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	authors	<ul style="list-style-type: none">• Xing Su• Shan Xue• Fanzhen Liu• Jia Wu• Jian Yang• Chuan Zhou• Wenbin Hu• Cecile Paris• Surya Nepal• Di Jin• Quan Z. Sheng• Philip S. Yu	authors	<ul style="list-style-type: none">• Xing Su• Shan Xue• Fanzhen Liu• Jia Wu• Jian Yang• Chuan Zhou• Wenbin Hu• Cecile Paris• Surya Nepal• Di Jin• Quan Z. Sheng• Philip S. Yu	DUPLICATES	10		
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	abstract	A community reveals the features and connections of its members that are different from those in other communities in a network. Detecting communities is of great significance in network analysis. Despite the classical spectral clustering and statistical inference methods, we notice a significant development of deep learning techniques for community detection in recent years with their advantages in handling high dimensional network data. Hence, a comprehensive overview of community detection's latest progress through deep learning is timely to academics and practitioners. This survey devises and proposes a new taxonomy covering different state-of-the-art methods, including deep learning-based models upon deep neural networks, deep nonnegative matrix factorization and deep sparse filtering. The main category, i.e., deep neural networks, is further divided into convolutional networks, graph attention networks, generative adversarial networks and autoencoders. The survey also summarizes the popular benchmark data sets, evaluation metrics, and open-source implementations to address experimentation settings. We then discuss the practical applications of community detection in various domains and point to implementation scenarios. Finally, we outline future directions by suggesting challenging topics in this fast-growing deep learning field.	abstract	A community reveals the features and connections of its members that are different from those in other communities in a network. Detecting communities is of great significance in network analysis. Despite the classical spectral clustering and statistical inference methods, we notice a significant development of deep learning techniques for community detection in recent years with their advantages in handling high dimensional network data. Hence, a comprehensive overview of community detection's latest progress through deep learning is timely to academics and practitioners. This survey devises and proposes a new taxonomy covering different state-of-the-art methods, including deep learning-based models upon deep neural networks, deep nonnegative matrix factorization and deep sparse filtering. The main category, i.e., deep neural networks, is further divided into convolutional networks, graph attention networks, generative adversarial networks and autoencoders. The survey also summarizes the popular benchmark data sets, evaluation metrics, and open-source implementations to address experimentation settings. We then discuss the practical applications of community detection in various domains and point to implementation scenarios. Finally, we outline future directions by suggesting challenging topics in this fast-growing deep learning field.				
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