

# Procedural Semantic Cities

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Procedural modeling of virtual cities has achieved high levels of realism with little effort from the user. One can rapidly obtain a large city using off-the-shelf software based on procedural techniques, such as the use of *CGA*. However in order to obtain realistic virtual cities it is necessary to include virtual humanoids that behave realistically adapting to such environment. The first step towards achieving this goal requires tagging the environment with semantics, which is a time consuming task usually done by hand. In this paper we propose a framework to rapidly generate virtual cities with semantics that can be used to drive the

behavior of the virtual pedestrians. Ideally, the user would like to have some freedom between fully automatic generation and usage of pre-existing data. Existing data can be useful for two reasons: re-usability, and copying real cities fully or partly to develop virtual environments. In this paper we propose a framework to create such semantically augmented cities from either a fully procedural method, or using data from OpenStreetMap. Our framework has been integrated with Unreal Engine 4.