Wiener Fuzzy Neural Optimization through Shape-Aware Channelling in Nonlinear Networks for Sustainable Environment

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Abstract

Grand networks in conveyance systems, digital frameworks, and smart digital rostrum exhibit convoluted topology, nonlinear variability, gridlock sensitivity, and strapping synergy among components. Customary least track structuring is applied in a guaranteed dominance weight that is scant under catching universal basic sway, hesitancy transmission, and versatile determination process. This analysis study has forwarded an integration of scattered structure etched as Shape-Aware Suitable Channelling (SASC) that integrates systemic graph parameters, nonlinear modelling, and knowledge-built optimization. The scaffolding assimilates a Wiener-Listed global parametric grade to compute topological status, a degree-sensitive grid lock to provide hub weight, and a fuzzy model-2 representation is used to model the nonlinearity in edge manifests. A neural network model captures structure-aware channelling that encodes full-scale confidences, while a reinforcement knowledge stimulus actively intensifies trimming approaches by interacting with the network context. Conceptual investigation validates the standard boundary approximations that, coupled with knowledge-based constraints, neural continuity loss, and limit hypothesis. To converge on the ideal value operation, the neural parameter is fixed with a minimal neighbourhood, and the whole system is moved to a robust channelling. Comprehensive simulations over 30 individual runs deliver a 14.2% optimal channelling cost compared to that of the known Dijkstra channelling. The method produced a stable boundary under random edge removal, and the model furnished a measurable and mathematical-based output for flexible channelling in hesitant mass networks.

Keywords: Hesitancy, Mass-Channelling, Knowledge-built optimization, SASC, Grid-Lock, Non-linear.