Abstract

In this paper, a new way of optimizing fuzzy logic is introduced. This way is used to optimize the output of Interval Type-2 Fuzzy Logic controller by replacing the Defuzzification stage by the Optimization algorithm. The algorithm chooses the best crisp output variable from the type-reduced set which is the output of the Type-Reduction stage instead of averaging the set extremes which was performed by Defuzzification stage. Artificial Bee Colony optimization algorithm is used to optimize the Interval Type-2 Fuzzy Logic controller to manage the navigation of multiple mobile robots in indoor environments.

References

- Karnik, N. N. and Mendel, J. M. , "Type-2 Fuzzy Logic Systems: Type
An Optimized Interval Type-2 Fuzzy Logic Control Scheme based on Optimal Defuzzification

- Castillo, O., "Interval Type-2 Fuzzy Logic for Control Applications," IEEE International Conference on Granular Computing, San Jose, California, USA, 2010, pp. 79-84.
An Optimized Interval Type-2 Fuzzy Logic Control Scheme based on Optimal Defuzzification

- Michel, O. and et al, Cyberbotics'; Robot Curriculum, Cyberbotics Ltd., Wikibooks,
Index Terms

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