MegaCQA: Construction and Benchmarking of a Large-Scale Visual Chart Question Answering Dataset

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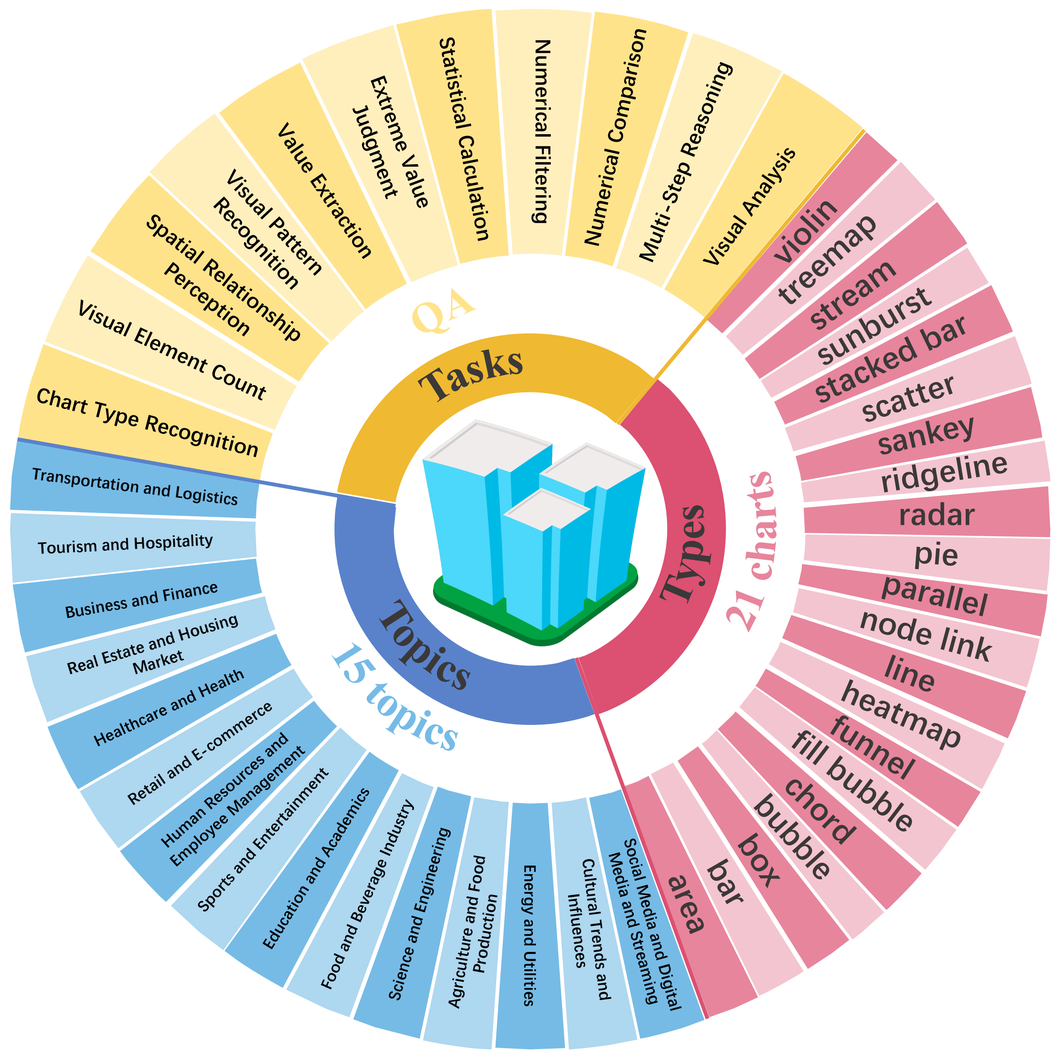
Introduction

As vision language models improve, multimodal understanding is increasingly applied to specialized fields, especially in chart question answering.

However, existing datasets are **small in scale**, **high data overlap**, **few chart types**, **single question formats**, and **restricted modalities**, making it difficult to fully evaluate a model's general reasoning abilities.

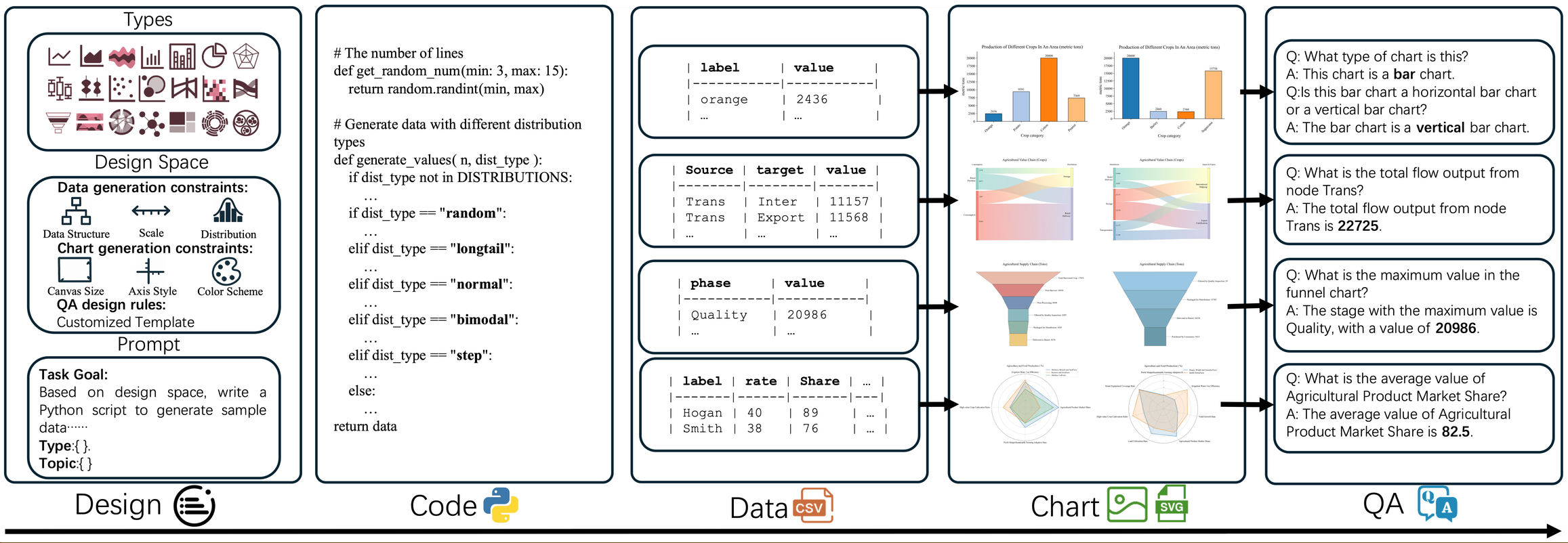
To address these limitations, we introduce a large-scale chart question answering dataset—**MegaCQA**. In summary, the contributions of this work are summarized as follows:

- We offer a wide range of chart types and question formats, enabling robust evaluation of model generalization to new scenarios.
- We use a multimodal data setup that not only supports visual reasoning tests but also makes it easy to analyze model performance in structured data understanding, numerical computation, and multi-step logical reasoning.
- We implement a multi-stage quality control process—combining hard constraints with soft constraints and both automated and manual checks—to ensure data accuracy and sample readability, providing a high-quality, reproducible benchmark for fair, systematic evaluation of complex chart understanding and reasoning models.



Pipeline

Dataset Construction Process



Comparison

Compared to existing datasets, MegaCQA represents a qualitative leap across several core metrics:

- It covers **21 chart types**, far exceeding its peers; includes a vast corpus of **260 K charts** and **5.74 M QA pairs.**
- Supports **11 question categories** with both **fixed** and **open** response formats, offering high task diversity.
- All samples are provided in **CSV, PNG, and SVG** modalities and undergo a multi-stage quality-control pipeline combining automated checks with expert review to ensure accuracy and readability.

Consequently, MegaCQA delivers a more comprehensive and reliable benchmark for evaluating models on structure parsing, numerical computation, and multi-step logical reasoning.

Dataset	Chart		QA Tasks		Answer Type		
	Types	Scale	Types	Scale	Closed	Fixed	Open
DVQA	1	300.0k	3	3487.4.k	√		√
FigureQA	3	140.0k	7	1800.0k	√		
PlotQA	3	224.3k	3	28900.0k	√	√	√
ChartQA	3	21.9k	4	32.7k		√	√
Chart-HQA	3	0.95k	4	2.2k			√
ChartInstruct	4	70.9k	-	42.4k	-	-	-
LEAF-QA	6	240.0k	2	2000.0k		√	√
ChartBench	8	66.6k	5	600.0k	√	√	
ChartLlama	8	11.0k	-	107.0k	-	-	-
ChartX	12	6.0k	-	48.0k		√	
NovaChart	14	47.0k	5	342.4k		√	√
MegaCQA(ours)	**21**	**260.0k**	**11**	**5740.0k**		√	√

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