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Towards hearing mosquito-borne diseases ROZHIN HAJIAN, Harvard University, SHAILABH KUMAR, Stanford University, MICHAEL BRENNER, Harvard University, MANU PRAKASH, Stanford University — Mosquito bites are responsible for the transmission of deadly pathogens among humans, including Plasmodium parasites, which cause Malaria as well as viruses such as Zika, leading to deaths of more than 0.5 million people every year. Eastern equine encephalitis (EEE) and West Nile virus (WNV) are the latest mosquito-borne threats to appear in the northeastern United States. Insects flap their wings to fly, generating sound due to the scattering of turbulence at the trailing edge. Interestingly, insects utilize this unavoidable consequence for mating purposes, as the sound generated by the wingbeat is usually different for males and females of the same species. Researchers have taken advantage of the flapping sounds of natural fliers for numerous purposes, including the design of quiet drones. Possibly, one of the most significant applications of flight tone detection is to identify disease-carrying insects using their noise footprints, which can be used to build an early warning system to prevent mosquito-borne diseases. In order to fulfill this goal, we apply deep learning algorithms to classify insect species utilizing the data of mosquito wingbeat sounds. Moreover, the connection between the flight tones will be discussed with the flying mechanisms.

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