

An Analytical Review of Computational Drug Repurposing

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Abstract— Drug repurposing is a vital function in pharmaceutical fields that has gained popularity in recent years. Drug repurposing is the process of discovering new uses and indications for existing or failed drugs which on the contrary to experimental drug discovery, which is a costly, time-consuming, and risky process, is cost-effective and reliable; thus, a plethora of computational methodologies have been propounded to repurpose drugs in a large-scale manner by utilizing available high throughput data. The available literature, however, lacks a contemporary and comprehensive analysis of the current computational drug repurposing methodologies. In this paper, we suggested a systematic analysis of computational drug repurposing which consists of three main components: at the first segment, we categorize the computational drug repurposing methods based on their technical approach and artificial intelligence perspective and discuss the strength and weakness of various ways. Second, some general criteria are recommended to analyze our proposed categorization. In the third and final section, a qualitative comparison between each approach which is a guide to understanding their preference to one another demonstrated. Also, this systematic analysis can help in the efficient selection and improvements of drug repurposing techniques based on the nature of computational methods implemented on biological resources.

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<http://dx.doi.org/10.1109/TCBB.2019.2933825>