Learning to Reinforcement Learn[1]

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Recent advances have allowed long-standing methods for reinforcement learning (RL) to be newly extended to such complex and large-scale task environments as Atari and Go. The key enabling breakthrough has been the development of techniques allowing the stable integration of RL with non-linear function approximation through deep learning. The resulting deep RL methods are attaining human- and often superhuman-level performance in an expanding list of domains. However, there are at least two aspects of human performance that they starkly lack.

- **First, deep RL typically requires a massive volume of training data, whereas human learners can attain reasonable performance on any of a wide range of tasks with comparatively title experience.**
- **Second, deep RL systems typically specialize on one restricted task domain, whereas human learnerscan flexibly adapt to changing task conditions.**

References

[1] Jane X Wang, Zeb Kurth-Nelson, Dhruva Tirumala, Hubert Soyer, Joel Z Leibo, Remi Munos, Charles Blundell, Dharshan Kumaran, and Matt Botvinick. Learning to reinforcement learn. 2016.