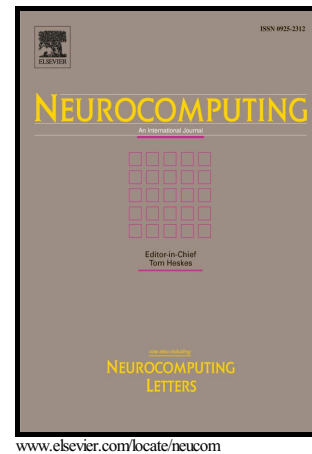


# Author's Accepted Manuscript

Sampled containment control for multi-agent systems with nonlinear dynamics

Yan Wang, Hong Zhou, Zhenhua Wang, Zhiwei Liu, Wenshan Hu



PII: S0925-2312(16)31035-9  
DOI: <http://dx.doi.org/10.1016/j.neucom.2016.09.020>  
Reference: NEUCOM17549

To appear in: *Neurocomputing*

Received date: 8 May 2016  
Revised date: 1 August 2016  
Accepted date: 12 September 2016

Cite this article as: Yan Wang, Hong Zhou, Zhenhua Wang, Zhiwei Liu and Wenshan Hu, Sampled containment control for multi-agent systems with nonlinear dynamics, *Neurocomputing* <http://dx.doi.org/10.1016/j.neucom.2016.09.020>

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

# Sampled containment control for multi-agent systems with nonlinear dynamics

Yan Wang, Hong Zhou, Zhenhua Wang, Zhiwei Liu\*, Wenshan Hu\*\*

## Abstract

In this paper, the sampled containment control scheme is proposed to study leader-following consensus problem in second-order systems. Compared to existing investigations, we develop the containment control to the sampled-data case for sake of the movements of the agents and the limited capacities of the communication. Furthermore, it is noted that the proposed algorithm is discussed for nonlinear dynamics which is much more challenging rather than linear ones. By using the LMIs and Lyapunov method, some useful sufficient conditions are presented. Finally the numerical examples are included to validate the effectiveness of proposed algorithms.

**Keywords:** Containment control, sampled-data, consensus, nonlinear dynamics.

## I. INTRODUCTION

Due to the wide application of the digital processor, the research of the sampled-data problems [1] [2] [3] [4] [5] [6] [7] [8] has attracted much attention. The digital processor can only process discrete data and obtain the discrete control signal which can be acquired as a continuous signal by a zero-order holder. In these sampled-data systems, the control signals are piecewise continuous. The effective method to analyze and deal with the sampled-data systems is the input-delay method. That is, the systems are viewed as continuous systems with a time-varying delay

This work was supported in part by the National Natural Science Foundation of China under Grants 61304152 and 6374034. Yan Wang, Hong Zhou, Zhenhua Wang, Zhiwei Liu, and Wenshan Hu are with the Department of Automation, Wuhan University, Wuhan, 430072, P. R. China.

Zhenhua Wang is with China Ship Development and Design Center (CSDDC), Wuhan, 430064, P. R. China.

\*Corresponding author. Email: liuzw@whu.edu.cn

\*\*Corresponding author. Email: wenshan.hu@whu.edu.cn

Download English Version:

<https://daneshyari.com/en/article/4948236>

Download Persian Version:

<https://daneshyari.com/article/4948236>

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