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Centrality ranking in multiplex networks using topologically biased random walks

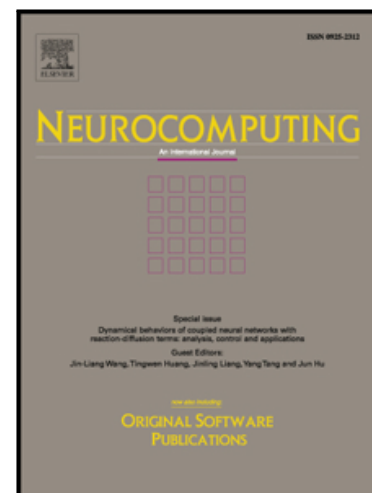
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Highlights

- A general expression of topologically biased random walks is proposed to do multiplex PageRank.
- The topologically biased multiplex PageRank is proposed to characterize the centrality rankings of nodes in multiplex networks.
- Depending on the nature of biases and the interaction of nodes between different layers, the biased multiplex PageRank is divided into the additive, multiplicative and combined cases.
- The proposed method is evaluated on two real-world multiplex network datasets, demonstrating that it can efficiently capture the significantly top-ranked nodes in multiplex networks by opportunistically tuning of the biases in the walks.

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