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A FRAMEWORK FOR BEHAVIOURAL CONTROL IN COMPUTER ANIMATION

ABSTRACT

A major problem in computer animation is the amount of tedious work required to specify the positions of objects at each step of an animation sequence. This problem is extreme in the case of humanoid animation where several figures are required to move coherently in an environment.

This thesis presents a framework for behavioural animation. The framework has been developed to deal with a multiplicity of autonomous robots which inhabit a dynamically changing environment. There is also a requirement that these robot entities be capable of interacting with each other and reacting to changes in the environment. The assumption that the actions realised by these entities are goal-directed permits the specification of their behaviour by simple but high-level commands called "*instructions*". The animator can therefore control the behaviour of the robots by organising a set of instructions that they will perform as a script. However, because the robots possess a degree of autonomy, they can react to their immediate environment in the absence of specific directions from the animator. The high-level instructions are developed, by the system, as a hierarchy of sub-instructions, as events take place. This forms a mechanism for the automatic generation of complex animation sequences. The task of an animator is considerably simplified because it is not necessary to specify detailed behaviour. Such an approach provides the flexibility to re-use and to extend existing commands for a wider range of situations. This technique is explored using an example scenario with a variety of static objects and autonomous agents.