Early Detection of Mastitis in Dairy Cattle through Sensor Data Combination
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Cow Health Monitor

- InnovateUK 102083
- Supporting farmers in tackling animal health challenges
  - Metabolic diseases, such as ketosis and acidosis
  - Lameness
  - Mastitis
Partners

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Trial summary

• Trials on both research and commercial farms
  – SRUC Dumfries
  – Parkend Farm, Cowdenbeath (Agri Epi)
• Robot milkers and behaviour monitoring collars
  – Daily budget for rumination and eating behaviours
  – Milk conductivity
  – Constituents: fat, protein, lactose
  – Milking trends: visits/day, milking pattern, contribution, yield
• Across both trials, 300+ days of data across 200+ animals
• Mixture of lactation stages and parity
Commercial Trial

- ~170 cows (HF)
- Behaviour monitoring collars
- 4 Robot milkers
- After 9 months:
  - 32 cases of mastitis across 28 cows
- ~30+ cases of lameness (around 24%), but not covered here
Milk Conductivity
...& Rumination/Eating
Avoid false positives
Reinforce true positives
Milk Constituents

![Graph showing milk constituents over time with different lines for rumination, eating, fat, protein, and lactose. The y-axis ranges from 0 to 1.5, and the x-axis shows timestamps from 2017-06-14 to 2017-07-08.](image)
Rumination, eating, conductivity, and milk constituents
Conclusion

• Alerts before farmer:
  – 80/90% have rumination + eating change
  – 50% have fat increase
  – 70% have an increase in time-between-milkings
• Need long-term commercial evaluation
  – Impact on herd health statistics
• Make use of extensive data
  – Other welfare events (e.g. lameness, ketosis)
  – Increase sensitivity and specificity