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	authors	• Urvil Nileshbhai Jivani • Omatharv Bharat Vaidya • Anwesh Bhattacharya • Snehanshu Saha	**authors**	• Urvil Nileshbhai Jivani • Omatharv Bharat Vaidya • Anwesh Bhattacharya • Snehanshu Saha	DUPLICATES	52
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	urls	• http://arxiv.org/pdf/2104.04795v2 • http://arxiv.org/abs/2104.04795v2 • http://arxiv.org/pdf/2104.04795v2	**urls**	• https://www.semanticscholar.org/paper/950790484963e78065cab49e5c4a7e5dfd560986		
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	abstract	This paper introduces application of the Exponentially Averaged Momentum Particle Swarm Optimization (EM-PSO) as a derivative-free optimizer for Neural Networks. It adopts PSO's major advantages such as search space exploration and higher robustness to local minima compared to gradient-descent optimizers such as Adam. Neural network based solvers endowed with gradient optimization are now being used to approximate solutions to Differential Equations. Here, we demonstrate the novelty of EM-PSO in approximating gradients and leveraging the property in solving the Schr\"odinger equation, for the Particle-in-a-Box problem. We also provide the optimal set of hyper-parameters supported by mathematical proofs, suited for our algorithm.	**abstract**	This paper introduces the application of the Exponentially Averaged Momentum Particle Swarm Optimization (EM-PSO) as a derivative-free optimizer for Neural Networks. It adopts PSO's major advantages such as search space exploration and higher robustness to local minima compared to gradient-descent optimizers such as Adam. Neural network based solvers endowed with gradient optimization are now being used to approximate solutions to Differential Equations. Here, we demonstrate the novelty of EM-PSO in approximating gradients and leveraging the property in solving the SchrÃ¶dinger equation, for the Particle-in-a-Box problem. We also provide the optimal set of hyper-parameters supported by mathematical proofs, suited for our algorithm11Snehanshu Saha would like to thank the Science and Engineering Research Board (SERB), DST, Government of India, for supporting our research (project reference number: EMR/2016/005687)..		
	versions		**versions**			