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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).

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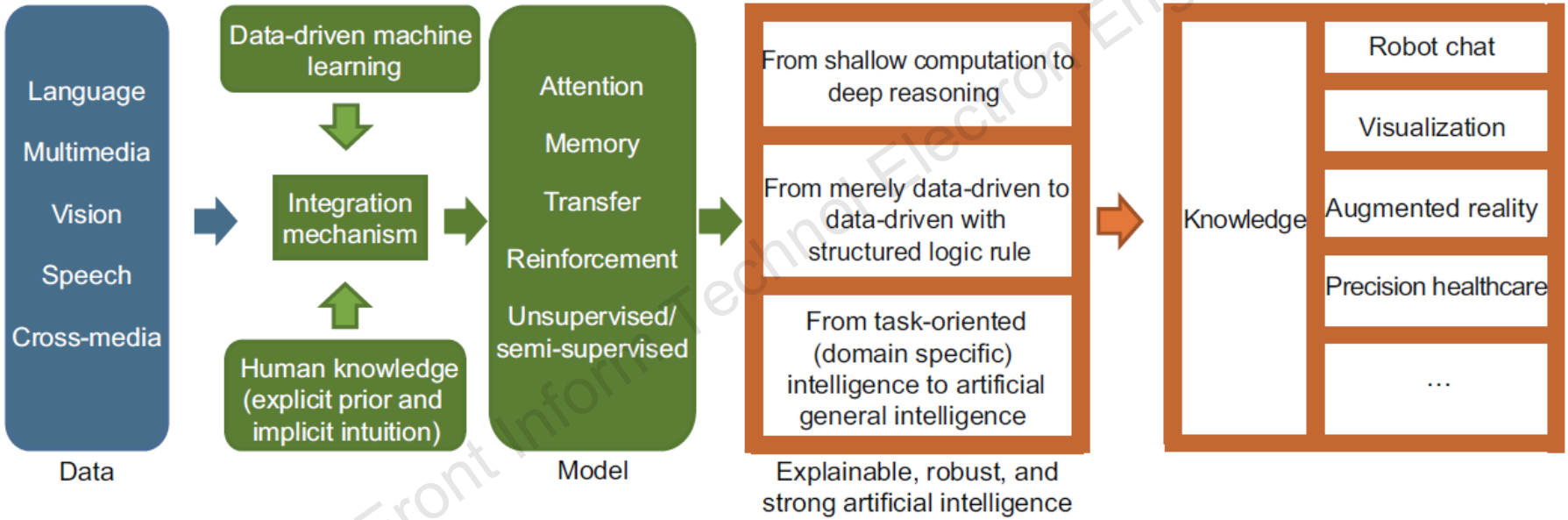
Main idea

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).

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Method



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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.

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