Pregel: a system for large-scale graph processing

Abstract

Many practical computing problems concern large graphs. Standard examples include the Web graph and various social networks. The scale of these graphs - in some cases billions
of vertices, trillions of edges - poses challenges to their efficient processing. In this paper we present a computational model suitable for this task. Programs are expressed as a sequence of iterations, in each of which a vertex can receive messages sent in the previous iteration, send messages to other vertices, and modify its own state and that of its outgoing edges or mutate graph topology. This vertex-centric approach is flexible enough to express a broad set of algorithms. The model has been designed for efficient, scalable and fault-tolerant implementation on clusters of thousands of commodity computers, and its implied synchronicity makes reasoning about programs easier. Distribution-related details are hidden behind an abstract API. The result is a framework for processing large graphs that is expressive and easy to program.

↑ REFERENCES

Note: OCR errors may be found in this Reference List extracted from the full text article. ACM has opted to expose the complete List rather than only correct and linked references.


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INDEX TERMS

Primary Classification:
D. Software
  D.2 SOFTWARE ENGINEERING
    D.2.13 Reusable Software
    Subjects: Reusable libraries

Additional Classification:
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