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Development of Novel Video-based method for Epileptic Seizure Detection in Mice

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Epilepsy is a prevalent neurological disorder that affects various aspects of an individual's life, including economic, social, and biological aspects. Despite medication, many individuals with epilepsy suffer from uncontrolled seizures and the side effects of anticonvulsants. The condition also causes difficulties with information processing speed, memory, and individual attention, which may be due to the seizures, underlying causes of the condition, or the drugs used to treat it. This paper describes the preparation and development of novel video-based method for future research on epileptic seizures in mice. Seizures were induced in mice using pilocarpine hydrochloride (100-160 mg/kg) and electric shock via ear-clip electrodes (5 mA, 60 Hz, 0.2 s stimulus duration). A 20-second video was recorded for each scenario, and then labeling was performed for each frame (600 frames in a 20-second clip) using Labelbox software for 15 entities in the mice, including the head, nose, shoulder, pelvis, tail0, tail1, tail2, arm-L0, arm-L1, arm-R0, arm-R1, leg-L0, leg-L1, leg-R0, and leg-R1.