Pre-reading vocabulary check:
Check for understanding of key terms from this article:

- ***poultry***
- ***productivity***
- ***animal welfare***
- ***automation***
- ***commercial setting***
- ***biosecurity***

Pre-reading chicken meat industry video:
A day in the life of a chicken meat farmer:
https://youtu.be/Wkht0q4VzBo?si=KRtHhjJ4S8VFz8LS

Stock journal

Weblink: Machine vision technology brings benefits to monitoring chickens | Stock Journal | SA

'Revolutionary' chicken monitoring tech on show at evokeAG

By Perri Polson
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A program to revolutionise machine vision monitoring inside the poultry shed was put in the spotlight by AgriFutures Australian Researcher of the Year 2023 at the two-day evokeAG 2024 conference at the Perth Convention and Exhibition Centre this week.

AgriFutures' Australian Researcher of the Year 2023, Dr Cheryl McCarthy shared the details of a project which saw the benefits of machine vision in managing meat chicken flocks.

Dr Cheryl McCarthy has revolutionised productivity and animal welfare technology within the poultry industry.

The mechatronics engineer from the University of Southern Queensland, spoke about machine vision which is a camera/software package which can interpret images - something that has captured the attention of the poultry industry.

Discussion point:
What is mechatronics? Is it usually associated with agriculture?

"We're seeing machine vision monitoring around the clock, and can be complementary to human inspections," Dr McCarthy said.

Chickens were held in large open sheds with a capacity of about 50,000 birds, and farm staff walked through the sheds daily to check on the health of the birds, manually measuring their weights.

"Automated monitoring has the potential to significantly reduce the labour costs of these tasks, as well as being less disruptive to the flock," she said.

"This enhances chicken welfare and enhances meat quality."
Discussion point:
How does enhancing welfare improve meat quality?

Dr McCarthy showed how a single camera could simultaneously monitor different aspects of the flock, and said the program was able to derive an array of data, including weight measurement, behaviour classification and flock motion from one camera alone.

This technology will make it easier for a farmer to track the daily weight increases of birds and compare them to target weights.
Discussion point:
Why do chicken farmers need to track daily weight increases?

The camera enabled the project team to identify at least seven different behaviours of chickens, a completely new technology which Dr McCarthy said didn't exist anywhere else yet.

"We should be able to quantify behaviours that indicate the chickens are comfortable or maybe behaviours that suggest temperature stress," she said.
Discussion point:
What chicken behaviours might the machine vision monitor?

"Potentially this could send alerts to the farmer or provide input to a climate controller inside the shed."

The camera can also detect flock motion, which Dr McCarthy said has a wealth of evidence to support the correlation between flock motion and chicken footpad health.
Discussion point:
What is "footpad health"?

While machine vision is becoming an increasing part of agricultural technology, the most novel aspect of machine vision is the algorithms which interpret the images.

"Intelligent and accurate sensing is the most important part to achieve autonomy," Dr McCarthy said.

She said machine vision could also reduce gaps in human vision, seeing things we tend to overlook, small, slow or subtle changes, or things we can't see all together, such as infrared light.

Discussion point:

Machine vision can detect changes earlier than a human could – how could this benefit the farmer AND the chickens?

Overall, the AgriFutures' project took place in a commercial setting - speeding up the time to implementation - and underwent consultation with industry.

Discussion points:

This project is funded by AgriFutures – what is that?

Dr McCarthy works for the University of Southern Queensland – is this a collaboration between the University and AgriFutures and industry?

What is the point of consultation with industry? How do you think it is done?

"This project has undergone proof of concept development and with funding also from AgriFutures has been working on commercial development of machine vision," Dr McCarthy said.

"Once commercialised, the technology is expected to have numerous benefits for the Australian chicken meat industry."

Dr McCarthy said there were plenty of benefits in using machine vision, such as better uniformity at meat processing time, reduced labour demands, a more efficient use of resources such as feed, water and medicine, biosecurity benefits and a strengthened social licence.

Discussion points:

Why is "uniformity at meat processing" an advantage?

How could machine vision help with biosecurity?

What is "social licence"?

Could machine vision be used in a free-range system?