CALLEX: Exploring the evolution of disciplines Zeyu Li Changhong Zhang, Shichao Jia, and Juwan Zhang. Senior Member, IEEE Presented IV: Roant Maximum Advance and Ma	Overview Data hierarchy Requirements Analysis What How Why The video Design Details Previous tools Effectiveness Toolbox The new tool Visual Exploration User Feedback Who could use 87 Literature Visualization Critique C&A	<figure></figure>	Discipline Category Area Use we
What, How, Why Marks: Predefined Points, lines Color has and saturation, location Anones: Color has and saturation, location BOD: domains, fields, subfields	= Previous tools: Lacks interactivity Evolution of topics Semantic relevance among topics Showing the structure of science	Here a construction of the second sec	= The new tool: Divergence of the second sec
	Data hierarchy • Discipline level • Area level: origin, growth, fusion, seperation, decline • Institution level: academics Popularity of topics and phrases that are involved in Galex, including phrases, institutions, and authors.	= Who could use it? Students Decision-makers Professors Analysts Investors	- The video
Effectiveness - Design and implementation of a hierarchical and integrated visual analysis framework that allows analysis to understand a scientific field from matro- to micro-perspective:	- Visual Exploration of the Intersections among Scientific Fields	Eliterature Visualization Software	Requirements analysis Use Care 1. Originary more 2. Days area 2. Originary more 2. Originary

 Design of a flexible time brush and a context-aware spotlight, they empower analysts to quickly grasp the semantics of region of interest in any time slice. We also design a synchronous spotlight which enables the comparison of sets of document collections;

 Design of a topic tree metaphor which enables analysts to review topic evolution intuitively and to find representative papers of each topic and potential inter-topical papers expediently;

· Provision of a set of networks revealing the backbone of a field, as a complementary to the structure captured by text data.

Examples: co -occurrence topical words, Showing citation

Chunag->mapped the topic similarity between areas

Pivot slice

CiteVis2, CiteMatrix

VOS viewer-> focuses on creating bibliometric networks . journals , papers, authors and phrases(heatmaps)

CitNet Explorer-> aims the development of research topics

Action science explorer->integrates reference management and network analysis

GALEX: illustrates a hierarchical understanding of on discipline from macro to micro.

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