

NL-to-Vis: A Natural Language Interface for Generating Business Data Visualization

Le Tuan Anh

University of Information Technology, VNU-HCM, Vietnam

What ?

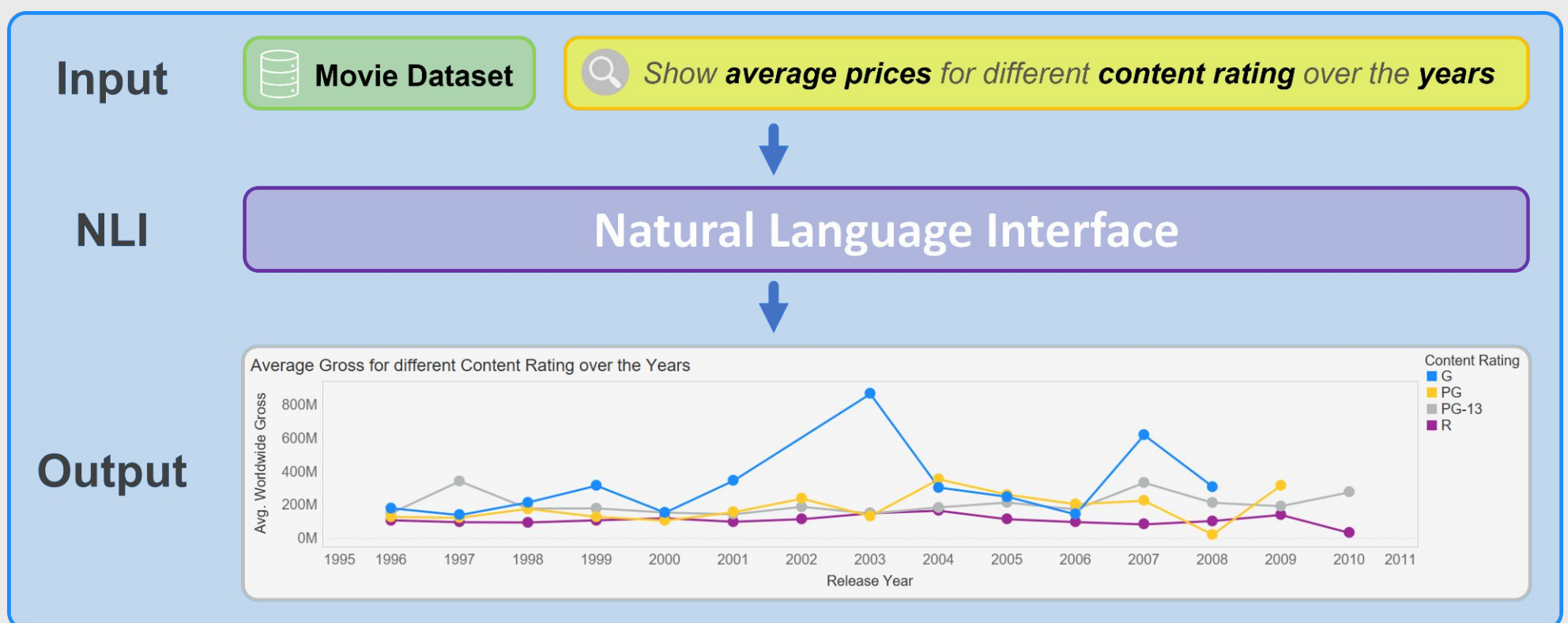
This research addresses the complexity and underspecification of NL-to-Vis model by proposing 3 objectives:

- Building the *UITxNL-to-Vis* - a Business-Oriented Natural Language to Data Visualization dataset.
- Using *NL4DV baseline* to explore NLP techniques minimizing language complexity and under-specification.
- Developing an *NL-to-Vis Interface*, enabling data exploration through natural language conversation.

Why ?

- NL-to-Vis allows users to perform analyses flexibly using *plain language questions*, and deliver immediate visual insights without complex data manipulation.
- Current NL-to-Vis systems struggle with *complex user queries*, leading to an *under-specified visual* generation that does not reflect user information needs.
- Evaluating NL-to-Vis is a resource-intensive process due to insufficient data and involvement in user studies.

Overview



Description

1. Build the **UITxNL-to-Vis** by

- Scraping business dashboards from Tableau Public, PBI Gallery.
- Annotating dashboards' user intents and visual specifications.

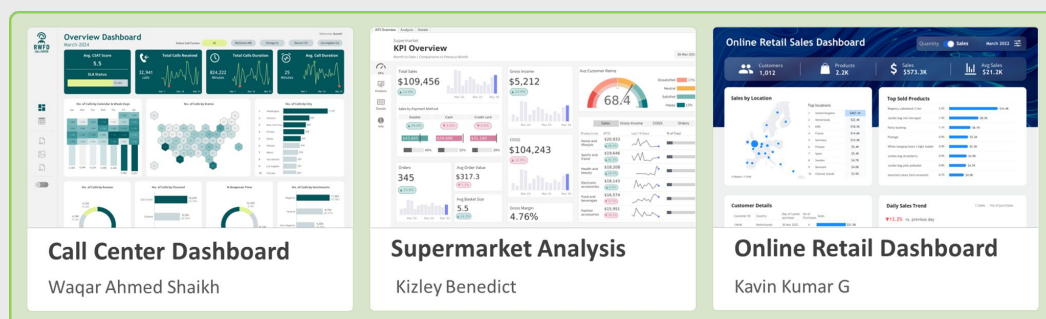


Figure 1. Business Dashboards from Tableau Public

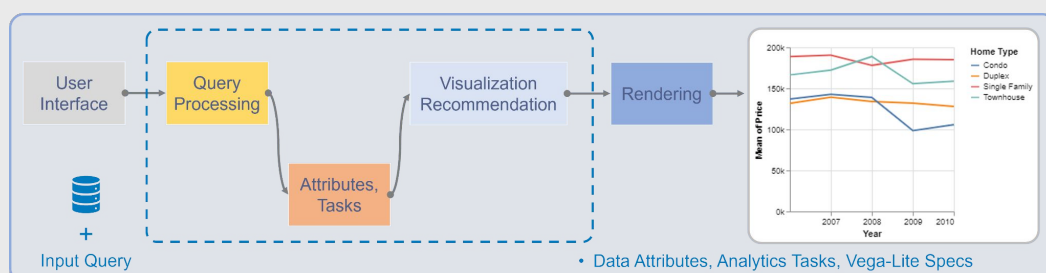


Figure 2. The NL4DV baseline proposed by Narechania et al.

2. Explore advanced NLP tech for NL-to-Vis by

- Evaluating NL4DV baseline, Figure 2.
- Studying advanced NLP tech like LLMs & RAG.

3. Develop an NL-to-Vis Interface

- Enabling user interaction via natural language.
- Making data exploration more accessible & intuitive regardless of technical exp in DA tools.

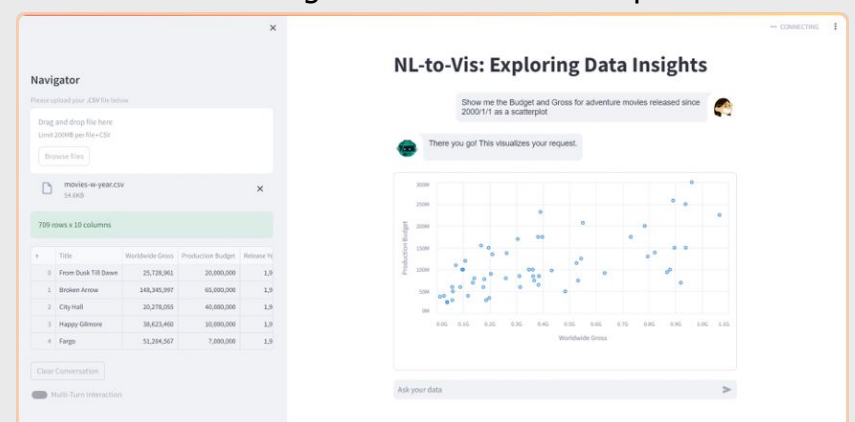


Figure 3. The NL-to-Vis UI facilitating chat interaction built by Le Tuan Anh

