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Summer Research Proposal

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Visualizing Interdisciplinary Research

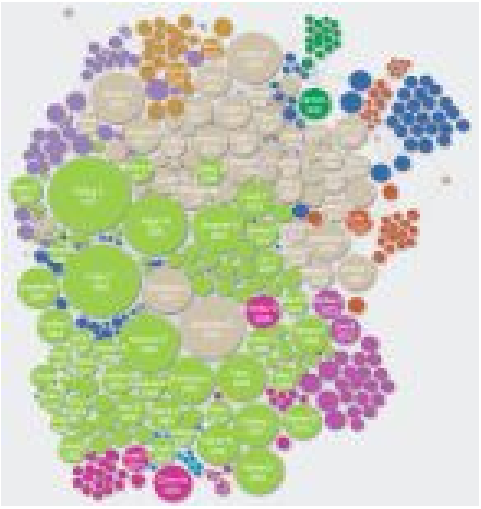

Fig 2 Papers in urban resilience [2]

Introduction

Meaningful research ideas transcend the scope of a single discipline or area.

Disaster Risk Reduction is one of many who brings actors from qualitative and quantitative areas to tackle the problem.

The National Science Foundation defines Interdisciplinary research as :

"a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice. [1]

An example of this is the term resilience, since it has been studied in abroad different disciplines such as ecology, engineering , psychology and economy among others [2]. Communicating between different knowledge areas is a key point for success in the process from generating knowledge to impact public policy [3]. How could we visualize the knowledge generated in different areas?

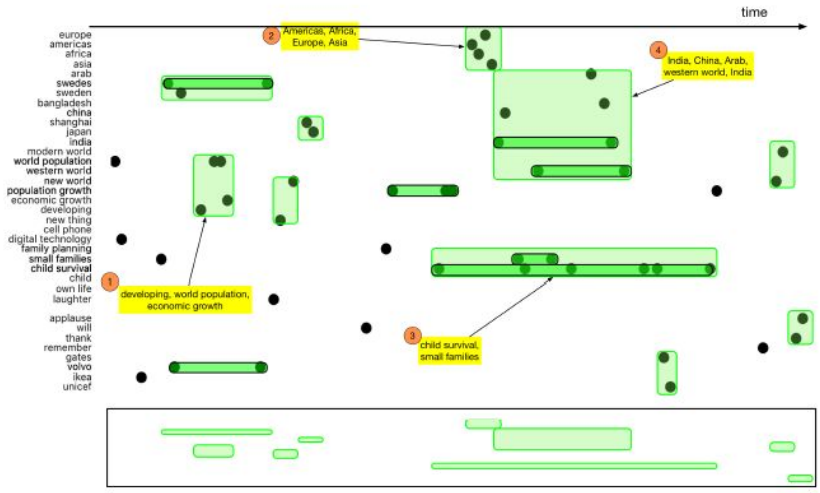

Figure 3: Semantic Narrative Visualization of the Speech *Population Growth, Box by Box* by Hans Rosling.

Project Definition

The objective of this project is creating a visualization that integrates the main findings of different disciplines in a common research objective to identify knowledge gaps. One idea is to compare the structure of the documents. Gama Dessavre et. al. have developed a methodology to visually extract the narrative structure of text (figure 3), this project aims to extend this idea to visualize the knowledge generation in different scientific areas [4].

Project Pipeline

1) Scrap data sources such as scientific journals and grey literature
2) Data cleaning
3) Topic model detection
4) Visualize the results

References

[1] Committee on Facilitating Interdisciplinary Research, Committee on Science, Engineering, and Public Policy (2004). Facilitating interdisciplinary research. National Academies. Washington: National Academy Press, p. 2. https://www.nsf.gov/od/oia/additional_resources/interdisciplinary_research/index.jsp

[2] Meerow, S., Newell, J. P., & Stults, M. (2016). Defining urban resilience: A review. *Landscape and urban planning*, *147*, 38-49.

[3]Overseas Development Institute (ODI), Resilience Scan https://www.odi.org/projects/2864-resilience-scan

[4]Gama Dessavre, D. , Ramirez-Marquez, J.E. (2017). Nar-A-Viz: A Methodology to Visually Extract the Narrative Structure. Text. Preprint submitted to Computers & Industrial Engineering

[5] Introduction to Natural Language Processing
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