

Emily Lyon

Deep Reinforcement Learning From Theory to Empirical Research

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Preface

Reinforcement learning is a branch of machine learning (ML), which is different from traditional machine learning such as supervised and unsupervised learning. It focused on learning from agent-environment interactions to achieve certain goal(s) optimally. The learning process is interactive and driven both internally and externally. Recent developments in other machine learning techniques, especially neural networks, have been driving forces which help advance this field significantly. The improvements in both the scope and the depth of problems being studied and solved in the area are encouraging. This book starts from introduction to math foundations, to recent improvements and advanced topics.

Why This Book

This book is written as a comprehensive introduction to the field of reinforcement learning, with the focus on recent improvements and new techniques in the area. It starts with the introduction to traditional reinforcement learning and its evolution, math foundations in the area, to the recent technique advances in the area that are being applied and developed, including deep reinforcement learning algorithms. Then, one chapter is dedicated to the realistic applications, followed by advanced topics in both academy and industry and attemptive solutions, which make RL-based models and systems empirical.

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Contents

1	Introduction	1
1.1	Evolution of Reinforcement Learning	2
1.1.1	Basic Reinforcement Learning	2
1.1.2	Inverse Reinforcement Learning	2
1.1.3	Multi-agent Reinforcement Learning	2
1.1.4	Meta Reinforcement Learning	2
1.1.5	Hierarchical Reinforcement Learning	2
1.1.6	Multi-Task Reinforcement Learning	2
1.2	Applications of Reinforcement Learning	2
1.3	Deep Reinforcement Learning	2
1.4	Advanced Topics in Deep Reinforcement Learning	2
1.5	Summary	2
1.6	Bibliographic Notes	2
	References	2
2	Mathematics in Deep Reinforcement Learning	5
2.1	Reinforcement Learning Foundations	5
2.2	Deep Learning Foundations	5
2.3	Deep Reinforcement Learning Foundations	5
2.4	Performance Evaluations	5
2.4.1	Offline Performance Metrics	5
2.4.2	Online Performance Metrics	5
2.4.3	A/B Testing	5
2.4.4	Interleaving	5
	References	5
3	Deep Reinforcement Learning Models	9
3.1	General Functionalities of Deep Models	10
3.1.1	Policy Approximation Based	10
3.1.2	Value Function Approximation Based	10
3.2	Deep Embeddings	10

3.3	Transformers in Reinforcement Learning Models	10
3.4	CNN-based Reinforcement Learning Models	10
3.5	RNN-based Reinforcement Learning Models	10
3.6	Hybrid Deep Reinforcement Learning Models	10
3.7	Hybrid Reinforcement Learning Models	10
3.8	Advanced Network Components	10
3.8.1	Attention	10
	References	10
4	Emperical Deep Reinforcement Learning Systems	13
4.1	DRL In Robotics	13
4.2	DRL In Commerce	13
4.3	DRL In Medications	13
4.4	DRL In Education	13
4.5	DRL In Civilization	13
4.6	DRL In Simulations	13
	References	13
5	Performance Evaluations	17
5.0.1	Offline Performance Metrics	17
5.0.2	Online Performance Metrics	17
5.0.3	A/B Testing	17
5.0.4	Interleaving	17
	References	17
6	Advanced Topics	21
6.1	Memorization	21
6.2	Alignment of Target Network	21
6.3	Policy Drift and the Solutions	21
6.4	Sociality and Trust	21
6.5	Attack Resistance	21
6.6	Privacy Preservation	21
6.7	Personalization	21
	References	21
7	Empericcal Researches Ongoing	25
7.1	Adaptations of Neuroscience	25
7.2	Future of Deep Reinforcement Learning	25
	References	25
A	Appendix	29
A.1	Math Appendix	29
	Glossary	31
	Index	33

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ABC	Spelled-out abbreviation and definition
BABI	Spelled-out abbreviation and definition
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Chapter 1

Introduction

Abstract Reinforcement Learning nowadays are widely used in various industries, including business, IT, Pharmacy and government, etc.. Along with the development and thrive of WWW and other important computer techniques, such as IOT and neural network, the breath and depth of the use of Reinforcement Learning have improved significantly. In this chapter, we highlight the evolution of Reinforcement Learning. Discuss the use of Reinforcement Learning in our daily life and beyond. Finally, we briefly discuss advanced topics in the area and leave the details to be elaborated in later chapters.

1.1 Evolution of Reinforcement Learning

1.1.1 Basic Reinforcement Learning

1.1.2 Inverse Reinforcement Learning

1.1.3 Multi-agent Reinforcement Learning

1.1.4 Meta Reinforcement Learning

1.1.5 Hierarchical Reinforcement Learning

1.1.6 Multi-Task Reinforcement Learning

1.2 Applications of Reinforcement Learning

1.3 Deep Reinforcement Learning

1.4 Advanced Topics in Deep Reinforcement Learning

1.5 Summary

1.6 Bibliographic Notes

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 3. Geddes, K.O., Czapor, S.R., Labahn, G.: *Algorithms for Computer Algebra*. Kluwer, Boston (1992)
 4. Hamburger, C.: Quasimonotonicity, regularity and duality for nonlinear systems of partial differential equations. *Ann. Mat. Pura. Appl.* **169**, 321–354 (1995)
 5. Slifka, M.K., Whitton, J.L.: Clinical implications of dysregulated cytokine production. *J. Mol. Med.* (2000) doi: 10.1007/s001090000086
 6. J. Dod, in *The Dictionary of Substances and Their Effects*, Royal Society of Chemistry. (Available via DIALOG, 1999), <http://www.rsc.org/dose/title of subordinate document>. Cited 15 Jan 1999
 7. H. Ibach, H. Lüth, *Solid-State Physics*, 2nd edn. (Springer, New York, 1996), pp. 45–56
 8. S. Preuss, A. Demchuk Jr., M. Stuke, *Appl. Phys. A* **61**
 9. M.K. Slifka, J.L. Whitton, *J. Mol. Med.*, doi: 10.1007/s001090000086
 10. S.E. Smith, in *Neuromuscular Junction*, ed. by E. Zaimis. *Handbook of Experimental Pharmacology*, vol 42 (Springer, Heidelberg, 1976), p. 593
 11. Calfee, R. C., & Valencia, R. R. (1991). *APA guide to preparing manuscripts for journal publication*. Washington, DC: American Psychological Association.
 12. Dod, J. (1999). Effective substances. In: *The dictionary of substances and their effects*. Royal Society of Chemistry. Available via DIALOG. <http://www.rsc.org/dose/Effective substances>. Cited 15 Jan 1999.
 13. Harris, M., Karper, E., Stacks, G., Hoffman, D., DeNiro, R., Cruz, P., et al. (2001). Writing labs and the Hollywood connection. *J Film Writing*, 44(3), 213–245.

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15. Kreger, M., Brindis, C.D., Manuel, D.M., Sassoubre, L. (2007). Lessons learned in systems change initiatives: benchmarks and indicators. *American Journal of Community Psychology*, doi: 10.1007/s10464-007-9108-14.
16. Alber John, Daniel C. O'Connell, and Sabine Kowal. 2002. Personal perspective in TV interviews. *Pragmatics* 12:257–271
17. Cameron, Deborah. 1997. Theoretical debates in feminist linguistics: Questions of sex and gender. In *Gender and discourse*, ed. Ruth Wodak, 99–119. London: Sage Publications.
18. Cameron, Deborah. 1985. *Feminism and linguistic theory*. New York: St. Martin's Press.
19. Dod, Jake. 1999. Effective substances. In: The dictionary of substances and their effects. Royal Society of Chemistry. Available via DIALOG.
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20. Suleiman, Camelia, Daniel C. O'Connell, and Sabine Kowal. 2002. 'If you and I, if we, in this later day, lose that sacred fire...': Perspective in political interviews. *Journal of Psycholinguistic Research*. doi: 10.1023/A:1015592129296.
21. Brown B, Aaron M (2001) The politics of nature. In: Smith J (ed) The rise of modern genomics, 3rd edn. Wiley, New York
22. Dod J (1999) Effective Substances. In: The dictionary of substances and their effects. Royal Society of Chemistry. Available via DIALOG.
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23. Slifka MK, Whitton JL (2000) Clinical implications of dysregulated cytokine production. *J Mol Med*, doi: 10.1007/s001090000086
24. Smith J, Jones M Jr, Houghton L et al (1999) Future of health insurance. *N Engl J Med* 341:325–329
25. South J, Blass B (2001) The future of modern genomics. Blackwell, London

Chapter 2

Mathematics in Deep Reinforcement Learning

Abstract

2.1 Reinforcement Learning Foundations

2.2 Deep Learning Foundations

2.3 Deep Reinforcement Learning Foundations

2.4 Performance Evaluations

2.4.1 Offline Performance Metrics

2.4.2 Online Performance Metrics

2.4.3 A/B Testing

2.4.4 Interleaving

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13. Harris, M., Karper, E., Stacks, G., Hoffman, D., DeNiro, R., Cruz, P., et al. (2001). Writing labs and the Hollywood connection. *J Film Writing*, 44(3), 213–245.
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Chapter 3

Deep Reinforcement Learning Models

3.1 General Functionalities of Deep Models

3.1.1 Policy Approximation Based

3.1.2 Value Function Approximation Based

3.2 Deep Embeddings

3.3 Transformers in Reinforcement Learning Models

3.4 CNN-based Reinforcement Learning Models

3.5 RNN-based Reinforcement Learning Models

3.6 Hybrid Deep Reinforcement Learning Models

3.7 Hybrid Reinforcement Learning Models

3.8 Advanced Network Components

3.8.1 Attention

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Chapter 4

Emperical Deep Reinforcement Learning Systems

4.1 DRL In Robotics

4.2 DRL In Commerce

4.3 DRL In Medications

4.4 DRL In Education

4.5 DRL In Civilization

4.6 DRL In Simulations

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14. O'Neil, J. M., & Egan, J. (1992). Men's and women's gender role journeys: Metaphor for healing, transition, and transformation. In B. R. Wainrig (Ed.), *Gender issues across the life cycle* (pp. 107–123). New York: Springer.
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24. Smith J, Jones M Jr, Houghton L et al (1999) Future of health insurance. *N Engl J Med* 341:325–329
25. South J, Blass B (2001) *The future of modern genomics*. Blackwell, London

Chapter 5

Performance Evaluations

5.0.1 Offline Performance Metrics

5.0.2 Online Performance Metrics

5.0.3 A/B Testing

5.0.4 Interleaving

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 6. J. Dod, in *The Dictionary of Substances and Their Effects*, Royal Society of Chemistry. (Available via DIALOG, 1999), [http://www.rsc.org/dose/title of subordinate document](http://www.rsc.org/dose/title%20of%20subordinate%20document). Cited 15 Jan 1999
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 12. Dod, J. (1999). Effective substances. In: *The dictionary of substances and their effects*. Royal Society of Chemistry. Available via DIALOG. [http://www.rsc.org/dose/Effective substances](http://www.rsc.org/dose/Effective%20substances). Cited 15 Jan 1999.
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Chapter 6

Advanced Topics

6.1 Memorization

6.2 Alignment of Target Network

6.3 Policy Drift and the Solutions

6.4 Sociality and Trust

6.5 Attack Resistance

6.6 Privacy Preservation

6.7 Personalization

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 6. J. Dod, in *The Dictionary of Substances and Their Effects*, Royal Society of Chemistry. (Available via DIALOG, 1999), <http://www.rsc.org/dose/title of subordinate document>. Cited 15 Jan 1999
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 12. Dod, J. (1999). Effective substances. In: *The dictionary of substances and their effects*. Royal Society of Chemistry. Available via DIALOG. <http://www.rsc.org/dose/Effective substances>. Cited 15 Jan 1999.

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25. South J, Blass B (2001) The future of modern genomics. Blackwell, London

Chapter 7

Empericcal Researches Ongoing

7.1 Adaptations of Neuroscience

7.2 Future of Deep Reinforcement Learning

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 2. Dod, J.: Effective substances. In: *The Dictionary of Substances and Their Effects*. Royal Society of Chemistry (1999) Available via DIALOG. [http://www.rsc.org/dose/title of subordinate document](http://www.rsc.org/dose/title%20of%20subordinate%20document). Cited 15 Jan 1999
 3. Geddes, K.O., Czapor, S.R., Labahn, G.: *Algorithms for Computer Algebra*. Kluwer, Boston (1992)
 4. Hamburger, C.: Quasimonotonicity, regularity and duality for nonlinear systems of partial differential equations. *Ann. Mat. Pura. Appl.* **169**, 321–354 (1995)
 5. Slifka, M.K., Whitton, J.L.: Clinical implications of dysregulated cytokine production. *J. Mol. Med.* (2000) doi: 10.1007/s001090000086
 6. J. Dod, in *The Dictionary of Substances and Their Effects*, Royal Society of Chemistry. (Available via DIALOG, 1999), [http://www.rsc.org/dose/title of subordinate document](http://www.rsc.org/dose/title%20of%20subordinate%20document). Cited 15 Jan 1999
 7. H. Ibach, H. Lüth, *Solid-State Physics*, 2nd edn. (Springer, New York, 1996), pp. 45–56
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 10. S.E. Smith, in *Neuromuscular Junction*, ed. by E. Zaimis. *Handbook of Experimental Pharmacology*, vol 42 (Springer, Heidelberg, 1976), p. 593
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Appendix A

Appendix

All's well that ends well

A.1 Math Appendix

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Index

acronyms, list of, ix
glossary, 31

symbols, list of, ix