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authors	Sylvain LaizetPanagiotis Tzirakis	title	Poisson CNN: Convolutional neural networks for the solution of the Poisson equation on a Cartesian mesh 2019-10-18 00:00:00		
	 Georgios Rizos Björn Schuller 	source	SupportedSources.PAPERS WITH CODE		
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title	Poisson CNN: Convolutional neural networks for the solution of the Poisson equation on a Cartesian mesh	volume		╡	
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journal	Data-centric engineering	urls	https://github.com/aligirayhanozbay/poisson_CNN		
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id	id984902111399467840	abstract	prediction and the target. Even when predicting on grids denser than previously encountered, our model		
abstract			demonstrates encouraging capacity to reproduce the correct solution profile. The proposed model, which		
versions		versions	outperforms well-known neural network models, can be included in a CFD solver to help with solving the Poisson equation. Analytical test cases indicate that our CNN architecture is capable of predicting the correct solution of a Poisson problem with mean percentage errors below 10%, an improvement by comparison to the first step of conventional iterative methods. Predictions from our model, used as the initial guess to iterative algorithms like Multigrid, can reduce the RMS error after a single iteration by more than 90% compared to a zero initial guess.		