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Variational Inference Data-driven Gait Model for Biped Trajectory Generation

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Abstract:
Biped robot trajectory generation is a very complex task for real-world uneven terrain. This work presents the gait model based on data-driven to address the issue of traipse ground conditions. The data-driven approach efficiently extracts valuable information regarding the joint relationship efficiently. However, the models can suffer from the model-bias issue. Therefore, the model bias is addressed by considering the uncertainty into the model itself under Bayesian framework. In addition, the new objective function for training of data-driven model based on the integration variational inference with standard error is proposed. It helps the training algorithm to precisely follow the lower variance data-point along the gait cycle. Lastly, the proposed model is analysed based on the two scenarios: (a) constant speed 1m/s with varying incline, and (b) constant incline 0 degrees with varying speed.

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