Invitation to PhD defense of dissertation

Computer vision Analysis of Broiler Carcass and Viscera

By Anders Jørgensen

The defense will take place on Friday September 14th at 1 pm.
Venue: Room No. 3.529, Rendsburggade 14, Aalborg

The dissertation is the result of an industrial PhD study at IHFood A/S and the Department of Architecture, Design and Media Technology, Aalborg University, Denmark. The study has been funded by *Innovationsfonden*.

Assessment committee:

Associate Professor Georgios A. Triantafyllidis (Chairman)
Department of Architecture, Design and Media Technology
Aalborg University Copenhagen

Assistant Professor Paulo Luís Serras Lobato Correia
Instituto de Telecomunicações, Instituto Superior Técnico
Portugal

Senior Software Engineer Kristian Kirk
CLAAS E-Systems

PhD supervisors:

Professor Thomas B. Moeslund
Aalborg University, Department of Architecture, Design and Media Technology

Jens Fagertun
IHFood A/S

Mads Dabros
IHFood A/S

After the defense, the Department of Architecture, Design and Media Technology will host a reception in room 5.355 (lunch area, level 3).

Questions can be directed to Senior Secretary Lisbeth Dam (+4599403603 / ldam@create.aau.dk).

Summary of the PhD study

Poultry processing plants want to increase their slaughter rates, but the manual food safety inspection is holding it back. The veterinarians conducting the inspection are already hard pressed to keep up with inspection rates of more than 3 birds per second. To maintain a high quality in future products, we need an automatic computer vision system to handle the inspection.

This thesis focusses on the inspection of broiler viscera, an area that has received little attention from the research community in the past years. Both the viscera and the carcass are examined during the health inspection and are equally important for the condemnation decision. Through this work methods have been developed for segmentation and diagnosis of the viscera set. A method has been put forward for segmentation of the viscera using both RGB and RGB-D data. Diagnosis methods have been developed for classification of healthy/unhealthy viscera and for classification of the most common liver diseases.

Ground truth is obtained by having veterinarians grade a subset of the data. Three veterinarians graded the same samples and the variation in their labels indicate that the inspection task is indeed difficult. Small deviations in the veterinarians' threshold for when a disease is a disease can result in large variations even in an unhealthy/healthy categorization.

Data collection has been a crucial part of this work. The non-rigid nature of the viscera gives a high variation in both position and appearance of the organs. On top of this comes the many different diseases which individually have a large variation as well. A large dataset is therefore key if a developed inspection system should generalize well.