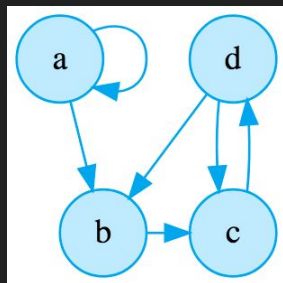# Paper 1687: Stochastic Online Learning with Probabilistic Graph Feedback

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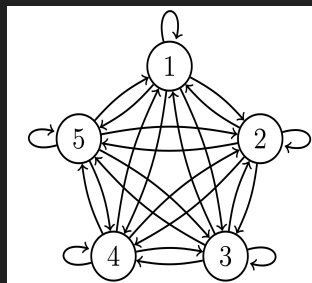
1. Shanghai Jiao Tong University
2. Microsoft Research
3. DeepMind
4. The Chinese University of Hong Kong
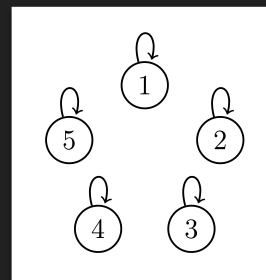
AAAI 2020, New York City

Probabilistic Graph Feedback

- Online learning: choose an action, receive reward and feedback
- Graph feedback: a generalization of full information feedback and bandit feedback

Graph feedback   Full information   Bandit feedback

- Probabilistic graph feedback: the feedback graph is also random
- **Our work (Paper 1687):** algorithm design and analysis for online learning with probabilistic graph feedback

Our Contributions

- **Performance metric:** expected cumulative regret
- **Asymptotic lower bounds** on expected cumulative regret for **all** algorithms
- Proposed novel learning algorithms
  - The art is to balance exploration and exploitation based on the problem structure
- **Finite-time upper bounds** on expected cumulative regret for our proposed algorithms
  - Upper bound matches the lower bound
- Preliminary experiment results
- Check out our poster and paper (Paper 1687)