COMPUTER VISION:
VIEW FROM INDUSTRY – CRV

Erik Mullaart | July 4 2019

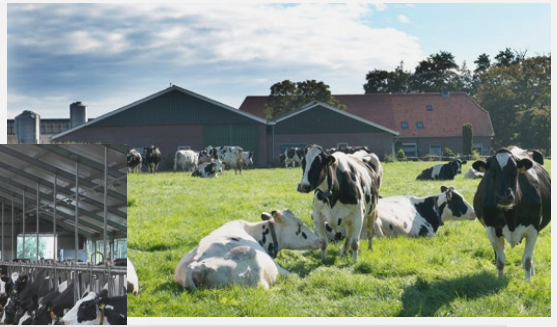
BETTER COWS | BETTER LIFE

COLLECTION PHENOTYPES

Special test farms for collection phenotypes

TopicsNorsvin Canada

Commercial farms



BETTER COWS | BETTER LIFE

GOAL

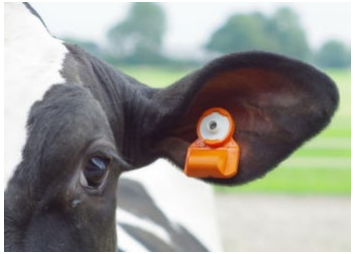
Cheap and large scale collection of phenotypes.

- **For our breeding program**
- **But also for farm management support**

Examples of phenotypes:

- Body condition score
- Infections of udder/claw
- Feed conversion
- ……

PHENOTYPING BY SENSORS



A lot of different sensors are available:

Disadvantages:

1. **Expensive (one cow one sensor)**

2. **Public perception: Not too much sensors on one cow**

Are camera a better solution????

Always lies early in the morning
She start eating immediatly
Like to scrub
Very relaxed

SCHIPHOL AIRPORT

AIM

Translate these video images into phenotypes

- **Images of several cameras should be used/combined**
- **Software/Artificial intelligence to analyse the images automatically**
- **Output is phenotype (i.e. behaviour)**

STARTS WITH TRACK& TRACE THE COWS

Can we regnonize and follow a cow???

https://www.youtube.com/watch?v=W-veyQ4eW1M

https://www.cainthus.com/technology

nedap
PERCENTAGE OF COWS LYING
PERCENTAGE (%)
100
80
60
40
20
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
TIME (hr)
BARN MAP
Afspelen (k)

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BARN MAP

BEHAVIOUR OF COWS

- **Determine daily pattern**
- **Disturbances might indicate issues (i.e. heat, illness, stress, etc)**

Review article

Implementation of machine vision for detecting behaviour of cattle and pigs

Abozar Nasirahmadi[a,b,*], Sandra A. Edwards[a], Barbara Sturm[a,b]

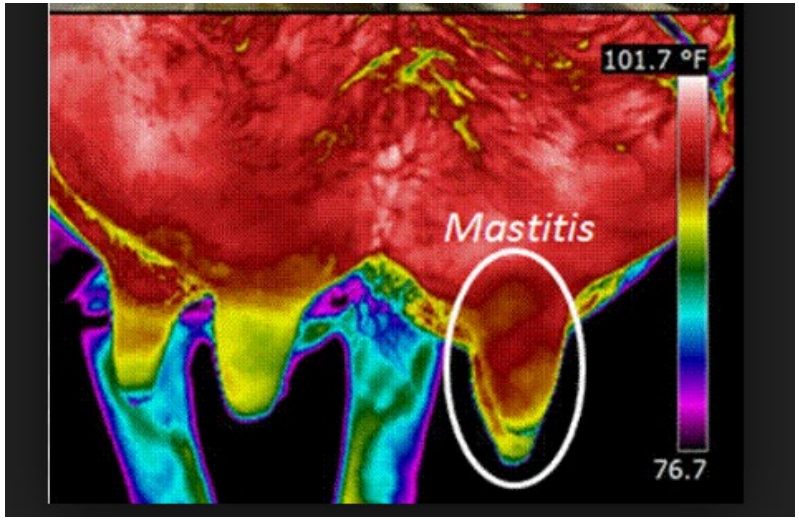
[a] School of Agriculture, Food and Rural Development, Newcastle University, Newcastle upon Tyne NE1 7RU, UK
[b] Department of Agricultural and Biosystems Engineering, University of Kassel, 37213 Witzenhausen, Germany

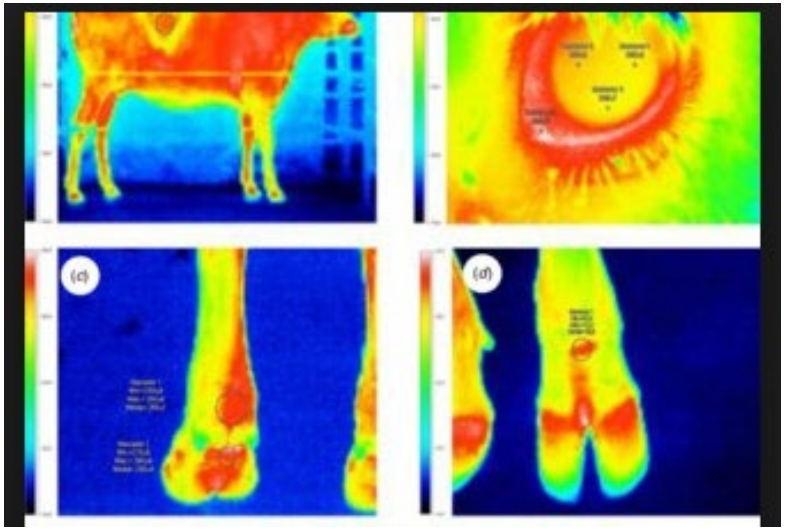
May, 2017 Int J Agric & Biol Eng Open Access at https://www.ijabe.org Vol. 10 No.3 165

Cow behavior recognition based on image analysis and activities

Gu Jingqiu[1,2,3,4], Wang Zhihai[1*], Gao Ronghua[2,3,4], Wu Huarui[2,3,4]

USE OF INFRA RED CAMERAS TO DETECT INFECTIONS





CONCLUSIONS

Need for collection of cheap phenotypes at large scale

- For breeding purposes
- Farm management

Cameras seems to be a good option for this

Our vision is that all (or most) phenotypes will be collected using cameras in 5-10 years from now.

Better cows, Better life