# Research & Project – HW2

Keivan Ipchi Hagh - 9831073

## الف)

1. جست و جو اولیه در Google (2 صفحه اول) با استفاده از کلید واژه های زیر
   a. Deep Neuroevolution
   b. Evolution Strategies
   c. NEAT Algorithm (Neuroevolution of augmenting topologies)
   d. ES vs SGD
   e. Alternative for Training Deep Neural Networks
2. جست و جو فراتر در سایت arxiv.org و مطالعه منابع مرتبط از طریق ناشر ها
3. یافتن مقاله های مرتبط از طریق گراف دانش در سایت connectedpapers.com توسط کلید واژه های بخش اول و مقاله های یافته شده

## ب)

**[1]**

**Title:** *Safe Mutations for Deep and Recurrent Neural Networks through Output Gradients*

**Authors:** *Joel Lehman, Jay Chen, Jeff Clune, Kenneth O. Stanley*

**Published In:** *arXiv:1712.06563*

**Citations:** *67*

**h-Index:** *13*

**Impact Factor:** *1.8*

**Refereed citations:** -

**[2]**

**Title:** *On the Relationship Between the OpenAI Evolution Strategy and Stochastic Gradient Descent*

**Authors:** *Xingwen Zhang, Jeff Clune, Kenneth O. Stanley*

**Published In:** *arXiv:1712.06564*

**Citations:** *38*

**h-Index:** *25*

**Impact Factor:** *2*

**Refereed citations:** *2*

**[3]**

**Title:** *ES Is More Than Just a Traditional Finite-Difference Approximator*

**Authors:** *Joel Lehman, Jay Chen, Jeff Clune, Kenneth O. Stanley*

**Published In:** *arXiv:1712.06568*

**Citations:** *72*

**h-Index:** *22*

**Impact Factor:** *3.8*

**Refereed citations:** *3*

**[4]**

**Title:** *Improving Exploration in Evolution Strategies for Deep Reinforcement Learning via a Population of Novelty-Seeking Agents*

**Authors:** *Edoardo Conti*, *Vashisht Madhavan*, *Felipe Petroski Such*, *Joel Lehman*, *Kenneth O. Stanley*, *Jeff Clune*

**Published In:** *arXiv:1712.06560*

**Citations:** *235*

**h-Index:** *21*

**Impact Factor:** *7.3*

**Refereed citations:** *2*

**[5]**

**Title:** *Simple random search provides a competitive approach to reinforcement learning*

**Authors:** *Horia Mania*, *Aurelia Guy*, *Benjamin Recht*

**Published In:** *arXiv:1803.07055*

**Citations:** *237*

**h-Index:** *6*

**Impact Factor:** *1.3*

**Refereed citations:** *1*

**[6]**

**Title:** *Deep Neuroevolution: Genetic Algorithms Are a Competitive Alternative for Training Deep Neural Networks for Reinforcement Learning*

**Authors:** *Felipe Petroski Such*, *Vashisht Madhavan*, *Edoardo Conti*, *Joel Lehman*, *Kenneth O. Stanley*, *Jeff Clune*

**Published In:** *arXiv:1712.06567*

**Citations:** *572*

**h-Index:** *5*

**Impact Factor:** *2.7*

**Refereed citations:** *16*

**[7]**

**Title:** *Evolution Strategies as a Scalable Alternative to Reinforcement Learning*

**Authors:** *Tim Salimans, Jonathan Ho, Xi Chen, Szymon Sidor, Ilya Sutskever*

**Published In:** arXiv:1703.03864

**Citations:** *1056*

**h-Index:** *10*

**Impact Factor:** *9*

**Refereed citations:** *20*

**[8]**

**Title:** *Improving reinforcement learning algorithms: towards optimal learning rate policies*

**Authors:** *Othmane Mounjid, Charles-Albert Lehalle*

**Published In:** *arXiv:1911.02319*

**Citations:** *76*

**h-Index:** *1.5?*

**Impact Factor:** -

**Refereed citations:** *0*

**[9]**

**Title:** *Evolving Neural Networks through a Reverse Encoding Tree*

**Authors:** *Haoling Zhang, Chao-Han Huck Yang, Hector Zenil, Narsis A. Kiani, Yue Shen, Jesper N. Tegner*

**Published In:** *arXiv:2002.00539*

**Citations:** *4*

**h-Index:** *3*

**Impact Factor:** -

**Refereed citations:** -

**[10]**

**Title:** *Rainbow: Combining Improvements in Deep Reinforcement Learning*

**Authors:** *Matteo Hessel, Joseph Modayil, Hado van Hasselt, Tom Schaul, Georg Ostrovski, Will Dabney, Dan Horgan, Bilal Piot, Mohammad Azar, David Silver*

**Published In:** *arXiv:1710.02298*

**Citations:** *1393*

**h-Index:** *35*

**Impact Factor:** *13.2*

**Refereed citations:** *3*

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## ج)

دو معیار دیگر ارزیابی eigenfactor و Refereed citations است. معیار eigenfactor تعداد مقاله هایی که با استفاده از مقاله کنونی منتشر شده اند و در JCR آمده اند را مورد بررسی قرار میدهد. معیار Refereed citations صرفا تعداد مقاله هایی به از مقاله کنونی رفرنس داده اند را مورد بررسی قرار میدهد. معیار دوم در ارزیابی مقاله های بخش **ب** استفاده شده است.

## د)

مقالات با استفاده از h-index و در صورت برابری توسط Impact Factor اولویت بندی شده اند:

1. *Rainbow: Combining Improvements in Deep Reinforcement Learning*
2. *On the Relationship Between the OpenAI Evolution Strategy and Stochastic Gradient Descent*
3. *ES Is More Than Just a Traditional Finite-Difference Approximator*
4. *Improving Exploration in Evolution Strategies for Deep Reinforcement Learning via a Population of Novelty-Seeking Agents*
5. *Safe Mutations for Deep and Recurrent Neural Networks through Output Gradients*
6. *Evolution Strategies as a Scalable Alternative to Reinforcement Learning*
7. *Simple random search provides a competitive approach to reinforcement learning*
8. *Deep Neuroevolution: Genetic Algorithms Are a Competitive Alternative for Training Deep Neural Networks for Reinforcement Learning*
9. *Evolving Neural Networks through a Reverse Encoding Tree*
10. Improving reinforcement learning algorithms: towards optimal learning rate policies