Abstract - Whittaker

Advancing cage-side welfare assessment: Automated monitoring technologies in laboratory animal research

Maximising the welfare of laboratory animals is a key principle of the Australian Code for the Care and Use of Animals for Scientific Purposes, yet traditional cage-side assessments of animal welfare remain limited by subjectivity, time constraints, and challenges integrating the information. This presentation explores emerging technologies that enable automated, multimodal monitoring of animal welfare directly within the home cage environment.

Drawing on recent developments such as the GrimACE system which integrates computer vision-based grimace scoring and pose estimation, this talk will examine how these tools can be used to detect pain and behavioural change more generally in laboratory animals. I will discuss the validation of automated scoring against expert assessments, the implications of analgesic regimes on behavioural outcomes, and the potential for continuous, non-invasive welfare monitoring. The use of such systems offers opportunity for a transformative change in how we identify and respond to harm in laboratory animals, supporting refinement of experimental protocols, improved reproducibility and a strong evidence-based approach to harm- benefit assessment by Animal Ethics Committees.

This talk will also reflect on the practical challenges of implementation, including facility readiness, resourcing, and data interpretation. Pathways for broader adoption across research institutions will be proposed.

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