

# Virtual Agents Simulating Everyday Life in Ancient Mesopotamia 5000 B.C.

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Many virtual reality reconstructions of historical sites focus on buildings and artefacts, but often ignore the issue of portraying everyday life of the people who populated the reconstructed area. This is mainly due to high costs and complexity of populating such sites with virtual agents. To automate the process of simulating large virtual agent societies we combine needs modelling and planning. Every agent in our simulations assumes a certain role in the reconstructed society (e.g. Potter) and this role would be associated with a set of norms and protocols of acceptable behaviour that the agent must follow while pursuing its goals. The goals are automatically generated in response to some of the simulated agent needs (e.g. hunger, thirst, fatigue) requiring satisfaction. Achieving these goals involves analysing agent surroundings and using AI planning to produce a role specific set of actions that lead from the current agent state to the state where the corresponding need is satisfied.

To illustrate our approach we have developed a simulation<sup>1</sup> of everyday life in an ancient Mesopotamian settlement (later known as the city of Uruk) around 5000 B.C. shown in Fig. 1.



**Fig. 1.** Ancient Mesopotamian settlement populated with virtual agents

To make this simulation historically accurate we relied on settlement maps for the reconstructed area, history books, museum exhibits and consulted with subject matter experts (archaeologists and historians).

<sup>1</sup> Accompanying video is available at: [https://youtu.be/t3Yyh9\\_J\\_YA](https://youtu.be/t3Yyh9_J_YA)