

# IOWA STATE UNIVERSITY

Agricultural and Biosystems Engineering

## Lie Tang

### Associate Professor

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### Education

Ph.D. Agricultural Engineering, 2002  
University of Illinois at Urbana-Champaign

M.S. Agricultural Engineering, 1994  
Zhejiang University, China

B.S. Electrical Engineering in Industrial  
Automation, 1989  
Jiangsu University of Science and Technology,  
China

### Honors and Awards

ISU Plant Science Institute Faculty Scholar  
(2015)

Member of Epsilon Pi Tau (2011)

Adjunct Professor, Jiangsu University (2011)

Adjunct Scientist, National Engineering  
Research Center for Information Technology  
in Agriculture (2011)

Newcomer Engineer of the Year, Iowa  
Section of ASABE (2009)

### Recent Publications

Supawadee Chaivivatrakul, **L. Tang**, M. Dailey,  
A. D. Nakarmi. 2014. Automatic corn plant  
trait characterization via 3D holographic  
reconstruction. *Computers and Electronics in  
Agriculture*, PP. 109-123. DOI information:  
10.1016/j.compag.2014.09.005

Nakarmi, A. D. and **L. Tang**. 2014. Within-Row  
spacing sensing of maize plants using 3D  
computer vision. *Biosystems Engineering*, PP.  
54-64 DOI Information: 10.1016/  
j.biosystemseng.2014.07.001

Nakarmi, A. D., **L. Tang**, H. Xin. 2014.  
Automated tracking and behavior  
quantification of laying hens using 3D  
computer vision and radio frequency  
identification technologies. *Transactions of  
the ASABE*.

Nakarmi, A. D. and **L. Tang**. 2012. Automatic  
Inter-plant spacing sensing at early growth  
stages using a 3D vision sensor. *Computers  
and Electronics in Agriculture* 82(3): 23-31.

Nakarmi, A. and **L. Tang**. 2012. Automatic  
Inter-plant spacing sensing at early growth  
stages using a 3D vision sensor. *Computers  
and Electronics in Agriculture*.

Jin, J., **L. Tang**. 2011. Coverage path planning  
on 3D terrain for arable farming. *Journal of  
Field Robotics* 28(3):424-440.

### Teaching

Dr. Tang teaches undergraduate and graduate courses such as AE363 –Agri-Industrial Applications of Electric Power and Electronics, TSM465–Automation Systems, and AE506–Applied Computational Intelligence for Agricultural and Biological Systems. He is also actively engaged in developing a new agricultural automation and robotics laboratory to offer students learning and research opportunities in advanced agricultural machinery engineering.

### Research

Dr. Tang's research has been concerned with agricultural automation, optimization, machine intelligence and robotics. He has many years of international research experience in Europe and US. He has developed an advanced real-time machine vision system for automated behavior monitoring for group-housed pigs in KULeuven (Belgium). During his PhD study he developed a sensing and control system for variable rate herbicide application system and an automated sensing system for plant spacing and population measurement. While he was on faculty in both KVL (Denmark) and Wageningen University (Netherlands), his research program was centered around the development of agricultural robotics and intelligent systems. Dr. Tang is currently continuing his research in developing advanced sensing, optimization and robotic technologies for agricultural production systems and high-throughput phenotyping systems. Some recent research projects include optimized coverage path planning for agricultural field equipment on 2D and 3D terrains, robotic mechanical intra-row weeding for vegetable crops, high-throughput infield plant sensing using 3D computer vision, robust navigation control for agricultural robotic vehicles, hyperspectral imaging for fungus detection, and real-time behavior monitoring for group-housed animals using 3D computer vision and RFID systems.

