FSci-PMI: An Innovative Interface for Postmortem Interval Identification Using the Calliphoridae (Blowfly) Cycle

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Determining the post-mortem interval (PMI) stands as a critical challenge in crime scene investigations (Franceschetti, et. al., 2023). Various forensic science methods, including entomology, are employed to estimate the time since death (Ciaffi et al., 2018) during a criminal investigation. However, due the complexity of insect behaviour, establishing the time of death is difficult, requires an expert, as well as long analyses. There is a lack of software to assist in the real time estimation of PMIs. The researchers developed a human/machine interphase (FSci-PMI) that connected the inputs of the blowfly stages to present outputs with the time of death. The hypothesis postulated that the incorporation of a human/machine interphase with blowfly stages through a coded Python program will significantly enhance the precision of a post-mortem interval of a person until found. The researchers performed rigorous testing of the human/machine interface by input blowfly numbers scenarios and comparing the interface outputs with parameters from the literature review. Through this approach, the researchers evaluated the effectiveness and functionality to calculate the post-mortem interval (PMI) retaining the hypothesis previously stated and providing to forensic investigators a reliable and technologically advanced tool for estimating PMI on time and in - situ. The potential impact of this innovation is multifaceted, ranging from accelerating criminal investigations to expanding the comprehension of decomposition processes across varied environmental conditions. This tool can serve as a valuable asset to the approach of criminal and forensic investigators during post-mortem analysis to fasten the process for successfully solve cases.

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