HPC Large-scale Pedestrian Simulation Based on Proxemics Rules

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The problem of efficient pedestrian simulation when large-scale environment is considered, poses a great challenge. When the simulation model size exceeds the capabilities of a single computing node or the results are expected quickly, the simulation algorithm has to use many cores and nodes. The problem considered in the presented work is the task of splitting the data-intensive computations with a common data structure into separate computational domains, while preserving the crucial features of the simulation model. We propose a modification of the popular pedestrian models which can be used in parallel processing. We describe its implementation in a highly scalable simulation framework. The proposed model is discussed and the preliminary results are presented.

Keywords: HPC, Supercomputing, Pedestrian simulation, Crowd Dynamics, Proxemic.