

Peer Review

Review of: "WOLO: Wilson Only Looks Once – Estimating Ant Body Mass From Reference-Free Images Using Deep Convolutional Neural Networks"

Somyot Kaitwanidvilai¹

1. King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand

Strengths:

- The study presents an original and compelling approach to estimating ant body mass from images without the need for reference objects.
- The study leverages an extensive dataset of images, ensuring diversity in training.
- The use of real and synthetic data for training improves generalization potential.
- A well-structured deep convolutional neural network (CNN) pipeline is implemented.
- The study conducts an insightful human-vs-machine comparison, showing that the best-performing model outperforms non-expert humans in mass estimation while being faster.
- The findings have strong implications for biological research, entomology, and automated monitoring of insect populations.
- The study hints at broader applications for automated size estimation in other animals, agriculture, and manufacturing.

Areas for Improvement:

- More diverse real-world data collection or real-time application may be good in future work.
- While human benchmarks are valuable, comparisons with simpler **traditional computer vision methods** (e.g., keypoint-based measurements (computer vision technique)) could highlight the true advantage of deep learning.

- The work provides a novel application of deep learning in insect research and has broader implications in biological and ecological AI applications.

Declarations

Potential competing interests: No potential competing interests to declare.