UnderPressure: Deep Learning for Foot Contact Detection, Ground Reaction Force Prediction and Footskate Cleanup

Supplementary Material

#8342

Table 1: Median absolute deviation (MAD) in milimeters of CoP computed from predicted vGRF components. Similarly to predicted vGRF, modelling foot contact labels in addition to vGRFs (Ours) sligthly affects CoP accuracy.

Model	Walking	Running	Obstacles	Hopping	Stairs	Idle	Overall
Ours-C&F	16.7	12.3	17.8	15.5	17.9	28.9	16.4
Ours	**13.3**	**11.2**	**15.1**	**12.3**	**13.9**	**25.9**	**13.4**

1. CoP Prediction

In this section we provide results of our evaluation of Center of Pressure (CoP). Complementary to the root mean squared error (RMSE) of per-foot total vGRF which is mainly sensitive to global biases (at foot scale), the median absolute deviation (MAD) of the Center of Pressure (CoP) allows to evaluate predicted vGRF components with more sensitivy to local errors (at pressure cell scale) since CoP is calculated as the weighted mean of vGRF component application points.

Table 1 provides the median absolute deviation (or median distance to ground truth) of the CoP, while Figure 1 depicts the distribution of offsets from predicted to ground truth CoP.

Similarly to our evaluation of vGRFs with RMSE, the results shown Table 1 suggest that learning to model foot contact labels in addition to vGRF (Ours-C&F) reduces accuracy, although the performances of both variants are close.
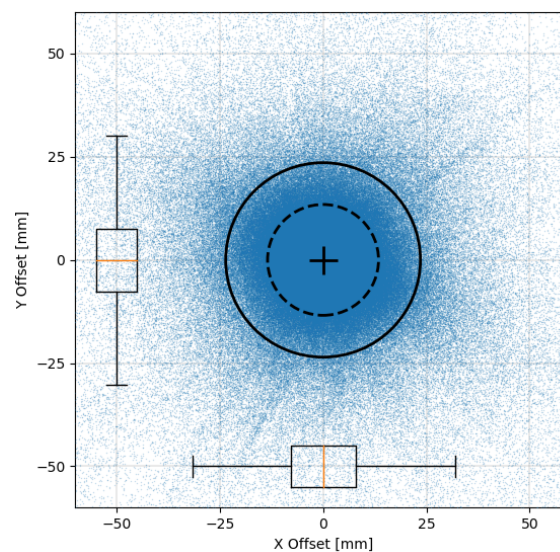

Figure 1: Scatter plot of 2D offsets between CoP computed from ground truth vGRFs and vGRFs predicted by our model. The concentric solid and dashed circles respectively represent the mean and median norm of 2D offsets, i.e. one half of blue dots lie inside the dashed circle.