cases	doc_1		doc_2		decision	id
	authors	• Ranganath Krishnan • Mahesh Subedar • Omesh Tickoo	**authors**	• Ranganath Krishnan and Mahesh Subedar and Omesh Tickoo	DUPLICATES	15
	title	Specifying Weight Priors in Bayesian Deep Neural Networks with Empirical Bayes	**title**	Specifying Weight Priors in Bayesian Deep Neural Networks with Empirical Bayes		
	publication_date	2020-04-03 00:00:00	**publication_date**	2019-12-28 00:00:00		
	source	SupportedSources.INTERNET_ARCHIVE	**source**	SupportedSources.INTERNET_ARCHIVE		
	journal	Association for the Advancement of Artificial Intelligence (AAAI)	**journal**			
	volume		**volume**			
	doi	10.1609/aaai.v34i04.5875	**doi**			
	urls	• https://web.archive.org/web/20201103201549/https://aaai.org/ojs/index.php/AAAI/article/download/5875/5731	**urls**	• https://web.archive.org/web/20200321003532/https://arxiv.org/pdf/1906.05323v3.pdf		
	id	id1568922700264953863	**id**	id8981172468559405281		
	abstract	Stochastic variational inference for Bayesian deep neural network (DNN) requires specifying priors and approximate posterior distributions over neural network weights. Specifying meaningful weight priors is a challenging problem, particularly for scaling variational inference to deeper architectures involving high dimensional weight space. We propose MOdel Priors with Empirical Bayes using DNN (MOPED) method to choose informed weight priors in Bayesian neural networks. We formulate a two-stage hierarchical modeling, first find the maximum likelihood estimates of weights with DNN, and then set the weight priors using empirical Bayes approach to infer the posterior with variational inference. We empirically evaluate the proposed approach on real-world tasks including image classification, video activity recognition and audio classification with varying complex neural network architectures. We also evaluate our proposed approach on diabetic retinopathy diagnosis task and benchmark with the state-of-the-art Bayesian deep learning techniques. We demonstrate MOPED method enables scalable variational inference and provides reliable uncertainty quantification.	**abstract**	Stochastic variational inference for Bayesian deep neural network (DNN) requires specifying priors and approximate posterior distributions over neural network weights. Specifying meaningful weight priors is a challenging problem, particularly for scaling variational inference to deeper architectures involving high dimensional weight space. We propose MOdel Priors with Empirical Bayes using DNN (MOPED) method to choose informed weight priors in Bayesian neural networks. We formulate a two-stage hierarchical modeling, first find the maximum likelihood estimates of weights with DNN, and then set the weight priors using empirical Bayes approach to infer the posterior with variational inference. We empirically evaluate the proposed approach on real-world tasks including image classification, video activity recognition and audio classification with varying complex neural network architectures. We also evaluate our proposed approach on diabetic retinopathy diagnosis task and benchmark with the state-of-the-art Bayesian deep learning techniques. We demonstrate MOPED method enables scalable variational inference and provides reliable uncertainty quantification.		
	versions		**versions**			