca.com, <http://www.bitiffoncuenca.com>

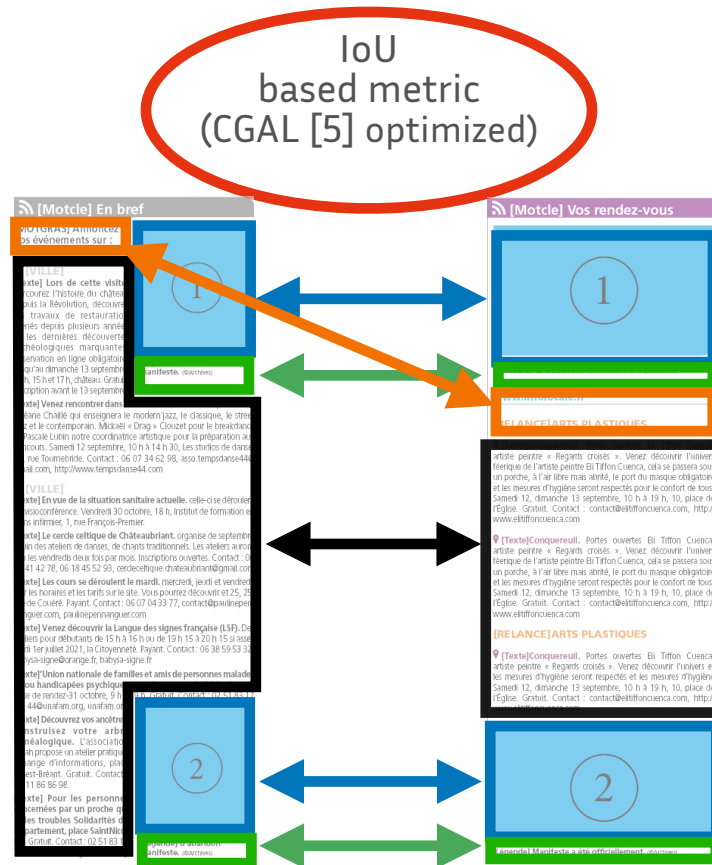
[RELANCE]ARTS PLASTIQUES

[Texte] Conquereuil. Portes ouvertes. Bi Tiffon Cuenca, artiste peintre « Regards croisés ». Venez découvrir l'univers et les mesures d'hygiène seront respectées pour le confort de tous. Samedi 12, dimanche 13 septembre, 10 h à 19 h, 10, place de l'Église. Gratuit. Contact : contact@bitiffoncuenca.com, <http://www.bitiffoncuenca.com>

[Légende] Manifesta a été officiellement. ouverts

Similarity measure

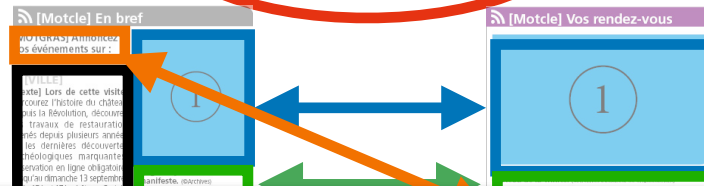
How do we compute a distance between two templates?



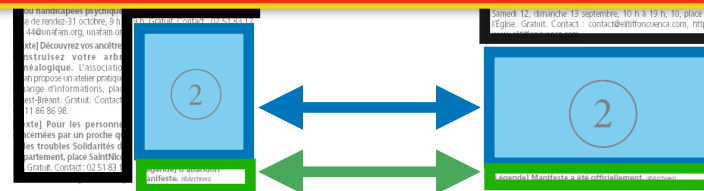
Similarity measure

How do we compute a distance between two templates?

IoU
based metric
(CGAL optimized)



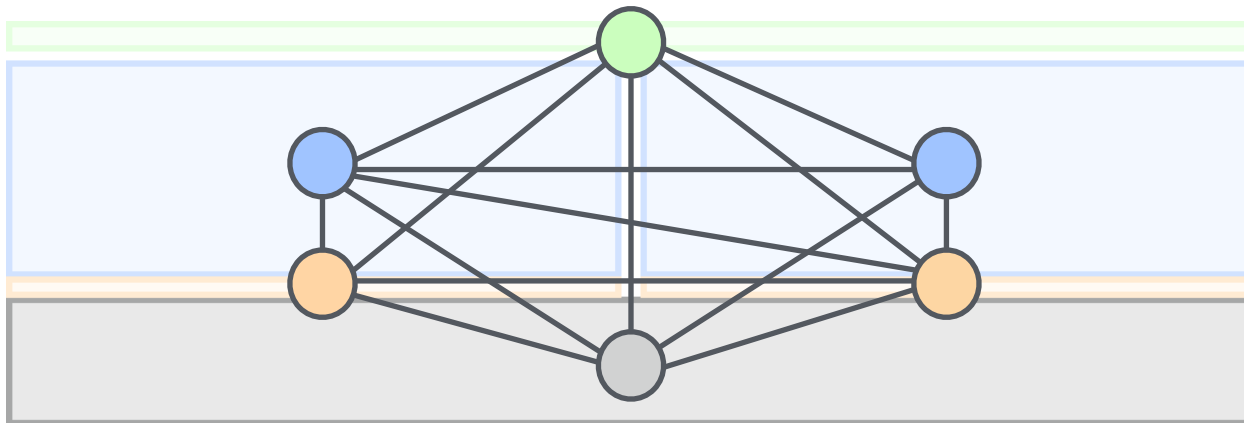
IoU metric has some problems, the most important being the sensitivity to elements misalignment that preserve the structure [1].



[1] G. Patil, M. Li, M. Fisher, M. Savva, and H. Zhang, "LayoutGMN: Neural Graph Matching for Structural Layout Similarity." arXiv, Apr. 05, 2021. Accessed: Oct. 11, 2023. [Online]. Available: <http://arxiv.org/abs/2012.06547>

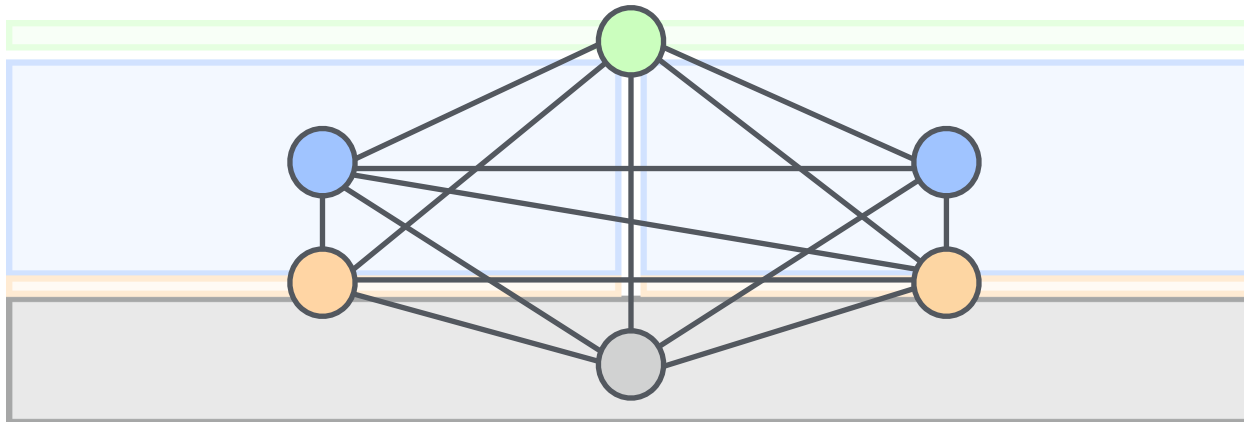
Similarity measure

Modeling templates as a graph



Similarity measure

Modeling templates as a graph



$$G = (V, E)$$

$$V = \{v_i\}_{i=1, \dots, n}$$

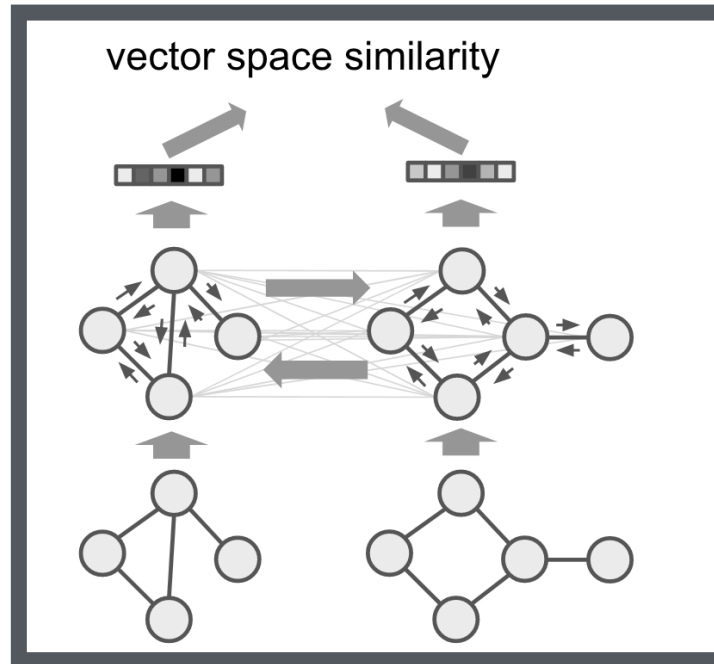
$$v_i = \left\{ \text{class}_i, \frac{x_i}{W}, \frac{y_i}{H}, \frac{w_i}{W}, \frac{h_i}{H}, \frac{w_i h_i}{\sqrt{WH}} \right\}$$

$$E = \{e_{ij}\}_{i=1, \dots, n; j=1, \dots, n}$$

$$e_{ij} = \left\{ \frac{x_j - x_i}{\sqrt{w_i h_i}}, \frac{y_j - y_i}{\sqrt{w_i h_i}}, \sqrt{\frac{w_j h_j}{w_i h_i}}, \text{IoU}(v_i, v_j), \frac{w_i}{h_i}, \frac{w_j}{h_j}, \frac{\sqrt{(x_j - x_i)^2 + (y_j - y_i)^2}}{\sqrt{W^2 + H^2}}, \theta \right\}$$

Similarity measure

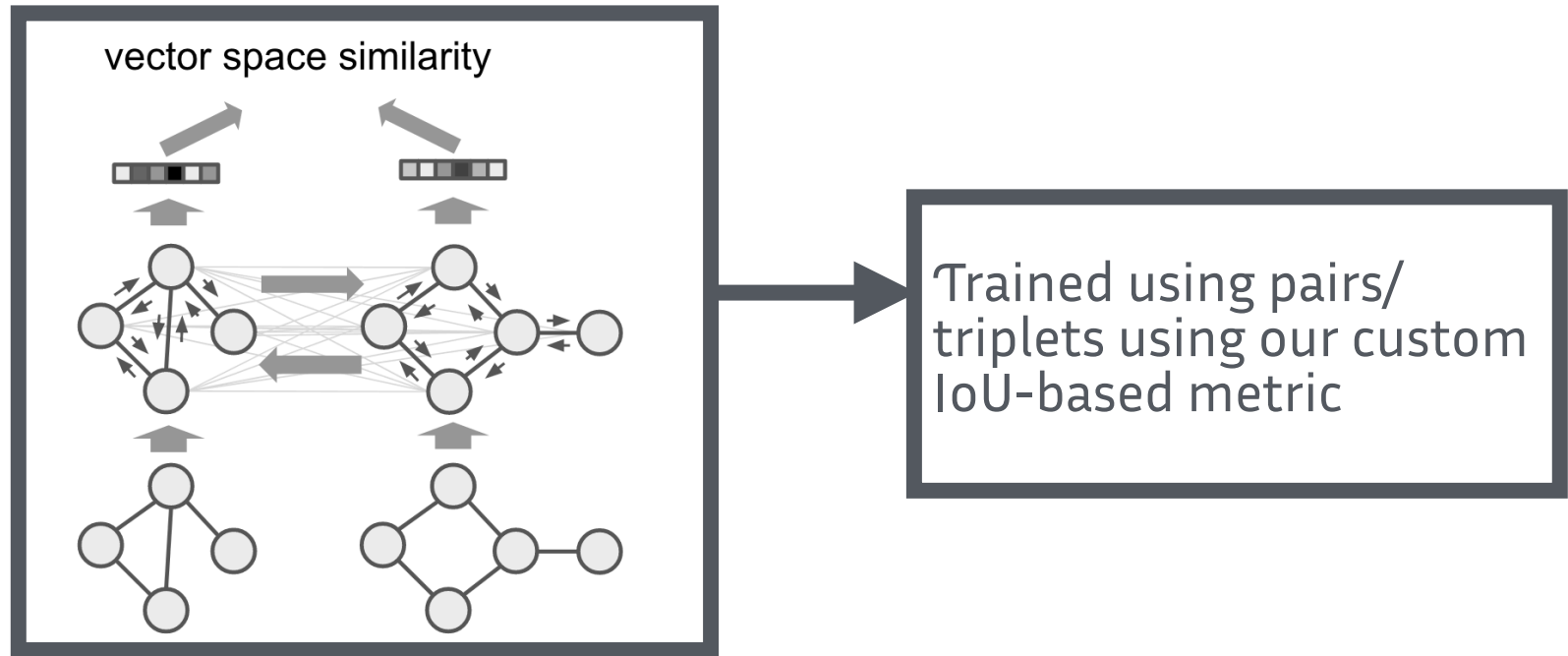
LayoutGMN application



G. Patil, M. Li, M. Fisher, M. Savva, and H. Zhang, "LayoutGMN: Neural Graph Matching for Structural Layout Similarity." arXiv, Apr. 05, 2021. Accessed: Oct. 11, 2023. [Online]. Available: <http://arxiv.org/abs/2012.06547>

Y. Li, C. Gu, T. Dullien, O. Vinyals, and P. Kohli, "Graph Matching Networks for Learning the Similarity of Graph Structured Objects." arXiv, May 12, 2019. Accessed: Oct. 11, 2023. [Online]. Available: <http://arxiv.org/abs/1904.12787>

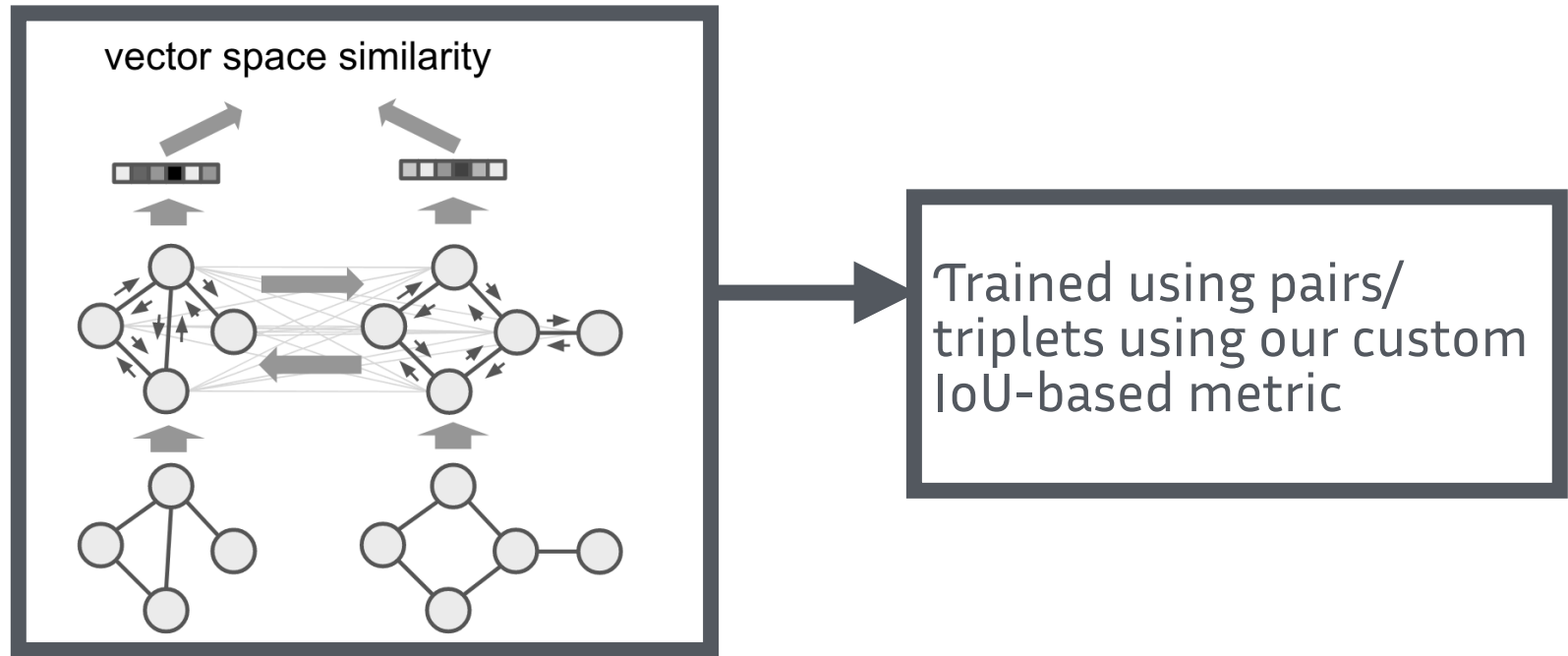
Similarity measure



G. Patil, M. Li, M. Fisher, M. Savva, and H. Zhang, "LayoutGMN: Neural Graph Matching for Structural Layout Similarity." arXiv, Apr. 05, 2021. Accessed: Oct. 11, 2023. [Online]. Available: <http://arxiv.org/abs/2012.06547>

Y. Li, C. Gu, T. Dullien, O. Vinyals, and P. Kohli, "Graph Matching Networks for Learning the Similarity of Graph Structured Objects." arXiv, May 12, 2019. Accessed: Oct. 11, 2023. [Online]. Available: <http://arxiv.org/abs/1904.12787>

Similarity measure



$$d(t_i, t_j) = |GMN(t_i, t_j)|$$

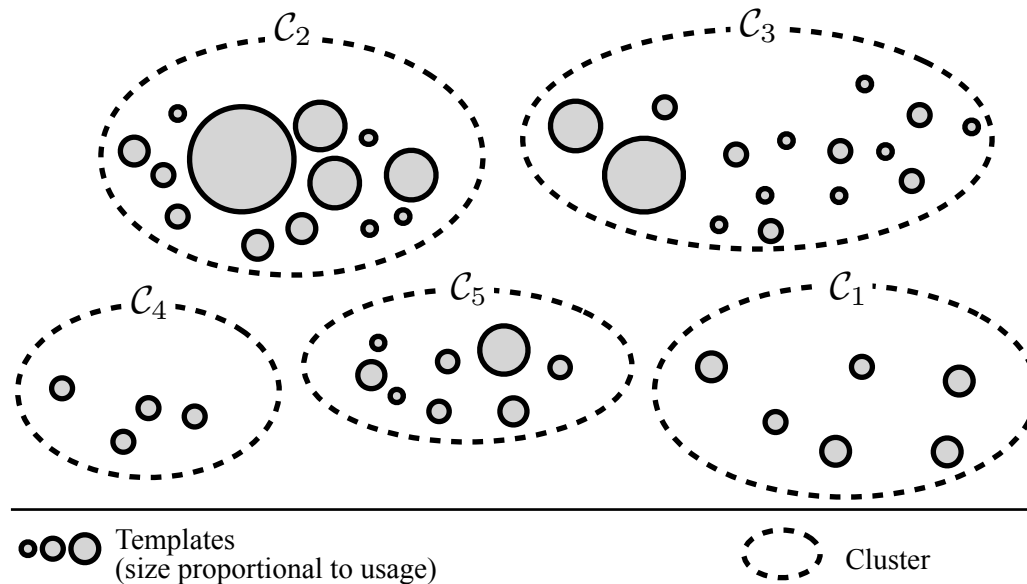
G. Patil, M. Li, M. Fisher, M. Savva, and H. Zhang, "LayoutGMN: Neural Graph Matching for Structural Layout Similarity." arXiv, Apr. 05, 2021. Accessed: Oct. 11, 2023. [Online]. Available: <http://arxiv.org/abs/2012.06547>

Y. Li, C. Gu, T. Dullien, O. Vinyals, and P. Kohli, "Graph Matching Networks for Learning the Similarity of Graph Structured Objects." arXiv, May 12, 2019. Accessed: Oct. 11, 2023. [Online]. Available: <http://arxiv.org/abs/1904.12787>

Clustering method

We employ agglomerative clustering [4] based on a clustering threshold value C_{th}

Unlike other clustering-based recommendation systems, such as ClusDiv [3], the number of clusters is not determined by the size N of the recommended list. Instead, it relies solely on the independent tunable parameter C_{th}



[3] T. Aytakin and M. Ö. Karakaya, "Clustering-based diversity improvement in top-N recommendation," J Intell Inf Syst, vol. 42, no. 1, pp. 1–18, Feb. 2014, doi: 10.1007/s10844-013-0252-9.

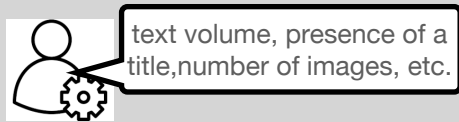
[4] Scikit-learn: Machine Learning in Python, Pedregosa et al., JMLR 12, pp. 2825–2830, 2011.

TRS - Method Overview

1. Catalog of templates \mathcal{T}



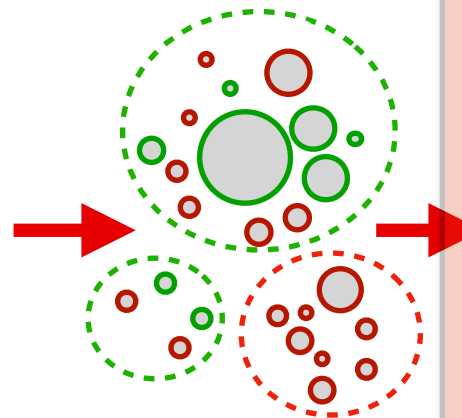
2. Requirements given by the written content



3. Template historical usage

id	usage
3142	4864
1456	3946
725	3830
12	3732
3107	2960
1526	2070
1527	2018
2858	1714
8389	1342
4574	1069
35098	856
1482	805

Input



Clustering of templates based upon shape and content, using a graph-matching neural network to measure similarity.

Offline Phase

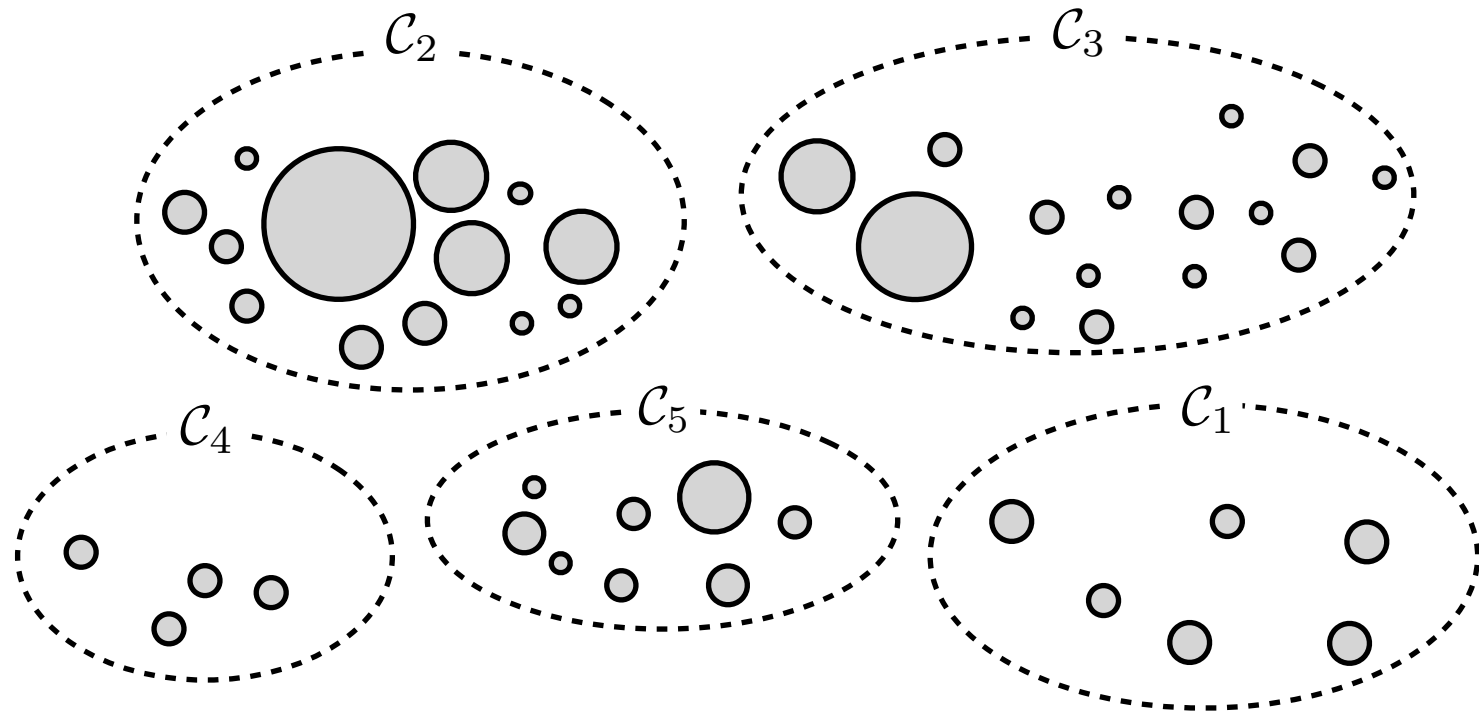
Recommend algorithm
Choosing templates per cluster based on usage and similarity

Online Phase

Output

Online Phase - Selecting templates from each cluster

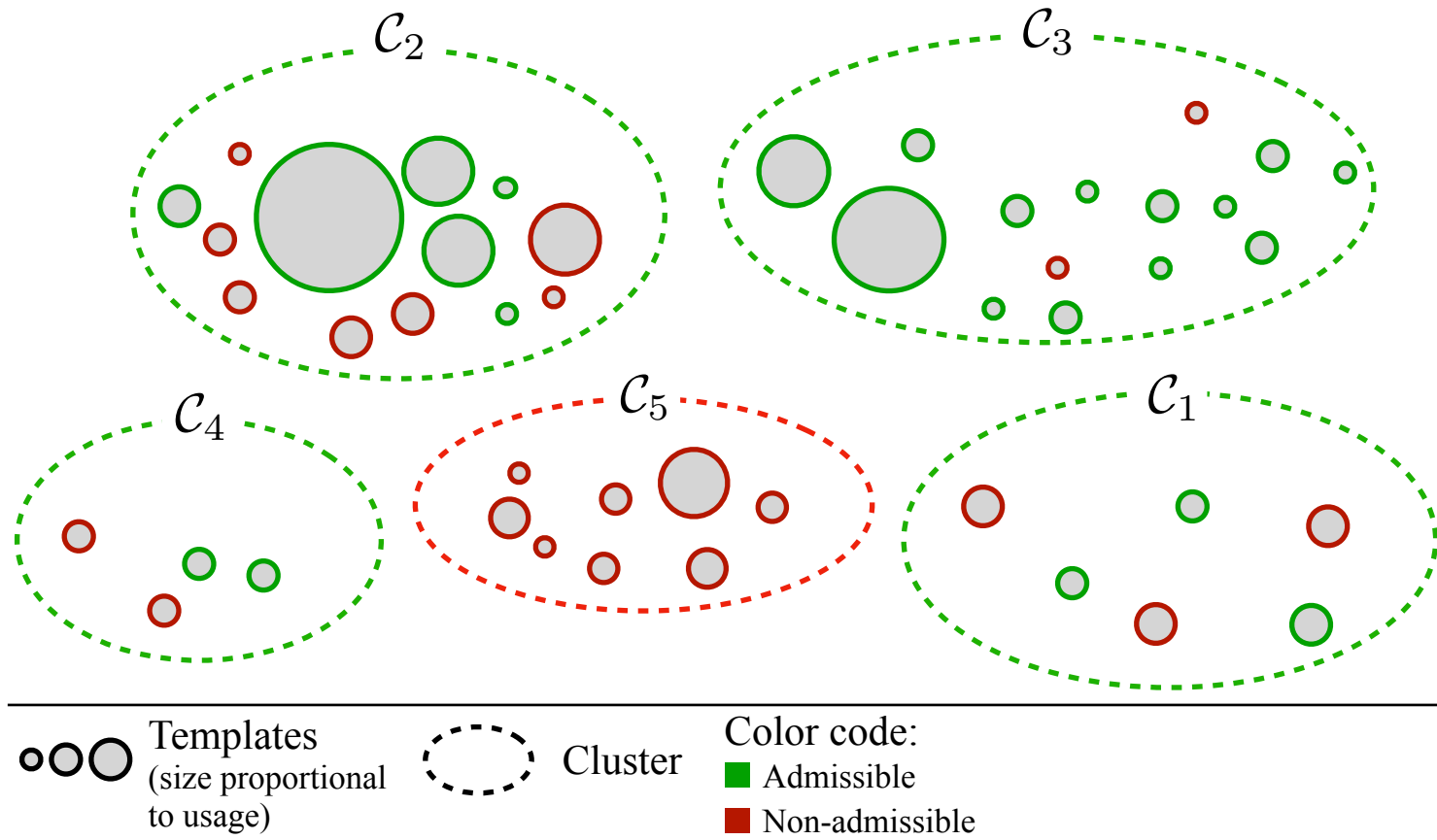
1) Assigning rating values = usage



●●● Templates
(size proportional
to usage) ○ Cluster

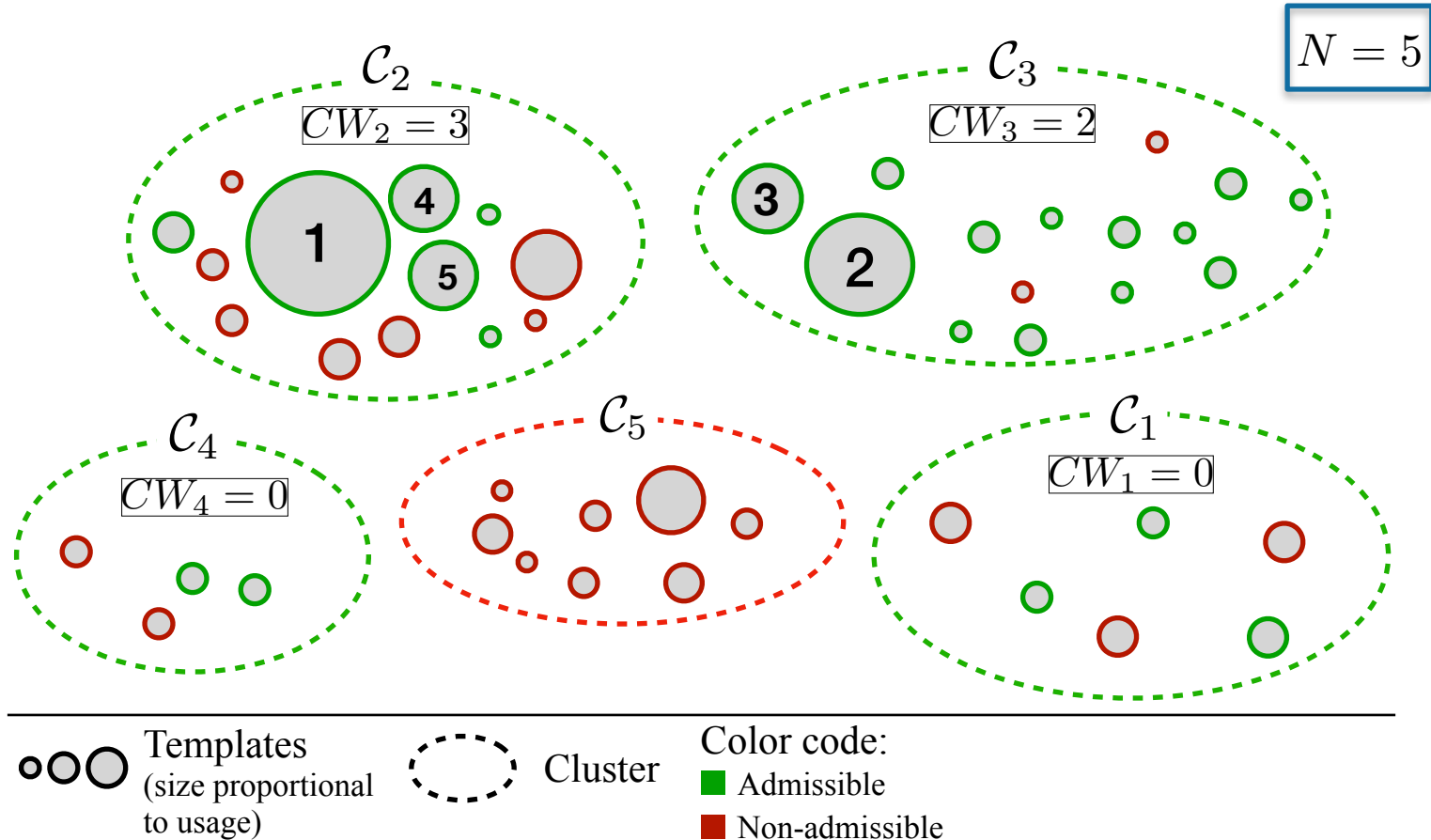
Online Phase - Selecting templates from each cluster

2) Filtering admissible templates and clusters



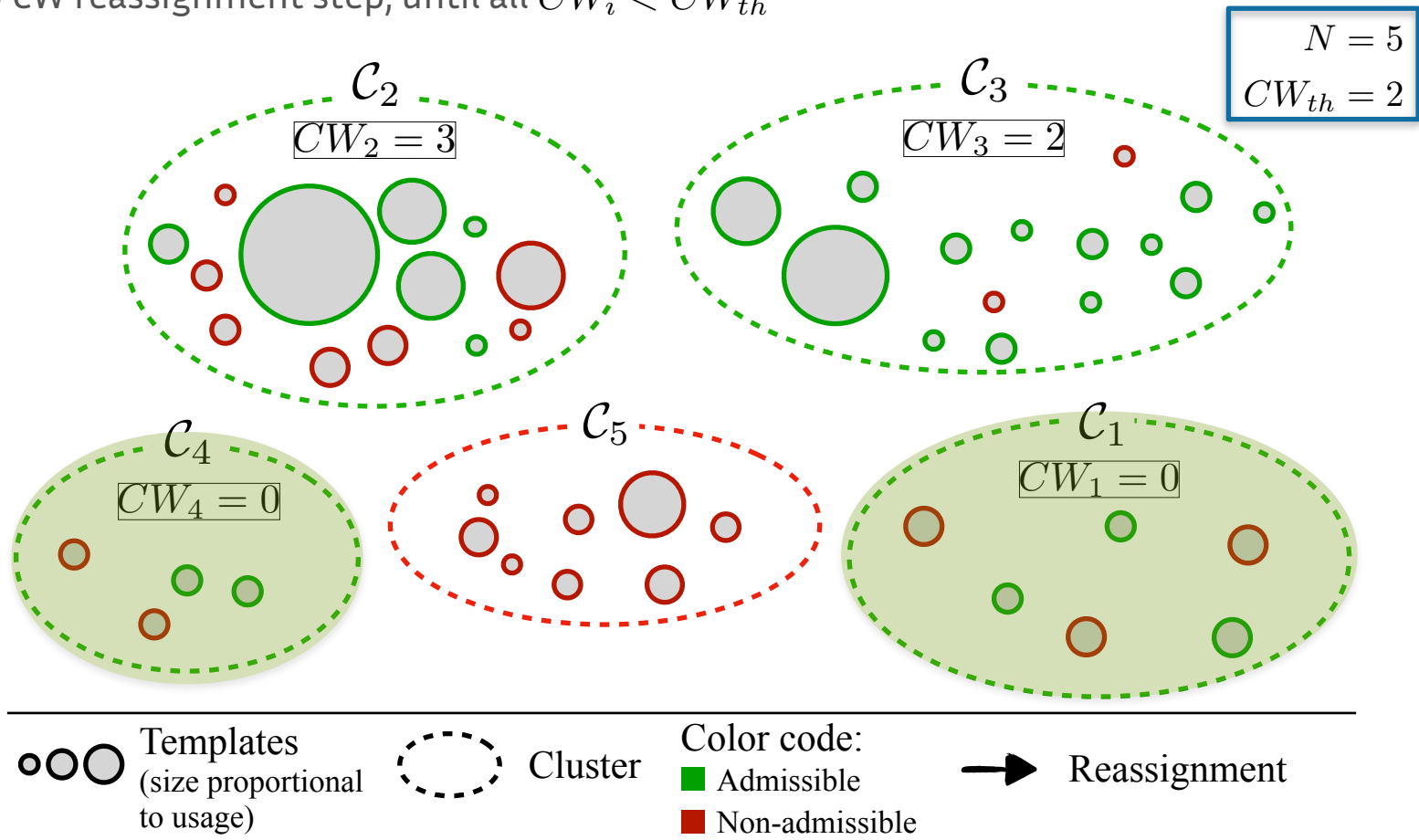
Online Phase - Selecting templates from each cluster

2) Initialize CW values



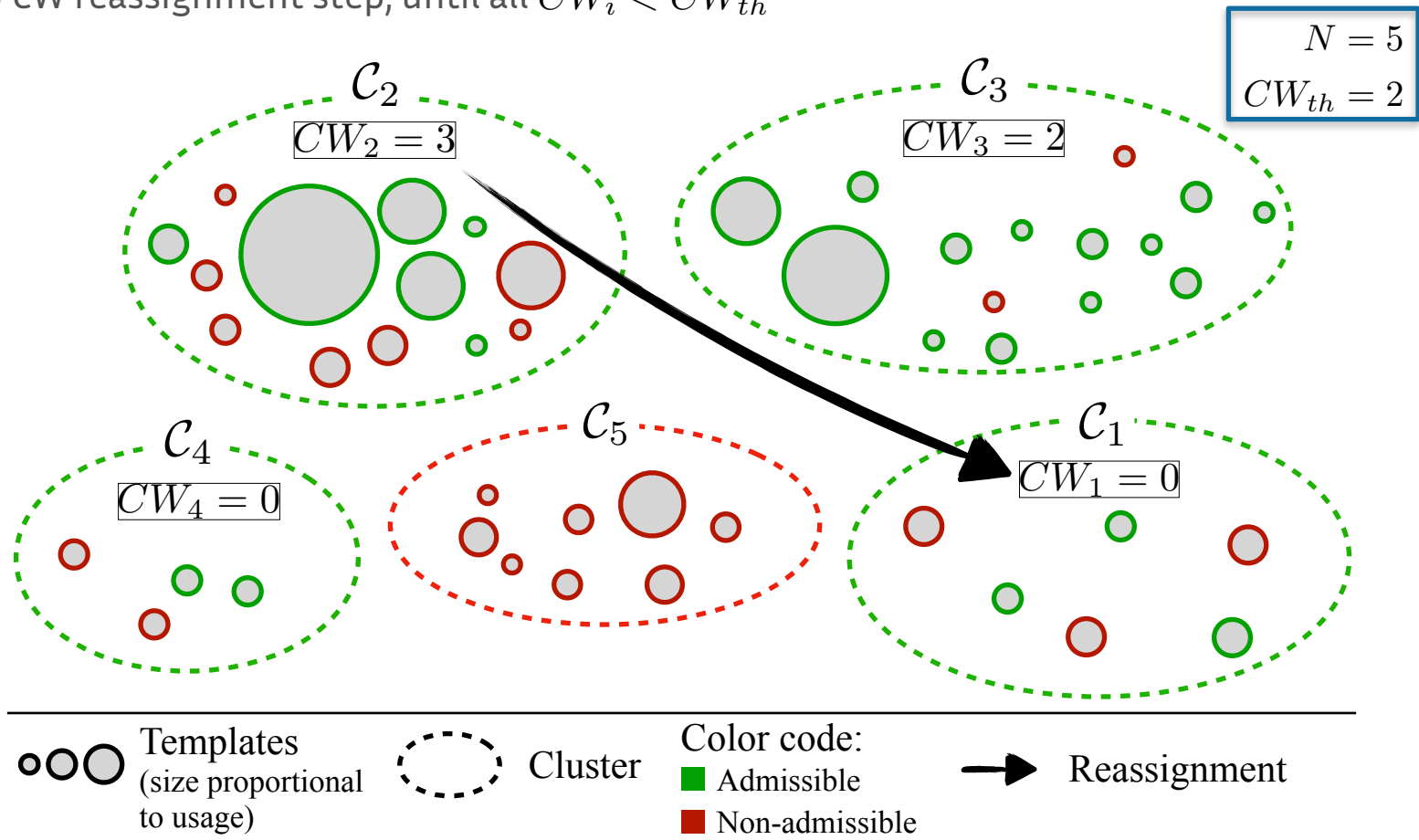
Online Phase - Selecting templates from each cluster

3) CW reassignment step, until all $CW_i < CW_{th}$



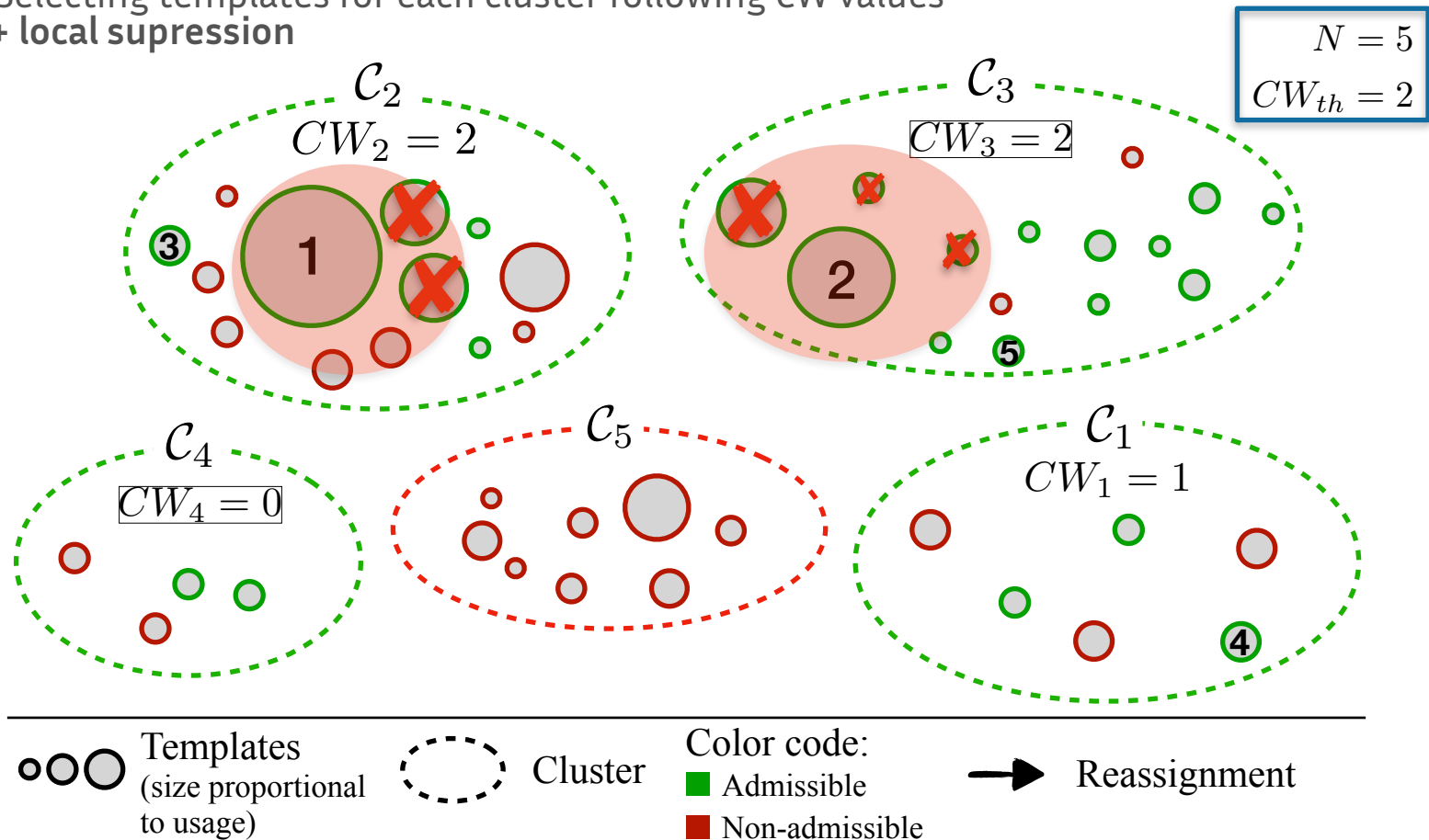
Online Phase - Selecting templates from each cluster

3) CW reassignment step, until all $CW_i < CW_{th}$



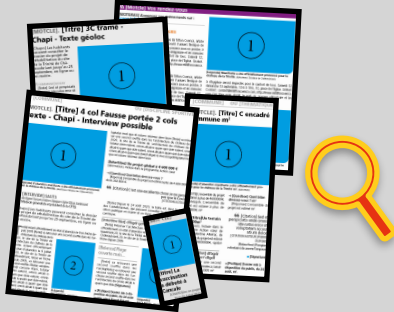
Online Phase - Selecting templates from each cluster

4) Selecting templates for each cluster following CW values
+ local suppression

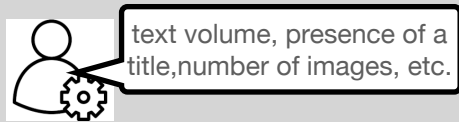


TRS - Method Overview

1. Catalog of templates \mathcal{T}

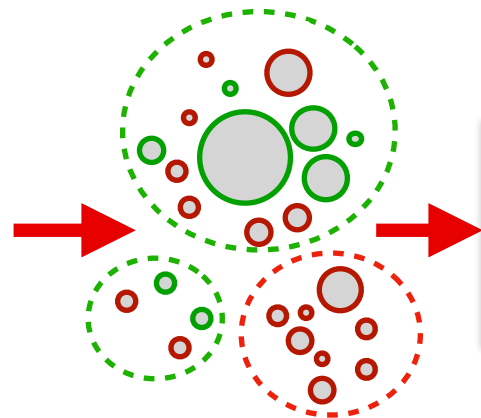


2. Requirements given by the written content



3. Template historical usage

id	usage
3142	4864
1456	3946
725	3830
12	3732
3107	2960
1526	2070
1527	2018
2858	1714
8389	1342
4574	1069
35098	856
1482	805



Clustering of templates based upon shape and content, using a graph-matching neural network to measure similarity.

Recommender algorithm
Choosing templates per cluster based on usage and similarity

Input

Offline Phase

Online Phase

Output

Dataset

We curated a dataset of 452 templates coming from real newspaper publishers, each one represented with a JSON file and a rendered image. Additionally, we collected template usage in a CSV file. **This dataset is publicly available for future researchers.**

Experiment Design - Baseline Methods

MostPopular

Top-N based only on usage along admissible templates

Classic ClusDiv [3]

Clustering-based method with CW reassignment, that uses N as number of clusters, and uses usage as similarity measure to cluster items.

Adapted ClusDiv

Our own custom adaptation of ClusDiv that does not use N as number of clusters, and uses GMN to cluster items. Does not have distance-between-clusters notion or local-suppression mechanism.

[3] T. Aytekin and M. Ö. Karakaya, "Clustering-based diversity improvement in top-N recommendation," J Intell Inf Syst, vol. 42, no. 1, pp. 1–18, Feb. 2014, doi: 10.1007/s10844-013-0252-9.

Experiment Design - Evaluation Metrics

Diversity

Average distance (GMN) between all templates in the recommended list

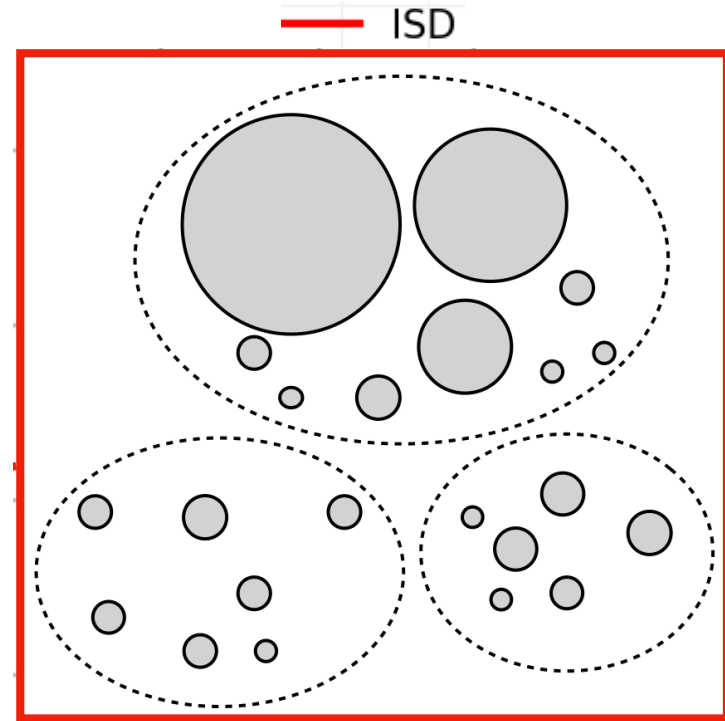
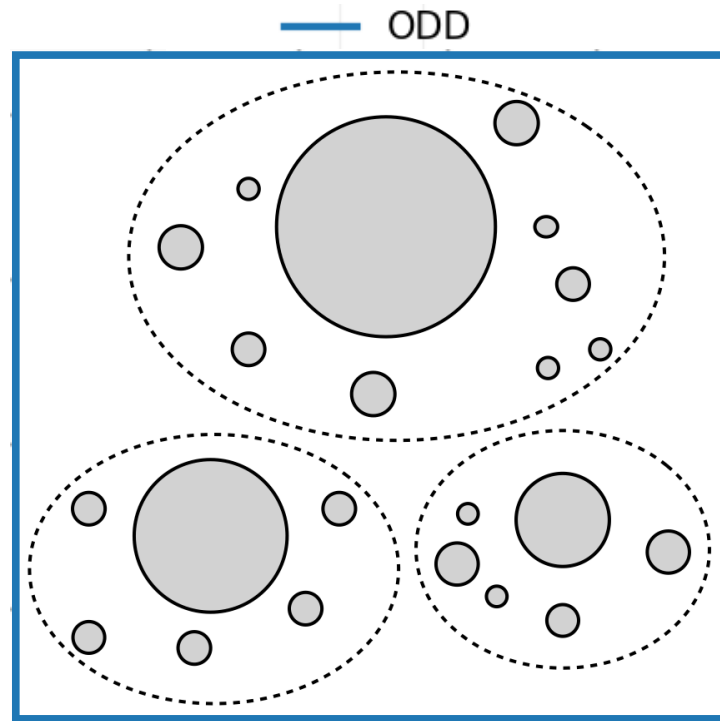
Accuracy

nDCG@N metric, that measure template rank order of the recommended list relative to the MostPopular algorithm (top-N based on popularity)

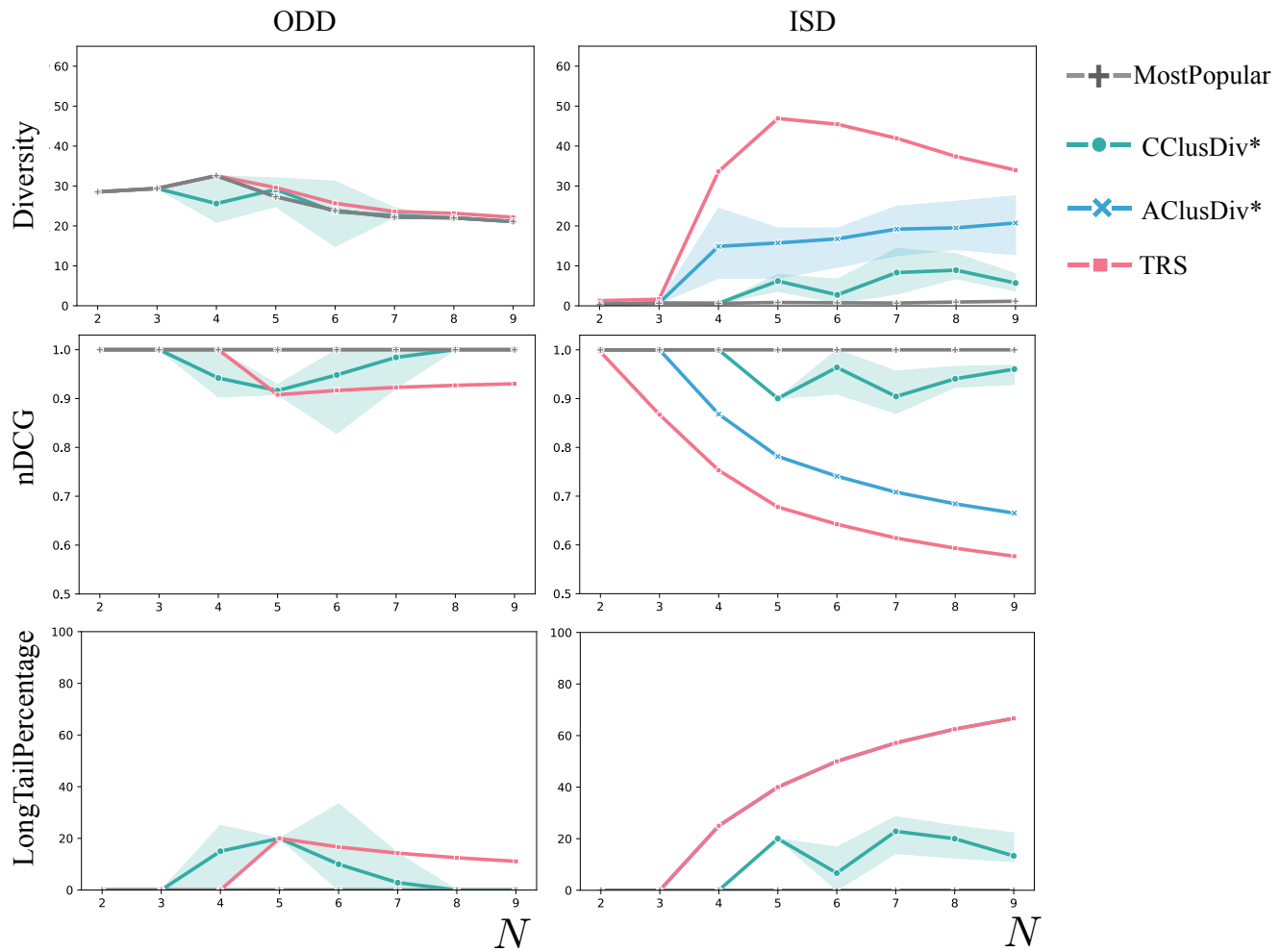
Novelty (Popularity-bias)

% of templates in the recommended list that are not popular, i.e. with usage < 8000

Experiment Design - Scenarios for Template Distributions Across Cluster



Results



Results - Use Case examples

Top 5 templates with a title and no images

MostPopular

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [Texte de communication]

id: 1528
Usage: 4424

[TITRE] Em quatit omnis estomacum perovoid emperep

[TEXT] [Texte de communication]

id: 1558
Usage: 2293

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [Texte de communication]

id: 38742
Usage: 1330

[COMMENTS] [TITRE] Titre sur 1 ou 2 lignes de texte et chapo

[MOTCLE] [Texte de communication]

id: 4407
Usage: 1196

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [Texte de communication]

id: 1531
Usage: 1026

CCLUSDiv

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [Texte de communication]

id: 1528
Cluster: 3
Usage: 4424

[TITRE] Em quatit omnis estomacum perovoid emperep

[TEXT] [Texte de communication]

id: 1558
Cluster: 3
Usage: 2293

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [Texte de communication]

id: 38742
Cluster: 0
Usage: 1330

[COMMENTS] [TITRE] Titre sur 1 ou 2 lignes de texte et chapo

[MOTCLE] [Texte de communication]

id: 4407
Cluster: 0
Usage: 1196

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [Texte de communication]

id: 1531
Cluster: 0
Usage: 1026

Results - Use Case examples

Top 5 templates with a title and no images

Most Popular

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [TITRE] Le communiqué des sapeurs-pompiers

id: 1528
Usage: 4424

-- [TITRE] Em quatit omnis eorumquam perovidit emperep

[TEXT] [TITRE] Em quatit omnis eorumquam perovidit emperep

id: 1558
Usage: 2293

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [TITRE] Le communiqué des sapeurs-pompiers

id: 38742
Usage: 1330

[COMMUNE] [MOTCLE] [Titre] Titre sur 1 ou 2 lignes de texte et chapo

[TEXT] [MOTCLE] [Titre] Titre sur 1 ou 2 lignes de texte et chapo

id: 4407
Usage: 1196

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [TITRE] Le communiqué des sapeurs-pompiers

id: 1531
Usage: 1026

AclusDiv

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [TITRE] Le communiqué des sapeurs-pompiers

id: 1528
Cluster: 16
Usage: 4424

-- [TITRE] Em quatit omnis eorumquam perovidit emperep

[TEXT] [TITRE] Em quatit omnis eorumquam perovidit emperep

id: 1558
Cluster: 16
Usage: 2293

[COMMUNE] [MOTCLE] [Titre] Titre sur 1 ou 2 lignes de texte et chapo

[TEXT] [MOTCLE] [Titre] Titre sur 1 ou 2 lignes de texte et chapo

id: 4407
Cluster: 31
Usage: 1196

[TITRE] Titre sur 1 ou 2 lignes de texte et chapo

[MOTCLE] 1^{er}, 2^{ème}, ... AUTO [Titre] 1^{er}, 1^{er}, 2^{ème}, etc... exposant auto

id: 155758
Cluster: 49
Usage: 342

id: 1718
Cluster: 43
Usage: 0

Results - Use Case examples

Top 5 templates with a title and no images

Most Popular

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [TITRE] Le communiqué des sapeurs-pompiers

id: 1528
Usage: 4424

--[TITRE] En quatuor omnis esumquam perovid emperep

[TEXT] [TITRE] En quatuor omnis esumquam perovid emperep

id: 1558
Usage: 2293

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [TITRE] Le communiqué des sapeurs-pompiers

id: 38742
Usage: 1330

[COMMA] [MOTCLE] [Titre] Titre sur 1 ou 2 lignes de texte et chapo

[TEXT] [Chapo] Les habitants peuvent consulter le dossier de projet de réhabilitation du site de la Trinité de Châteauroux jusqu'au 25 septembre, en ligne ou en mairie.

id: 4407
Usage: 1196

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [TITRE] Le communiqué des sapeurs-pompiers

id: 1531
Usage: 1026

AClusDiv

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [TITRE] Le communiqué des sapeurs-pompiers

id: 1528
Cluster: 16
Usage: 4424

--[TITRE] En quatuor omnis esumquam perovid emperep

[TEXT] [TITRE] En quatuor omnis esumquam perovid emperep

id: 1558
Cluster: 16
Usage: 2293

[COMMA] [MOTCLE] [Titre] Titre sur 1 ou 2 lignes de texte et chapo

[TEXT] [Chapo] Les habitants peuvent consulter le dossier de projet de réhabilitation du site de la Trinité de Châteauroux jusqu'au 25 septembre, en ligne ou en mairie.

id: 4407
Cluster: 31
Usage: 1196

[MOTCLE] 1^{er}, 2^{ème}, ... AUTO

[Titre] 1^{er}, 1^{er}, 2^{ème}, etc... exposant auto

id: 155758
Cluster: 49
Usage: 342

id: 1718
Cluster: 43
Usage: 0

TRS

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [TITRE] Le communiqué des sapeurs-pompiers

id: 1528
Cluster: 16
Usage: 4424

[TITRE] Le communiqué des sapeurs-pompiers

[TEXT] [TITRE] Le communiqué des sapeurs-pompiers

id: 1531
Cluster: 16
Usage: 1026

[COMMA] [MOTCLE] [Titre] Titre sur 1 ou 2 lignes de texte et chapo

[TEXT] [Chapo] Les habitants peuvent consulter le dossier de projet de réhabilitation du site de la Trinité de Châteauroux jusqu'au 25 septembre, en ligne ou en mairie.

id: 4407
Cluster: 31
Usage: 1196

[Titre] Le calendrier de votre club

[Table]

id: 155758
Cluster: 49
Usage: 342

id: 141050
Cluster: 48
Usage: 99

Conclusion

- We presented a clustering-based recommendation system designed to promote diversity in template recommendations by integrating both user preferences and the content of the written article.
- Our method demonstrated significant improvements over CClusDiv and AClusDiv, especially in scenarios where high-rated items are concentrated within a few clusters rather than distributed broadly.
- Finally, empirical use cases with varying user requirements illustrated the system's qualitative effectiveness in enhancing recommendation diversity and relevance.

Current and Future Work

Implementation as an API for Melody + studies with real newspaper publishers

Layout exploration and optimization



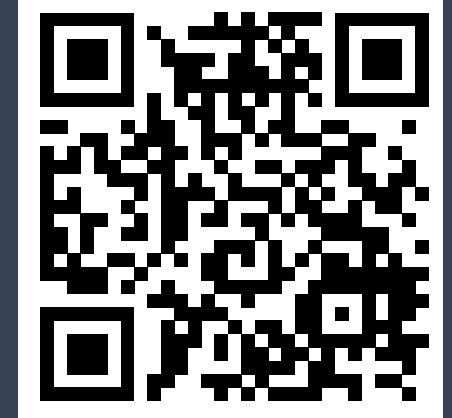
Magnification algorithm to improve readability



Multiple page layouting "from scratch"/ personalized



Inria



A Clustering Based Article Template Recommendation System for Newspaper Editors