
Multi-Armed Bandits for Optimizing New Peers in Peer-to-Peer Networks

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Abstract

Write this last.

1. Introduction

Introduction here. Problem, how we got here, what the general idea is.

2. Related Work

Example of related work section.

(Kool et al., 2018) and (Vaswani et al., 2017) push forward the idea of (Bello et al., 2016) and employ graph attention network that incorporates both the graph topology and input features as opposed to the previous architecture that employed a graph-agnostic sequence to sequence mapping. ... Experimental results also show that this model brings benefits over the pointer network in (Bello et al., 2016).

3. Framework

Explain the technical bits.

4. Experiments

What was done.

5. Discussion

Discussion on results.

6. Conclusion and Future Research

Future work, takeaways.

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Algorithm 1 k-step Q-learning

Input: number of episodes Z , and replay batch B

Output: Θ

Initialize experience replay memory M to capacity N

Initialize agent network parameters Θ

for episode = 1 **to** Z **do**

$g \sim \text{SampleGraph}(G)$

$s \sim \text{SampleSolution}(S)$

for $i = 1$ **to** m **do**

 Compute the context vector c_i

$a_i = \begin{cases} \text{random host} & w.p. \epsilon \\ \text{argmax } Q(c_i; \Theta) & \text{otherwise} \end{cases}$

if $i \geq k$ **then**

 Add tuple $(c_{i-k}, a_{i-k}, r_{i-k:i}, c_i)$ to M

end if

 Sample rand batch from replay memory $B \stackrel{i.i.d}{\sim} M$

 Update Θ by Adam given the average loss over B

end for

end for

References

- Bello, I., Pham, H., Le, Q. V., Norouzi, M., and Bengio, S. Neural combinatorial optimization with reinforcement learning. *arXiv preprint arXiv:1611.09940*, 2016.
- Kool, W., Van Hoof, H., and Welling, M. Attention, learn to solve routing problems! *arXiv preprint arXiv:1803.08475*, 2018.
- Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A. N., Kaiser, Ł., and Polosukhin, I. Attention is all you need. In *Advances in neural information processing systems*, pp. 5998–6008, 2017.