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Virtual environments using XML

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The process of constructing cities and agent simulation is expanding as a research area in computer graphics and artificial intelligence. Developing environments with intelligent agents implies several challenges, for instance, rendering thousands of objects within an any given scene with geometric and topological variety is very complex and many computational resources such as memory and processing power are required. A broad range of areas and applications such as games, movies or urban simulation require virtual 3D city models with detailed geometry, which poses several challenges. Cities are systems of high functional and visual complexity. To achieve this is necessary to implement the level of detail techniques that reduce the workload from the system. The main contributions of this research are the following: A system that allows to render thousands of props to create urban environments incorporating crowd simulation. This system reduces memory consumption to create populated virtual environments, and no matter how many elements are currently rendered at any given time, memory requirements do not exponentially increase. Everything that is displayed on the scene is configurable using XML specification files. Applications for virtual city generation range from research and educational purpposes such as urban planning, and creating virtual environments for simulation, which goverments and civil engineers can benefit from, applications can be extended to traffic simulation or disaster route planning.

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