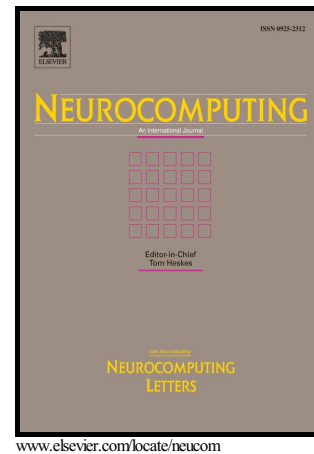


Author's Accepted Manuscript

Particle Filtering Approach to Membership Function Adjustment in Fuzzy Logic Systems

Jun Ho Chung, Jung Min Pak, Choon Ki Ahn, Sung Hyun You, Myo Taeg Lim, Moon Kyou Song



PII: S0925-2312(16)31168-7
DOI: <http://dx.doi.org/10.1016/j.neucom.2016.10.006>
Reference: NEUCOM17618

To appear in: *Neurocomputing*

Received date: 28 December 2015
Revised date: 16 September 2016
Accepted date: 12 October 2016

Cite this article as: Jun Ho Chung, Jung Min Pak, Choon Ki Ahn, Sung Hyun You, Myo Taeg Lim and Moon Kyou Song, Particle Filtering Approach to Membership Function Adjustment in Fuzzy Logic Systems, *Neurocomputing* <http://dx.doi.org/10.1016/j.neucom.2016.10.006>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and a review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Particle Filtering Approach to Membership Function Adjustment in Fuzzy Logic Systems

Jun Ho Chung¹, Jung Min Pak², Choon Ki Ahn^{*1}, Sung Hyun You¹, Myo Taeg Lim¹
and Moon Kyou Song³

¹School of Electrical Engineering, Korea University, 145, Anam-ro, Seongbuk-gu,
Seoul, Korea,

E-mail: {junho9503, hironaka, ysh88, mlim}@korea.ac.kr

²Department of Electrical Engineering, Wonkwang University,
344-2, Shinyong-dong, Iksan, 570-749 Korea, E-mail: destin11@wku.ac.kr

³Department of Electronics Convergence Engineering, Wonkwang University,
344-2, Shinyong-dong, Iksan, Korea, E-mail: mk song@wku.ac.kr

Abstract

The fuzzy logic system has been a popular tool for modeling nonlinear systems in recent years. In the fuzzy logic system, the shape of the membership function has a significant effect on the modeling accuracy. Thus, membership function adjustment methods have been studied and developed. However, in highly nonlinear systems, the existing membership function adjustment method based on the extended Kalman filter (EKF) may exhibit poor performance due to the linearization error. In this paper, to overcome the drawback of the EKF-based membership function adjustment (EKFMFA), we propose a new membership function adjustment method based on the particle filter (PF). The proposed PF-based membership function adjustment (PFMFA) does not suffer from performance degradation due to the

*Corresponding author (Tel:+82-2-3290-4831, E-mail: hironaka@korea.ac.kr)

Download English Version:

<https://daneshyari.com/en/article/4947760>

Download Persian Version:

<https://daneshyari.com/article/4947760>

[Daneshyari.com](https://daneshyari.com)