Paper-Search System to Identify Citation Networks and Motivations



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Research Movitation



We often analyze research material using a literature information system to find

However, with amount of academic literatures consistently increasing, researchers spend

This study proposes a system that can determine citation motives and topics from a cited sentence extracted from an IEEE InfoVis paper.

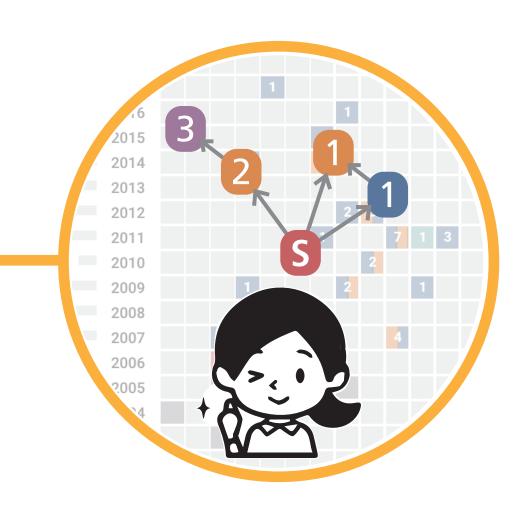
PAPER

DETECTOR

2014

2006

DEMO URL



The users can observe how the target paper has been developed and reproduced by other papers. (URL: https://paperdetector.hyunwoo.io/)

Sentence Base

5

System Overview & Interaction

Visualization Systems, Toolkits, and Environments

	Function Legend Background (26)	Fundamental (0) Technique (10) Compa	arison (1) Neutrality (10)	Citation S	entence About	t 47 results				
3 2018	1	2	2		Sort by citation count section date					
1 2017 1 2016 1 2015 3 2014		Number: Number of See 1 3	d Node literature mentioned sentences.	Filter	Background (26)	Fundamental (0)	Technique (10)	Comparison (1)	Neutrality (10)	
2013 2 2012 2 2011 2010 1 2009 3 2008 1 2007 2006	2 1 2 2 3 Seed Node (2007: ManyEye	ve pattern er.	6 INSTANTIATING THE FRAMEWORK Technique SELECT SEED <i>title : A Framework for Externalizing Implicit Error Using Visualization</i> <i>year : 2018, citation count :1</i>							
2005 2004 2003 2002 2001 2000 1999	ManyEyes: a Site for Visualization at Internet Scale VIEW IN XPLORE ABSTRACT Journal ★ Test of time award By Fernanda B. Viegas, Martin Wattenberg, Frank van Ham, Jesse Kriss, Matt McKeon IEEE Computer Society IEEE Computer Society Publication Year 2007 Citation 36 XPlore 222 AMiner 746		Our use of annotation is grounded both in the results of the annotation technology probe described in4. 2and in a large body of literature surrounding the effective use of annotation for narrative and storytelling [55,59], collaboration and communication [75,31,SEED], externalization of insights [14,28,29], and assessments of data quality [4].							
1998 1997 1996 1995	Visualization	al Software Social Data Analysis Communication-Minded		Group Topic	bic Kno Lab Pres	basis Knowledge Discovery □ Labeling, Knowledge Discovery □ Labeling, Storytelling, Storytelling, Collaborative Visualization, Presentation, Production, and Dissemination, Data Cleaning and Smoothing, Analysis Process - General, Visual Knowledge			lization, eaning	
in Ir	foVis 2007. And uses our syst	ar user was inspired by the Many Eyes tem to find the study cited with a 'Techn es paper as the target paper by selectin	ique' motive.			Smoothing, Analy resentation and E		eneral, Visual Kno	owledge	
	Topic & Motivation			5 SPONTANEOUS USAGE ON MANY EYES SELECT SEED ∟ 5.2 Visualizing the written word Technique						
	Topic Sentences			title : The Word Tree, an Interactive Visual Concordance year : 2008, citation count :383						

Reference As previously noted [SEED], visualizations of religious data have been a

unclear	
Analysis Process - General	
Graph/Network Data and Techniques	
Charts, Diagrams, Plots	
Interaction Techniques - General	
Internet, Web, Visualization for the Masses	
Hierarchical/Tree Data and Techniques	

STEP 2. Many Eyes is cited with the motivation classification in the order of 'Background' (navy), 'Technique' (orange), and 'Neutral' (purple) in sentences where 'Visualization Systems, Toolkits, and Environments' is the citation topic.

Group	basis
Торіс	Applications - General and Other, Events, Trends, Outlier
	Detection, Analysis, and Visualization, Flow Visualization, Data,
	and Techniques, Geography, Geospatial Vis, Cartography,
	Terrain Vis, Graph/Network Data and Techniques,
	Hierarchical/Tree Data and Techniques, Internet, Web,
	Visualization for the Masses, Multimedia
	(Image/Video/Music) Derticle/Visualization and Techniques

STEP 3. The user selects the 'Technique' motivation through the Filter function in the view in order to find only the research based on technical motivation. This allows user to see the actual sentence which has been used for citation and makes it easier to identify sentences related to technical motivation in other papers.

Citation-Motive Classification & Visualization Analysis

 \checkmark

Background

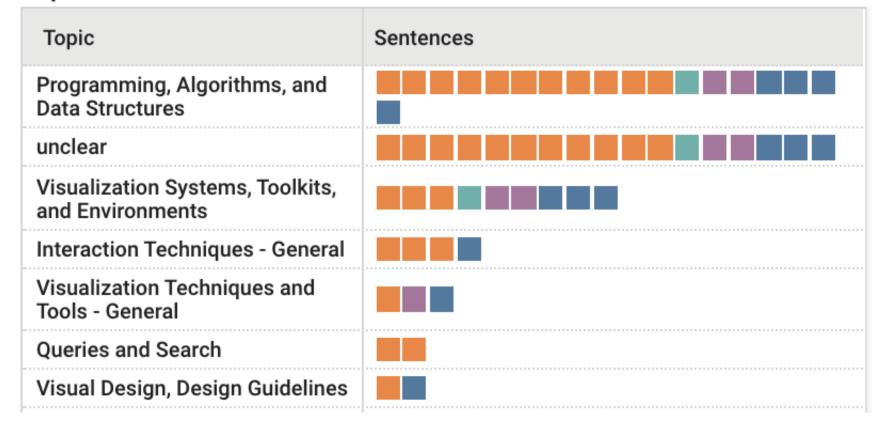
Citation that describes the background of a complete topic or provides a recent study or cutting-edge approach for a general method.



Citations of major previous articles that inspire or give concrete hints for current works.

Background (15) Fundamental (1) Technique (39) Comparison (6) Neutrality (8) 8 2014 7 2013 1 2012 2011 2010 2009 2008 2007 2006 2005 2004 2003 2002 2001 2000 1999 1997 1996 1995

Topic & Motivation



Network view (Paper Mode) having D3(2011) paper as Seed Node / Topic & Motivation View (Sentence Mode):

Technique

Citations of important tools, methods, data and other resources used or recomposed in the current study.

> Comparison

Citations comparing methods or results with current research.

> **~** Neutrality

A paper that exists in the bibliography but does not appear in a substantial sentence. In other words, the related text information cannot be checked in the text.

Paper	Legend Background (26) Fundamental (0) Technique (10) Comparison (1) Neutrality (10)	Topic & N
3 2018 1 2017 1 2016	(1) Design Studies and Case Studie (2) Analysis Process - General (1) Social Networks and Social Med (1) Social Networks and Social Med	Торіс
1 2015 3 2014 4 2013	Image: Constraint of the constraint	Visualizat and Envir
2 2012 2 2011	(1) Knowledge Discovery (2) Visual Design, Design Guideline (1) Storytelling (1) unclear	unclear
5 2009	(1) Storytelling (1) Evaluation General (1) User Interfaces - General (1) Evaluation General (3) Text, Document, Topic Analysis, (2) User Interfaces - General (1) Text, Document, Topic Analysis, (1) Evaluation General	Analysis F
9 2008 2007	(1) Analysis Process - General (2) Visualization Techniques and To (2) Text, Document, Topic Analysis, (1) Databases and Data Mining (1) Cognition [S] unclear	Charts, Di
2006 2005	unclear unclear	Interactio
2004 2003	Visualization Systems, Toolkits, and the second secon	Applicatio
2002 2001 2000		Biology a
2000 1999 1998		Comparis Visualizat
1997 1996 1995		VISUAIIZA

Motivation Sentences ation Systems, Toolkits ironments Process - General Diagrams, Plots tion Techniques - General tions - General and Other and Bioinformatics ison, Comparative ation and Similarity

Network view (Paper Mode) having ManyEyes(2007) paper as Seed Node / Topic & Motivation View (Sentence Mode): Most of the paper citing ManyEyes (2007) deal mainly with research topics such as 'Visualization Systems, Toolkits and Environments', and can be seen that citation motives related with 'Background' stands out.

Most of the paper citing D3(2011) deal mainly with research topics such as 'Programming, Algorithms and Data Structures', and can be seen that citation motives related with 'Technique' stands out.