Automatic game playing with DL

Abdullah Al Forkan
Electronic Engineering
Hochschule Hamm-Lippstadt
Lippstadt, Germany
Abdullah-al.forkan@stud.hshl.de

***Abstract*—Automatic game playing with deep learning represents a dynamic and transformative intersection of artificial intelligence and gaming. This field harnesses the power of deep neural networks, often in the form of convolutional and recurrent networks, to train intelligent agents capable of mastering a wide range of games autonomously. The core paradigm employed in this endeavor is reinforcement learning, wherein these agents learn to maximize rewards by making informed decisions within a game environment.**

I. Introduction

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II. DEEP LEARNING algorithms for games

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A. Convolutional Neural Networks (CNNs)

B. Long Short Term Memory Networks (LSTMs

C. Recurrent Neural Networks (RNNs)

D. Generative Adversarial Networks (GANs)

E. Radial Basis Function Networks (RBFNs)

F. Multilayer Perceptrons (MLPs)

G. Self Organizing Maps (SOMs)

H. Deep Belief Networks (DBNs)

I. Restricted Boltzmann Machines(RBMs)

J. Autoencoders

III. Deep learning techniques

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A. Dropout

B. Rectified linear unit

C. Stochastic gradient descent

D. Batch normalization

IV. My Game

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A. Game

B. Players

C. Strategies

D. Payoffs

E. Best response

F. Nash equilibrium)

G. Self Organizing Maps (SOMs)

H. Shapley function

I. Minimax theorem

J. Autoencoders

V. Application of Deep Learning in My Game

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A. Implementation environment

B. Equations

C. Figures and Tables

D. challenges

E. Results

Conclusions

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References

[1]. [2]. [3]
[4]

References

[1] Silver, D., Schrittwieser, J., Simonyan, K., et al. (2017). "Mastering Chess and Shogi by Self-Play with a General Reinforcement Learning Algorithm." Nature, 551(7676), 354-359.

[2] Silver, D., Huang, A., Maddison, C. J., et al. (2016). "Mastering the Game of Go with Deep Neural Networks and Tree Search." Nature, 529(7587), 484-489.

[3] Mnih, V., Kavukcuoglu, K., Silver, D., et al. (2015). "Human-level Control through Deep Reinforcement Learning." Nature, 518(7540), 529-533.

[4] Schulman, J., Wolski, F., Dhariwal, P., et al. (2017). "Proximal Policy Optimization Algorithms." arXiv preprint arXiv:1707.06347.