cases	doc_1		doc_2		decision	id
	authors	• Elad Dvash • Yam Peleg • Shay Zucker • Raja Giryes	**authors**	• Elad Dvash • Yam Peleg • Shay Zucker • Raja Giryes	NOT DUPLICATES	192
	title	Shallow Transits - Deep Learning II: Identify Individual Exoplanetary Transits in Red Noise using Deep Learning	**title**	Shallow Transitsâ€”Deep Learning. II. Identify Individual Exoplanetary Transits in Red Noise using Deep Learning		
	publication_date	2022-03-15 00:00:00	**publication_date**	2022-04-27 00:00:00		
	source	SupportedSources.INTERNET_ARCHIVE	**source**	SupportedSources.INTERNET_ARCHIVE		
	journal		**journal**	American Astronomical Society		
	volume		**volume**			
	doi		**doi**	10.3847/1538-3881/ac5ea2		
	urls	• https://web.archive.org/web/20220518043522/https://arxiv.org/pdf/2203.08017v1.pdf	**urls**	• https://web.archive.org/web/20220505180411/https://iopscience.iop.org/article/10.3847/1538-3881/ac5ea2/pdf		
	id	id-1064072209520396953	**id**	id-4625027815550693285		
	abstract	In a previous paper, we have introduced a deep learning neural network that should be able to detect the existence of very shallow periodic planetary transits in the presence of red noise. The network in that feasibility study would not provide any further details about the detected transits. The current paper completes this missing part. We present a neural network that tags samples that were obtained during transits. This is essentially similar to the task of identifying the semantic context of each pixel in an image -- an important task in computer vision, called 'semantic segmentation', which is often performed by deep neural networks. The neural network we present makes use of novel deep learning concepts such as U-Nets, Generative Adversarial Networks (GAN), and adversarial loss. The resulting segmentation should allow further studies of the light curves which are tagged as containing transits. This approach towards the detection and study of very shallow transits is bound to play a significant role in future space-based transit surveys such as PLATO, which are specifically aimed to detect those extremely difficult cases of long-period shallow transits. Our segmentation network also adds to the growing toolbox of deep learning approaches which are being increasingly used in the study of exoplanets, but so far mainly for vetting transits, rather than their initial detection.	**abstract**	In a previous paper, we introduced a deep learning neural network that should be able to detect the existence of very shallow periodic planetary transits in the presence of red noise. The network in that feasibility study would not provide any further details about the detected transits. The current paper completes this missing part. We present a neural network that tags samples that were obtained during transits. This is essentially similar to the task of identifying the semantic context of each pixel in an imageâ€”an important task in computer vision, called "semantic segmentation," which is often performed by deep neural networks. The neural network we present makes use of novel deep learning concepts such as U-Nets, Generative Adversarial Networks, and adversarial loss. The resulting segmentation should allow further studies of the light curves that are tagged as containing transits. This approach toward the detection and study of very shallow transits is bound to play a significant role in future space-based transit surveys such as PLATO, which are specifically aimed to detect those extremely difficult cases of long-period shallow transits. Our segmentation network also adds to the growing toolbox of deep learning approaches that are being increasingly used in the study of exoplanets; but, so far mainly for vetting transits, rather than their initial detection.		
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