Dynamic Footsteps Planning for Multiple Characters

Beacco, Alejandro; Pelechano, Nuria; Mubbasir Kapadia

Animating multiple interacting characters in real-time dynamic scenarios is a challenging task that requires not only positioning the root of the character, but also placing the feet in the right spatio-temporal state. Prior work either controls agents as cylinders by ignoring feet constraints, thus introducing visual artifacts, or use a small set of animations which limits the granularity of agent control. In this work we present a planner that given any set of animation clips outputs a sequence of footsteps to follow from an initial position to a goal such that it guarantees obstacle avoidance and correct spatio-temporal foot placement. We use a best-first search technique that dynamically repairs the output footstep trajectory based on changes in the environment. We show results of how the planner works in different dynamic scenarios with trade-offs between accuracy of the resulting paths and computational speed, which can be used to adjust the search parameters accordingly.