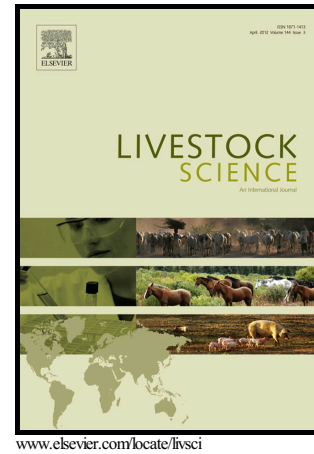


Author's Accepted Manuscript

Recognition and drinking behaviour analysis of individual pigs based on machine vision

Wei-xing Zhu, Yi-zheng Guo, Peng-peng Jiao, Chang-hua Ma, Chen Chen



PII: S1871-1413(17)30256-1
DOI: <http://dx.doi.org/10.1016/j.livsci.2017.09.003>
Reference: LIVSCI3288

To appear in: *Livestock Science*

Received date: 23 April 2017
Revised date: 3 September 2017
Accepted date: 5 September 2017

Cite this article as: Wei-xing Zhu, Yi-zheng Guo, Peng-peng Jiao, Chang-hua Ma and Chen Chen, Recognition and drinking behaviour analysis of individual pigs based on machine vision, *Livestock Science*, <http://dx.doi.org/10.1016/j.livsci.2017.09.003>

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 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.

Recognition and drinking behaviour analysis of individual pigs based on machine visionWei-xing Zhu^{a*}, Yi-zheng Guo^{a,b}, Peng-peng Jiao^b, Chang-hua Ma^a, Chen Chen^a^aSchool of Electrical and Information Engineering, Jiangsu University, Zhenjiang 212013, Jiangsu, China^bNanjing Normal University Taizhou College, Taizhou 225300, Jiangsu, China

wxzhu@ujs.edu.cn

guoyizheng0523@163.com.

*Corresponding author. Tel.: +86 051188797200.

ABSTRACT

Water consumption by individual pigs can be an interesting indicator of their health. A method using machine vision is proposed to (a) recognise the presence of an individual pig within the drinking zone and (b) analyse the vision images to determine if the pig is drinking. First, isolation of an individual pig within the drinking zone is extracted from the topview of the set of video sequences for group-housed pigs. Next, the distance between the individual pig and the drink nipple is calculated and used to determine whether the individual pig is in contact with the drink nipple. If yes, the colour moments, area, perimeter and other features of the pig are extracted. Then the features are normalised. The individual pig is recognised by computing the Euclidean distance between the pig and the standard sample. The contact time between an individual pig and the drink nipple is used to determine whether the pig is drinking. The pigsty contains 7 pigs and is monitored in real-time, and 140 video clips containing images of the individual pigs while drinking are captured. The correct (drinking) recognition rate for individual pigs is 90.7%. Our method differs from traditional methods in that it avoids any disturbance to the pigs, and it can be used for the recognition of individual pigs within a stress-free environment. Our results can provide a reference point and direction for exploration of other behaviours of topview group-housed pigs.

Keywords: Group-housed pigs; Object extraction; Individual pig recognition; Water use monitoring; Topview

1. Introduction

With the development of the modern pig industry and the increased use of the applications of

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات