Segmentation of Group-Housed Pigs using Concave-Points and Edge Information

*Hansol Baek, **Yeonwoo Chung, *Miso Ju, *Yongwha Chung, and *Daihee Park*(Pt10)*First-Third*
Dept. of Computer and Information Science, Korea University 2511 Sejong-ro, Sejong City, 339-770, KOREA
**Dept. of Applied Statistics, Korea University 145 Anam-ro, Seongbuk-gu, Seoul, 02841, Korea*
{hansol100, misoalth, william0516, ychungy, dhpark}@korea.ac.kr

Abstract— **Monitoring behaviour of weaning pigs with weak immune systems is important to reduce huge losses in pig farms. Even though various researches have been reported for monitoring environment of pig farms, segmenting each pig from touching-pigs is still entrenched as a difficult problem. In this paper, we propose a segmentation method for touching-pigs by using concave points and edge information in a video surveillance system. Especially, we interpret the segmentation problem as a time-series analysis problem in order to identify the concave points generated by touching-pigs. Based on the experimental results with the videos obtained from a domestic pig farm, we confirmed that the proposed method could accurately segment the touching-pigs.**

Keywords— ***Livestock Monitoring, Video Surveillance System, Objects Segmentation, Time-series Analysis***
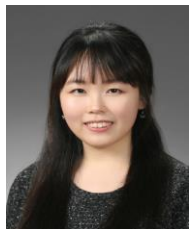
Hansol Baek
entrance into Korea University, Korea, in 2013

Yeonwoo Chung
entrance into Korea University, Korea, in 2014

Miso Ju
received the BE degree in Computer and Information Science from Korea University, Korea, in 2016

Yongwha Chung
received the BS and MS degrees from Hanyang University, Korea, in 1984 and 1986, respectively. He received the PhD degree from the University of Southern California, USA, in 1997. He worked for ETRI from 1986 to 2003 as a Team Leader. Currently, he is a professor in the Dept. of Computer and Information Science, Korea University. His research interests include video surveillance, parallel processing, and performance optimization.

Daihee Park
received the BS degree in mathematics from Korea University, Korea, in 1982, and his PhD degree in computer science from Florida State University, USA, in 1992. He joined Korea University in 1993 where he is currently a professor in the Dept. of Computer and Information Science. His research interests include data mining and intelligent database.