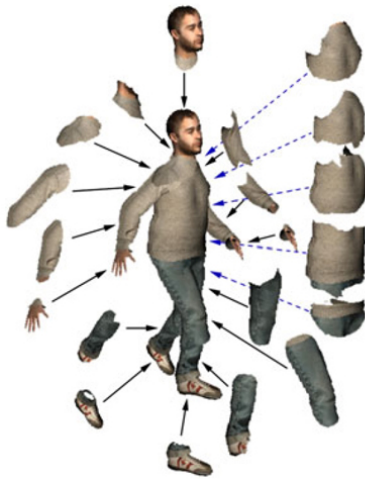


Efficient rendering of animated characters through optimized per-joint impostors

Beacco, Alejandro; Andujar, Carlos; Pelechano, Nuria; Bernhard Spanlang



In this paper, we present a new impostor-based representation for 3D animated characters supporting real-time rendering of thousands of agents. We maximize rendering performance by using a collection of pre-computed impostors sampled from a discrete set of view directions. Our approach differs from previous work on view-dependent impostors in that we use per-joint rather than per-character impostors. Our characters are animated by applying the joint rotations directly to the impostors, instead of choosing a single impostor for the whole character from a set of pre-defined poses. This offers

more flexibility in terms of animation clips, as our representation supports any arbitrary pose, and thus, the agent behavior is not constrained to a small collection of pre-defined clips. Because our impostors are intended to be valid for any pose, a key issue is to define a proper boundary for each impostor to minimize image artifacts while animating the agents. We pose this problem as a variational optimization problem and provide an efficient algorithm for computing a discrete solution as a pre-process. To the best of our knowledge, this is the first time a crowd rendering algorithm encompassing image-based performance, small graphics processing unit footprint, and animation independence is proposed.