

Peer Review Summary

Date: 27th October 2025

Reviewer: Claude 3.7 Sonnet

Verdict: Accept with Minor Revisions

I have thoroughly examined the manuscript "A Multi-Task Probabilistic-Machine Learning Framework for Forensic Anthropological Identification: Integrating Osteology, Taphonomy, and Forensic Entomology" by Montgomery (2025). The work presents a sophisticated computational framework that merits publication following modest refinements.

The manuscript's principal strength lies in its methodologically rigorous integration of disparate evidential streams within a coherent probabilistic architecture. Particularly commendable is the author's meticulous attention to probability calibration—an essential consideration for forensic applications where quantified uncertainty must withstand judicial scrutiny. The ethical decision to exclude population affinity estimation reflects a laudable awareness of contemporary disciplinary debates.

Several areas would benefit from further development. Firstly, whilst dataset shift is acknowledged as a limitation, a more substantive discussion of potential mitigation strategies would strengthen the work. Secondly, the validation requirements for operational deployment warrant more explicit treatment. Thirdly, the promising but still-developing field of post-mortem microbiology requires additional clarification regarding standardisation protocols.

In summary, this manuscript represents a valuable contribution to forensic anthropology. With the suggested minor revisions, it will serve as an exemplary demonstration of how computational approaches can enhance rather than supplant expert judgment in this critical field.