PigWatch
early automated detection of tail biting and aggression

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Pig Watch
Early warning system for aggression and tail biting

**DMRI**
- Own abattoir
- Conventional pig farming

**WUR**
- Animal – human interactions
- ‘Pig signals’

**FLI + FBN**
- Farmer network
- Pig behaviour research

**INRA**
- Haemoglobin scoring
- Movement sensors

**FiBL**
- Management ‘long tails’
- Communication

**anihwa**
Animal Health and Welfare ERA-Net
Ambition

PigWatch will

1. **train farmers** to identify warning signals by observing their animals (‘Eye of the Farmer’)

2. develop multi spectrum **camera** analyses to detect the presence of blood and hence detect lesions or abnormalities on **live pigs**

3. develop electronics for **activity monitoring** that can be included in the **ear tag** of the pigs

4. develop a **camera system** for automated lesion and tail length assessment in the **slaughter line**
1. Eye of the Farmer: protocol

- Newsletters
- Book: ‘Pig Signals’
- Quizes
- Video’s
1. Eye of the Farmer: video’s

https://pigwatch.net
2. Camera system detecting fresh blood
3. Activity monitoring through ear tags

- **Main characteristics:**
  - Light, water proof and chew resistant
  - Tri axial accelerometer
  - Micro-controller
  - Bluetooth Low Energy
  - Power supply

- **Data records:**
  - Android app
    - To connect to sensors
    - Data collection / formatting
  - Data stored on smartphone
3. Activity monitoring: conclusions

- Present results:
  - Strong diurnal variation of behavioural activity
  - Two sub peaks of activity: early morning and early afternoon

- Improvements:
  - Better connection between ear tags and the storage system
  - Better quality of the algorithm to detect specific behaviours
4. Tail length and lesions

Characterization of tail bites and tail wounds

- Normal tail conditions
- Grey zone
- Mild lesion
- Serious bite
4. Tail length and lesions: equipment
4. Tail length and lesions: positioning
4. Tail length and lesions: positioning

Steps in tail length analysis for cowId = 120

- Mask of pig region
- Location of tail end
- Curvature of border
- Center of tail region

Corrected tail length

- Predicted tail length [pix] vs. Measured tail length [cm]
- RMSE = 1.97
- R² = 0.95
4. Tail length and lesions: reports

- Moderately docked
- Small scratches
- Mild lesions

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**Distribution of Tail Lengths**

- Actual tail bites
- Arbitrary limits, can be adjusted
4. Tail length and lesions: reports

- Long tails
- Large number of shortened tails
- Relatively many ‘small lesions’
- Herd with moderate tail biting problem

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**Distribution of Tail Lengths**

- Actual tail bites
- Arbitrary limits, can be adjusted
- Overrepresentation of short tails
4. Tail length and lesions: opportunities

- Unprecedented, easily accessible, completely representative data
- One-page overview of tail length distribution for all pig producers
- Longitudinal monitoring of tail biting in a farm
- Investigation and documentation of compliance with quality assurance or tail docking regulation
- Identification of herds where intervention is needed