Dr. France Rose

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Neurolgy lecture hall @ 9:00 AM

“Deep Imputation for Skeleton Data (DISK) in Behavioral Science”

Summary:

Pose estimation methods and motion capture technologies have opened the doors to precise and quantitative measurements of animal kinematics. However, these methods are not perfect and contain missing data which might render large portions of the data unusable. In this talk I will present our method, Deep Imputation for Skeleton data (DISK). Based on deep learning algorithms, DISK learns correlation between keypoints and repeated dynamics to impute missing data without relying on manual annotations. We tested the performance of our imputation method in six different animal skeletons including a multi-animal set-up. With an estimated imputation score, DISK allows behavior scientists to remove data with potentially high imputation error. Finally, by learning to impute, DISK builds informative representations of behavior correctly distinguishing animal motion patterns such as turning, walking, or resting. DISK is available as a Python package and can be easily applied to new 2D or 3D datasets from motion capture or markerless tracking. As a standalone package, DISK can be integrated in any behavior analysis pipeline.