

# Novelty Assessment Report

**Paper:** ChartGalaxy: A Dataset for Infographic Chart Understanding and Generation

**PDF URL:** <https://openreview.net/pdf?id=P4lFbvZ4HH>

**Venue:** ICLR 2026 Conference Submission

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## Abstract

Infographic charts are a powerful medium for communicating abstract data by combining visual elements (e.g., charts, images) with textual information. However, their visual and structural richness poses challenges for large vision-language models (LVLMs), which are typically trained on plain charts. To bridge this gap, we introduce ChartGalaxy, a million-scale dataset designed to advance the understanding and generation of infographic charts. The dataset is constructed through an inductive process that identifies 75 chart types, 440 chart variations, and 68 layout templates from real infographic charts and uses them to create synthetic ones programmatically. We showcase the utility of this dataset through: 1) improving infographic chart understanding via fine-tuning, 2) benchmarking code generation for infographic charts, and 3) enabling example-based infographic chart generation. By capturing the visual and structural complexity of real design, ChartGalaxy provides a useful resource for enhancing multimodal reasoning and generation in LVLMs.

### Disclaimer

This report is **AI-GENERATED** using Large Language Models and WisPaper (a scholar search engine). It analyzes academic papers' tasks and contributions against retrieved prior work. While this system identifies **POTENTIAL** overlaps and novel directions, **ITS COVERAGE IS NOT EXHAUSTIVE AND JUDGMENTS ARE APPROXIMATE**. These results are intended to assist human reviewers and **SHOULD NOT** be relied upon as a definitive verdict on novelty.

Note that some papers exist in multiple, slightly different versions (e.g., with different titles or URLs). The system may retrieve several versions of the same underlying work. The current automated pipeline does not reliably align or distinguish these cases, so human reviewers will need to disambiguate them manually.

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## Core Task Landscape

This paper addresses: **Infographic Chart Understanding and Generation**

A total of **39 papers** were analyzed and organized into a taxonomy with **22 categories**.

### Taxonomy Overview

The research landscape has been organized into the following main categories:

- **Multimodal Model Development for Chart Tasks**
- **Automated Design and Authoring Systems**
- **Infographic Understanding and Interpretation**
- **Educational Applications and Pedagogy**
- **Domain-Specific Infographic Applications**

### Complete Taxonomy Tree

- Infographic Chart Understanding and Generation Survey Taxonomy
- Multimodal Model Development for Chart Tasks
  - Large-Scale Dataset Construction ★ (2 papers)
  - [0] ChartGalaxy: A Dataset for Infographic Chart Understanding and Generation (Anon et al., 2026) [View paper](#)
  - [1] NovaChart: A Large-scale Dataset towards Chart Understanding and Generation of Multimodal Large Language Models (Linmei Hu, 2024) [View paper](#)
  - Unified Multi-Task Learning Frameworks (2 papers)
  - [6] ChartLlama: A Multimodal LLM for Chart Understanding and Generation (Han Yucheng, 2023) [View paper](#)
  - [8] CycleChart: A Unified Consistency-Based Learning Framework for Bidirectional Chart Understanding and Generation (Dazhen Deng, 2025) [View paper](#)
  - Code-Guided Chart Synthesis (1 papers)
  - [5] ChartGen: Scaling Chart Understanding Via Code-Guided Synthetic Chart Generation (Kondic, 2025) [View paper](#)
  - Specialized UI and Infographic Models (1 papers)
  - [20] ScreenAI: A Vision-Language Model for UI and Infographics Understanding (Baechler, 2024) [View paper](#)
  - Domain-Specific Benchmarks (1 papers)
  - [23] ViInfographicVQA: A Benchmark for Single and Multi-image Visual Question Answering on Vietnamese Infographics (Tue-Thu Van-Dinh, 2025) [View paper](#)
- Automated Design and Authoring Systems
  - Template Extraction and Reuse (3 papers)
  - [18] A mixed-initiative approach to reusing infographic charts (Weiwei Cui, 2021) [View paper](#)
  - [36] Towards Automated Infographic Design: Deep Learning-based Auto-Extraction of Extensible Timeline (Chen Zhu-Tian, 2019) [View paper](#)
  - [38] A Mixed-Initiative Approach to Reusing Infographic Charts (Weiwei Cui, 2021) [View paper](#)
  - Message-Driven Authoring (1 papers)
  - [34] Epigraphics: Message-Driven Infographics Authoring (Tongyu Zhou, 2024) [View paper](#)
  - Generative AI Summarization (1 papers)
  - [19] Infographics Generator: A Smart Application for Visual Summarization (Manoj Nath, 2023) [View paper](#)
  - Data-Driven Visualization Composition (2 papers)
  - [26] Infomages: Embedding data into thematic images (Darius Coelho, 2020) [View paper](#)
  - [28] VisCollage: Annotative Collages for Organizing Data Event Charts (Xiao-han Li, 2024) [View paper](#)

- Infographic Understanding and Interpretation
  - Content Extraction and Tag Prediction (1 papers)
  - [37] Understanding Infographics through Textual and Visual Tag Prediction (Bylinskii, 2017) [View paper](#)
  - Cognitive and Perceptual Analysis (2 papers)
  - [11] Effects of working memory and relevant knowledge on reading texts and infographics (Chia-Yu Liu, 2023) [View paper](#)
  - [24] Infographics and communicating complex information (Michael J. Albers, 2015) [View paper](#)
  - Definitional Frameworks and Evaluation Criteria (1 papers)
  - [15] A framework for understanding and evaluating news infographics (Russell Chun, 2023) [View paper](#)
  - Immersive and Augmented Reality Infographics (1 papers)
  - [27] An Evaluation of Immersive Infographics for News Reporting: Quantifying the Effect of Mobile AR Concrete Scales Infographics on Volume Understanding (Wagner Jorge, 2024) [View paper](#)
- Educational Applications and Pedagogy
  - Infographic Creation as Learning Activity (3 papers)
  - [4] Infographic creation as an essential skill for highly visual Gen Alpha (P  nar Nuho  lu Kibar, 2024) [View paper](#)
  - [13] Infographics in Geography Education: Fostering Students' Creativity and Understanding (Nik Norliati Fitri Md Nor, 2025) [View paper](#)
  - [30] Didactic Set of Exercises in Interpretation and Creation of Infographics in a Foreign Language for Military University Cadets (Tatyana Borisovna Rapakova, 2022) [View paper](#)
  - Infographic-Enhanced Comprehension and Retention (3 papers)
  - [25] The Impact of Infographics on Cognitive Enhancement in English Language Students (W Andayani, 2025) [View paper](#)
  - [31] The Effectiveness of a Program Based on Educational Infographics in Developing EFL Inferential Reading Comprehension Skills For EFL Secondary Stage (Teacher, 2023) [View paper](#)
  - [39] USING INFOGRAPHICS TO ASSESS ESL READING COMPREHENSION AMONG MALAYSIAN TERTIARY-LEVEL LEARNERS (Ismail, n.d.) [View paper](#)
  - Pedagogical Design and Implementation (4 papers)
  - [2] Infographics in educational settings: A literature review (Sameer Ahmad Bhat, 2023) [View paper](#)
  - [3] Infographics and their application in the educational process (L. Tarkhova, 2020) [View paper](#)
  - [7] Getting graphic about infographics: design lessons learned from popular infographics (Joanna C. Dunlap, 2016) [View paper](#)
  - [29] Video-ecological approach to the infographics use in education (L. S. Podymova, 2023) [View paper](#)
- Domain-Specific Infographic Applications
  - Health and Medical Communication (4 papers)
  - [9] Does a picture speak louder than words? The role of infographics as a concussion education strategy (Reed, 2019) [View paper](#)
  - [12] The CDH patient perspective journey (Beverley Power, 2023) [View paper](#)
  - [17] A contemporary approach to improve understanding of the midwifery student continuity of care experience: designing an infographic using appreciative inquiry. (Olivia Tierney, 2025) [View paper](#)
  - [35] Morphine Equianalgesic Dose Chart in the Emergency Department (Savannah Tan, 2022) [View paper](#)
  - Accessibility and Inclusive Design (1 papers)
  - [10] Creating accessible infographics: Describing scientific data in ways everyone can understand (Monroe, 2022) [View paper](#)
  - Social Movements and Digital Activism (1 papers)
  - [33] Bridging Action Frames: Instagram Infographics in U.S. Ethnic Movements (Kaviani, 2021) [View paper](#)
  - Library and Information Science (3 papers)
  - [14] Infographics: More than words can say. (Jane Krauss, 2012) [View paper](#)
  - [21] Generalized overview infographic: a customizable library instructional material on the NIH Data Management and Sharing Policy. (Katy Smith, 2024) [View paper](#)
  - [32] Data visualizations and infographics (Darren Sweeper, 2015) [View paper](#)
  - Environmental and Geospatial Systems (1 papers)
  - [22] A Global & Environmental Coral Analysis System with SPA-Based Semantic Computing for Integrating and Visualizing Ocean-Phenomena with "5-Dimensional World-Map" (Yasushi Kiyoki, 2020) [View paper](#)
  - Research Workflow and AI Tools (1 papers)
  - [16] ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN RESEARCH ACTIVITIES: OVERVIEW AND APPLICATION (Oksana Buinytska, 2024) [View paper](#)

## Narrative

Core task: infographic chart understanding and generation. The field encompasses both computational methods for interpreting visual data representations and systems that automate their creation. The taxonomy reveals five main branches: Multimodal Model Development focuses on building large-scale datasets and training vision-language models to parse charts and infographics, with works like ChartLlama[6] and ScreenAI[20] advancing multimodal reasoning capabilities. Automated Design and Authoring Systems explore tools that assist or fully automate the generation process, including mixed-initiative approaches such as Mixed Initiative Charts[18] and template-based generators like Infographics Generator[19]. Infographic Understanding and Interpretation addresses how humans and machines extract meaning from complex visual narratives, with studies ranging from tag prediction methods to accessibility considerations in works like Accessible Infographics[10]. Educational Applications examine pedagogical uses across diverse contexts, from geography instruction to medical communication, while Domain-Specific Applications target specialized fields like healthcare patient journeys and military training exercises.

Recent activity centers on scaling up dataset construction to support more robust multimodal models, contrasting data-driven learning approaches with rule-based authoring systems that offer greater designer control. ChartGalaxy[0] sits squarely within the Large-Scale Dataset Construction cluster under Multimodal Model Development, sharing this focus with NovaChart[1], which similarly emphasizes building comprehensive training resources for chart understanding tasks. While NovaChart[1] and related dataset efforts concentrate on breadth and diversity of chart types, ChartGalaxy[0] appears to push toward even larger scale or richer annotation schemes to support next-generation vision-language models. This dataset-centric work contrasts with generation-focused efforts like ChartGen[5] and CycleChart[8], which prioritize synthesis quality and design automation, highlighting an ongoing tension between improving interpretive capabilities through better training data versus developing more sophisticated authoring tools.

## Related Works in Same Category

The following **1 sibling papers** share the same taxonomy leaf node with the original paper:

# 1. NovaChart: A Large-scale Dataset towards Chart Understanding and Generation of Multimodal Large Language Models

**Authors:** Linmei Hu, Duokang Wang, Yiming Pan, Jifan Yu, Yingxia Shao, et al. (7 authors total) | **Year/Venue:** 2024 • ACM Multimedia | **URL:** [View paper](#)

## Abstract

Multimodal Large Language Models (MLLMs) have shown significant potential for chart understanding and generation. However, they are still far from achieving the desired effectiveness in practical applications. This could be due to the limitations of the used training chart data. Existing chart datasets suffer from scarcity of chart types, limited coverage of tasks, and insufficient scalability, making them incapable of effectively enhancing the chart-related capabilities of MLLMs. To tackle these...

## Relationship Analysis

Both papers belong to the Large-Scale Dataset Construction category, focusing on creating comprehensive datasets with diverse chart types and annotations for training multimodal models. They overlap in their goal of addressing the scarcity of chart datasets by constructing large-scale resources with multiple chart types and task coverage—ChartGalaxy provides 1.7M synthetic and 62K real infographic charts with 75 chart types, while NovaChart offers 47K high-resolution charts with 18 chart types and 856K instructions. The key difference is that ChartGalaxy specifically targets infographic charts with complex layouts and visual elements through template-based synthesis, whereas NovaChart emphasizes a broader range of chart understanding and generation tasks (15 tasks) with detailed metadata annotations including visualization code.

## Contributions Analysis

**Overall novelty summary.** The paper introduces ChartGalaxy, a million-scale dataset for infographic chart understanding and generation, constructed through an inductive process identifying 75 chart types, 440 variations, and 68 layout templates. Within the taxonomy, it resides in the 'Large-Scale Dataset Construction' leaf under 'Multimodal Model Development for Chart Tasks', sharing this space with only one sibling paper (NovaChart). This leaf represents a relatively sparse but critical research direction focused on building comprehensive training resources for vision-language models, distinguishing itself from the more crowded branches of design automation and educational applications.

The taxonomy reveals that ChartGalaxy sits within a broader ecosystem of multimodal model development, adjacent to leaves addressing unified multi-task learning frameworks, code-guided synthesis, and specialized UI models. Neighboring branches include 'Automated Design and Authoring Systems' (template extraction, message-driven authoring) and 'Infographic Understanding and Interpretation' (content extraction, cognitive analysis). The scope note for its leaf emphasizes 'diverse chart types, annotations, and task coverage', explicitly excluding domain-specific or small-scale datasets, positioning ChartGalaxy as a general-purpose resource rather than a specialized benchmark.

Among 24 candidates examined across three contributions, the dataset itself (Contribution 1: 10 candidates, 0 refutable) appears novel within the limited search scope, with no prior work directly overlapping its million-scale programmatic construction approach. However, the pipeline for programmatic chart creation (Contribution 2: 10 candidates, 2 refutable) shows more substantial prior work, suggesting that code-based synthesis methods have been explored elsewhere. The three applications demonstrating utility (Contribution 3: 4 candidates, 0 refutable) appear less contested, though the small candidate pool limits confidence in this assessment.

Based on this limited top-24 semantic search, ChartGalaxy's primary novelty appears to lie in its scale and systematic taxonomy-driven construction rather than fundamentally new generation techniques. The analysis does not cover exhaustive literature on chart datasets or programmatic synthesis methods, leaving open the possibility of additional relevant prior work beyond the examined candidates. The sparse population of its taxonomy leaf suggests this dataset-centric direction remains relatively underexplored compared to design automation or educational applications.

This paper presents **3 main contributions**, each analyzed against relevant prior work:

### Contribution 1: ChartGalaxy dataset

**Description:** The authors present ChartGalaxy, a large-scale dataset containing 1,701,356 synthetic and 61,833 real infographic charts paired with data tables. The dataset is constructed through an inductive process that identifies chart types, variations, and layout templates from real designs to programmatically create synthetic ones.

This contribution was assessed against **10 related papers** from the literature. Papers with potential prior art are analyzed in detail with textual evidence; others receive brief assessments.

### 1. Scaling text-rich image understanding via code-guided synthetic multimodal data generation

**URL:** [View paper](#)

#### Brief Assessment

Code Guided Synthesis[44] focuses on generating diverse text-rich images (charts, documents, diagrams, etc.) using code-guided synthesis with multiple rendering tools. While both datasets include synthetic charts, Code Guided Synthesis[44] addresses a broader scope of text-rich images beyond infographic charts and does not specifically focus on the inductive structuring process or layout template extraction from real infographic designs that characterizes ChartGalaxy.

### 2. Evaluation and Analysis of Chart Reasoning Accuracy in Multimodal Large Language Models: An Empirical Study on Influencing Factors

**URL:** [View paper](#)

#### Brief Assessment

Chart Reasoning Accuracy[47] focuses on evaluating existing MLLMs' chart reasoning performance across different chart types and complexity factors, rather than constructing a large-scale dataset for chart understanding and generation.

### 3. From pixels to insights: A survey on automatic chart understanding in the era of large foundation models

**URL:** [View paper](#)

#### Brief Assessment

Pixels to Insights[46] is a survey paper that reviews existing chart understanding datasets and methods but does not present a new dataset. It discusses various datasets in the field but does not claim to introduce ChartGalaxy or any comparable large-scale infographic chart dataset.

### 4. Unmasking Deceptive Visuals: Benchmarking Multimodal Large Language Models on Misleading Chart Question Answering

**URL:** [View paper](#)

#### Brief Assessment

Deceptive Visuals Benchmark[48] focuses on misleading chart detection and reasoning with 3,026 examples across misleader types, not on large-scale infographic chart generation with paired data tables like ChartGalaxy's 1.7M+ synthetic charts.

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## 5. Chart-info 2024: A dataset for chart analysis and recognition

URL: [View paper](#)

### Brief Assessment

Chart Info Dataset[40] focuses on chart analysis and recognition tasks, while ChartGalaxy emphasizes infographic chart understanding and generation with programmatic synthesis methods and layout templates.

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## 6. Infogen: Generating complex statistical infographics from documents

URL: [View paper](#)

### Brief Assessment

InfoGen[42] focuses on generating complex statistical infographics from text documents, not on creating a large-scale dataset for chart understanding and generation. The candidate addresses a different task (text-to-infographic generation) with a different dataset (InfoDat) that contains text-infographic pairs rather than chart-table pairs.

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## 7. Effective Training Data Synthesis for Improving MLLM Chart Understanding

URL: [View paper](#)

### Brief Assessment

Training Data Synthesis[45] focuses on synthetic chart generation for MLLM training with a modular pipeline and visual diversification, while the original paper emphasizes a million-scale dataset of infographic charts with layout templates extracted from real designs. The candidate does not demonstrate that similar prior work on large-scale infographic chart datasets exists.

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## 8. ScreenAI: A Vision-Language Model for UI and Infographics Understanding

URL: [View paper](#)

### Brief Assessment

ScreenAI[20] focuses on UI and infographics understanding with screen annotation tasks, not on large-scale datasets for infographic chart generation paired with data tables as in ChartGalaxy.

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## 9. ChartCoder: Advancing Multimodal Large Language Model for Chart-to-Code Generation

URL: [View paper](#)

### Brief Assessment

ChartCoder[43] focuses on chart-to-code generation with the Chart2Code-160k dataset, not on large-scale infographic chart understanding datasets with paired data tables like ChartGalaxy.

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## 10. Infographicvqa

URL: [View paper](#)

### Brief Assessment

InfographicVQA[41] focuses on visual question answering over infographics with 5,485 images and 30,035 questions, not on large-scale chart generation or paired data tables for chart understanding and generation tasks.

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## Contribution 2: Pipeline for programmatic infographic chart creation

**Description:** The authors develop a human-in-the-loop pipeline that extracts design patterns (75 chart types, 440 variations, 68 layout templates) from real infographic charts and uses them to automatically generate synthetic infographic charts at scale.

This contribution was assessed against **10 related papers** from the literature. Papers with potential prior art are analyzed in detail with textual evidence; others receive brief assessments.

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### 1. MapCraft: Dissecting and Designing Custom Geo-Infographics

URL: [View paper](#)

#### Brief Assessment

MapCraft[58] focuses on geographic infographics with manual design space construction and interactive authoring tools, not on programmatic synthesis from extracted design patterns at scale like the original paper's automated pipeline.

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### 2. Text-to-viz: Automatic generation of infographics from proportion-related natural language statements

URL: [View paper](#)

#### Prior Art Analysis

Text to Viz[53] demonstrates prior work that programmatically generates infographic charts from design patterns extracted from real-world samples. The candidate paper describes a systematic approach where they collected real infographics, analyzed their design patterns (including layout templates and visual variations), and used these patterns to automatically synthesize new infographics at scale. This directly parallels the original paper's claimed contribution of extracting design patterns from real infographic charts and using them to programmatically create synthetic ones.

#### Evidence

Evidence 1 - **Rationale:** Both describe a two-stage process: first collecting/analyzing real infographics, then programmatically generating new ones based on extracted patterns. - **Original:** we build chartgalaxy in two steps: 1) collecting real infographic charts; 2) programmatically creating synthetic infographic charts. the real infographic charts are collected from 18 reputable chart-rich websites - **Candidate:** we first conducted a preliminary study to explore the design space of infographics. based on the preliminary study, we built a proof-of-concept system that automatically converts statements about simple proportion-related statistics to a set of infographics with pre-designed styles.

Evidence 2 - **Rationale:** Both papers extract layout templates and design patterns from real infographics to enable programmatic generation. - **Original:** the synthetic infographic chart creation stage follows an inductive structuring process that extracts design patterns, such as layout templates and chart variations, from real infographic charts and then uses these patterns to programmatically create high-quality synthetic charts. - **Candidate:** we summarized each dimension as follows. 4.2.1 layout based on the existing layout taxonomies on general visualization design [5, 59], we analyzed and discussed the layout of infographics for proportional facts.

Evidence 3 - **Rationale:** Both papers identify and categorize chart types and variations from real infographics to support programmatic generation. - **Original:** this results in 440 chart variations in total. the full lists of chart types and variations are provided in appendix d.1 and d.2. we implement these chart types and variations using the expressive d3.js - **Candidate:** based on some existing visualization

taxonomies [2, 12], we went through our infographic dataset for proportional facts. we summarized frequently-used visualizations into seven types, namely, pictograph (figure 1(a)), adornment (figure 1(d)), donut chart (figure 1(c)), pie chart (figure 1 (o)), bar ...

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### 3. Exploring visual information flows in infographics

URL: [View paper](#)

#### Brief Assessment

Visual Information Flows[54] focuses on analyzing and extracting visual information flow patterns from existing infographics using neural networks and gestalt principles, not on programmatically creating synthetic infographic charts from design templates.

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### 4. Datashot: Automatic generation of fact sheets from tabular data

URL: [View paper](#)

#### Prior Art Analysis

Datashot[52] demonstrates that prior work exists for automated generation of infographic charts from design patterns. Both papers extract design patterns from real infographics and use them to programmatically generate new ones. Datashot[52] conducts a qualitative analysis of 245 infographic examples to identify common structures, layouts, and visualization styles, then proposes a generation pipeline consisting of fact extraction, fact composition, and presentation synthesis. This shows that the concept of extracting design patterns from real infographics and using them for automated generation predates the original paper's contribution.

#### Evidence

Evidence 1 - **Rationale:** Both papers extract design patterns from real infographic examples as the foundation for automated generation, demonstrating that this approach existed in prior work. - **Original:** we build chartgalaxy in two steps: 1) collecting real infographic charts; 2) programmatically creating synthetic infographic charts. the real infographic charts are collected from 18 reputable chart-rich websites, such as visual capitalstand statista. - **Candidate:** we conduct a qualitative analysis of 245 infographic examples to explore general infographic design space at both the sheet and element levels. we identify common infographic structures, sheet layouts, fact types, and visualization styles during the study.

Evidence 2 - **Rationale:** Both papers describe pipelines that extract design patterns from real examples and use them to programmatically generate new infographic charts, showing prior work in this methodology. - **Original:** the synthetic infographic charts are created following an inductive structuring process (schadewitz & jachna, 2007). specifically, we identify design patterns grounded in real infographic charts, including 75 chart types (e.g., bar charts), 440 chart variations that reflect different visual element ... - **Candidate:** based on these findings, we propose a fact sheet generation pipeline, consisting of fact extraction, fact composition, and presentation synthesis, for the auto-generation workflow.

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### 5. Infographics Wizard: Flexible Infographics Authoring and Design Exploration

URL: [View paper](#)

#### Brief Assessment

Infographics Wizard[59] focuses on general structured and flow-based infographic design generation for text-based content, not specifically on extracting chart design patterns from real infographics or programmatic synthesis of infographic charts from data tables and templates.

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### 6. Propagating visual designs to numerous plots and dashboards

URL: [View paper](#)

#### Brief Assessment

Propagating Visual Designs[56] focuses on propagating existing visual designs across multiple datasets in an emergency response infrastructure, not on programmatic synthesis of infographic charts from design templates. The candidate addresses visualization deployment workflows rather than infographic chart generation from extracted design patterns.

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### 7. Multilingual Infographics Generator: A language-agnostic visual summarizer

URL: [View paper](#)

#### Brief Assessment

Multilingual Generator[57] focuses on language translation and multilingual content generation from various input formats (video, audio, text), not on programmatic synthesis of infographic charts from design templates or extraction of chart types and layout patterns.

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### 8. OrionBench: A Benchmark for Chart and Human-Recognizable Object Detection in Infographics

URL: [View paper](#)

#### Brief Assessment

OrionBench[55] focuses on object detection for infographic elements (charts, icons, text) rather than programmatic synthesis of infographic charts from design templates. The candidate paper's contribution is a detection dataset and model, not a chart generation pipeline.

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### 9. Retrieve-Then-Adapt: Example-based Automatic Generation for Proportion-related Infographics

URL: [View paper](#)

#### Brief Assessment

Retrieve-Then-Adapt[51] focuses on example-based generation by retrieving and adapting existing infographics, not programmatic synthesis from extracted design patterns and templates.

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### 10. Infographics Generator: A Smart Application for Visual Summarization

URL: [View paper](#)

#### Brief Assessment

Infographics Generator[19] focuses on generating infographics from audio/video/text inputs using pre-trained language models and template selection, not on extracting design patterns from real infographic charts to programmatically create synthetic ones at scale.

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## Contribution 3: Three applications demonstrating dataset utility

**Description:** The authors demonstrate the value of ChartGalaxy through three distinct applications: improving infographic chart understanding via fine-tuning, benchmarking code generation for infographic charts, and enabling example-based infographic chart generation.

This contribution was assessed against **4 related papers** from the literature. Papers with potential prior art are analyzed in detail with textual evidence; others receive brief assessments.

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## 1. Let the chart spark: Embedding semantic context into chart with text-to-image generative model

URL: [View paper](#)

### Brief Assessment

Chart Spark Embedding[49] focuses on generating pictorial visualizations using text-to-image models for semantic embedding, not on dataset construction or applications for infographic chart understanding, code generation, and example-based generation.

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## 2. Charagraph: Interactive generation of charts for realtime annotation of data-rich paragraphs

URL: [View paper](#)

### Brief Assessment

Charagraph[50] focuses on interactive chart generation for data-rich text paragraphs, not on dataset construction or applications for infographic chart understanding, code generation, and example-based generation.

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## 3. ChartGen: Scaling Chart Understanding Via Code-Guided Synthetic Chart Generation

URL: [View paper](#)

### Brief Assessment

ChartGen[5] focuses on chart-to-code reconstruction and code-guided synthetic chart generation, not on infographic chart understanding, code generation for infographic charts, or example-based infographic chart generation as described in the original paper.

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## 4. Retrieve-Then-Adapt: Example-based Automatic Generation for Proportion-related Infographics

URL: [View paper](#)

### Brief Assessment

Retrieve-Then-Adapt[51] demonstrates a two-stage generation approach (retrieve-then-adapt) rather than applications for chart understanding, code generation, and example-based generation as distinct use cases.

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## Appendix: Text Similarity Detection

No high-similarity text segments were detected across any compared papers.

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## References

- [0] ChartGalaxy: A Dataset for Infographic Chart Understanding and Generation [View paper](#)
- [1] NovaChart: A Large-scale Dataset towards Chart Understanding and Generation of Multimodal Large Language Models [View paper](#)
- [2] Infographics in educational settings: A literature review [View paper](#)
- [3] Infographics and their application in the educational process [View paper](#)
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