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Challenges and opportunities: from big data to knowledge in AI 2.0

Key words: Deep reasoning; Knowledge base population; Artificial general intelligence; Big data; Cross media

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Motivation

- Review the recent emerging theoretical and technological advances of artificial intelligence in the big data settings.
- Conclude that integrating data-driven machine learning with human knowledge (common priors or implicit intuitions) can effectively lead to explainable, robust and general artificial intelligence (AI).

Main idea

The next generation artificial intelligence in terms of big data settings has following characteristics:

- from shallow computation to deep neural reasoning;
- from merely data-driven model to data-driven with structured logic rules models;
- from task-oriented (domain-specific) intelligence (adherence to explicit instructions) to artificial general intelligence in a general context (the ability to learn from experience).

Method

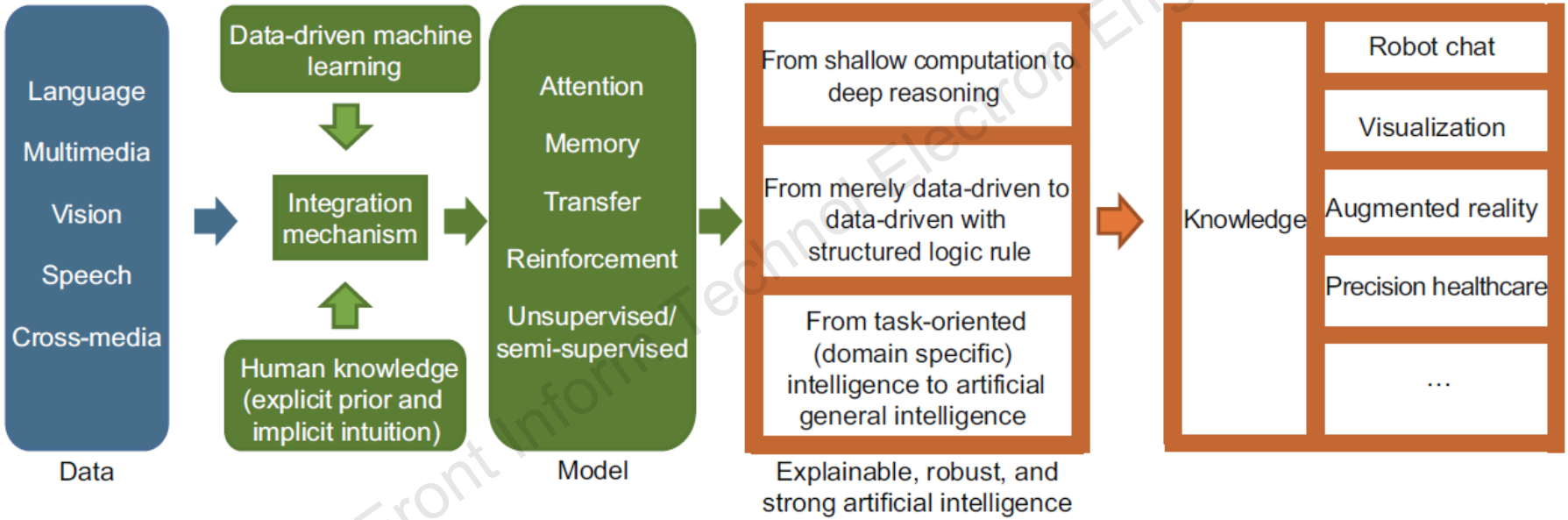

Fig. 1 Flowchart: from data to knowledge

Conclusions

- There are some of the emerging trends from data to knowledge as follows:
  - The effective integration of rule-based symbolic reasoning and data-driven learning (i.e., connectionist learning
  - Cross-media inference and reasoning.
  - Creative ability via artificial intelligence.