

AnimMagix Interaction Design with Projections for Updated Prototype

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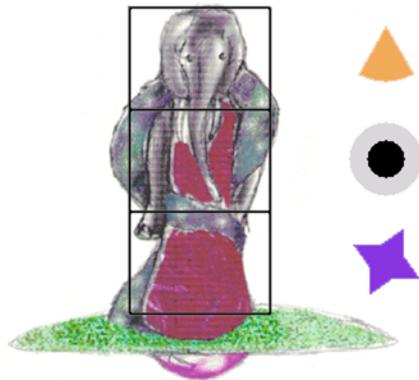
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Abstract

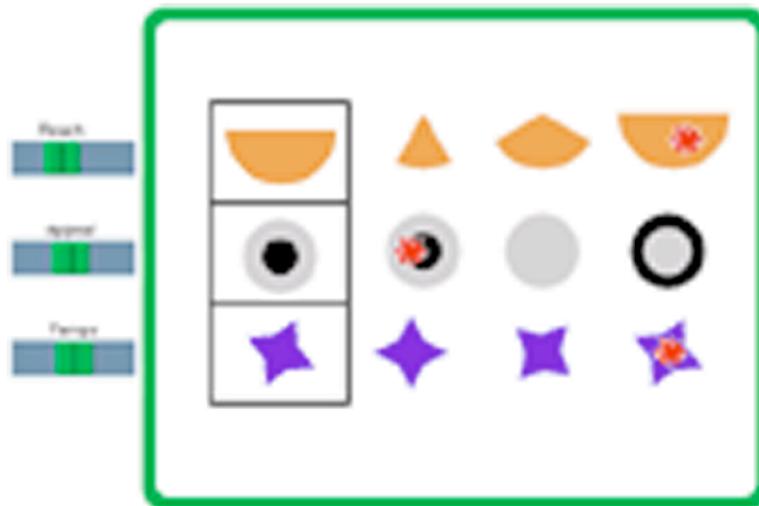
This document expands on TR98-13, adding details consistent with operation of an initial prototype for AnimMagix and including projections for further development. AnimMagix is part of the Magix series of playful learning environments. In AnimMagix, children create whimsical creatures with anthropomorphic behaviors and launch them onto a field in which the creatures interact and affect one another's behaviors. The creatures become like dancers on an ice rink. Their movements and intentions seem to change as they glide from one partner to the next. Children can explore these emerging effects by selecting and saving creatures for further study. AnimMagix maintains the constructive-dialogic style of interaction as well as many functions introduced in PatternMagix (see MERL TR97-24).

AnimMagix is a second prototype in MERL's Magix series of playful learning environments. Its basic operation is similar to the first environment, PatternMagix (see MERL TR97-24).

In AnimMagix, the compound element that provides the basis for later transformations is a tripartite column representing a whimsical creature. Creatures are composed of a head, a belly, and a base. Each part embodies a specific range of behaviors and appearances: the head, represented at times by an inverted cone, embodies the creature's perceptual field; the belly, represented at times by a circle, embodies the creature's sociability; and the base, represented at times by a star-like diamond, embodies the creature's motor ability.

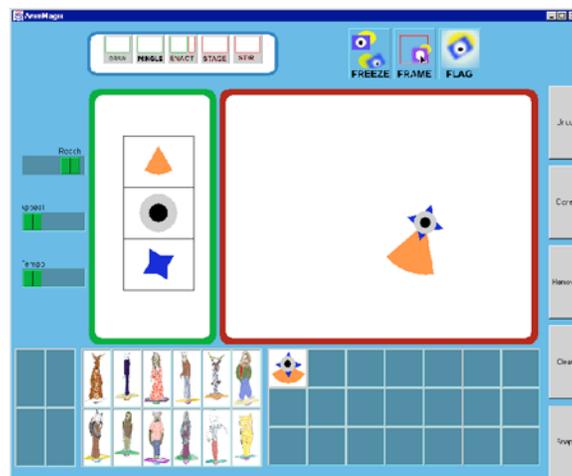


Each of these behavioral attributes has three user-determined settings: the scope of the perceptual field can be narrow, medium, or broad; the sociability can be attractive, neutral, or repulsive; and the motility can be circular, sweeping, or steady.



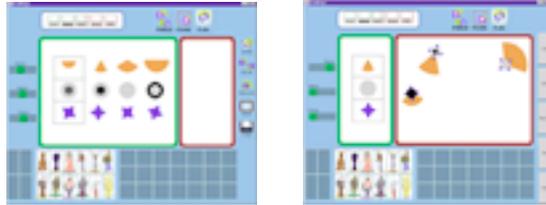
Additionally, users can fine-tune a behaviors' intensity by adjusting the three sliders at the left. The Reach slider (at top) regulates depth of the perceptual field; the Appeal slider (at center) controls the degree of attraction or repulsion; and the Tempo slider (at bottom) regulates the speed of intrinsic movement.

As in PatternMagix, the compound elements are created in the child's area (the green window at screen left). In AnimMagix these compound elements are geometric representations of creatures' behaviors, shown in frontal view. Users can launch these representations onto an activation field (the red window at screen right) to visualize how the behaviors affect one another. In this field, each representation is shown in collapsed form to simulate a bird's-eye view.



The activation field does not automatically multiply the compound elements created in the green window as would happen in PatternMagix. Instead, clicking on the red window in AnimMagix puts into the field only whatever creature representation currently appears at left. The activated representation begins moving according to its own motility pattern.

As the user clicks back and forth (between left and right), the red and green windows expand and shrink accordingly. When the green window is active, the user can build a new creature representation. Each click on the red window area brings into the field whatever representation currently appears at left. In this way, more and more "creatures" can appear simultaneously in the activation field, and emergent effects become apparent as the multiple behaviors interact.



The user can explore the simulated sociodynamic patterns interactively, using basic operations and functions of the system.

The user can click a creature to stop its movement. She can then relocate the creature, duplicate or delete it, or use the sliders to adjust its behaviors. Clicking again on the creature restarts its movement.

Function buttons at screen right include: Undo, which reverts the system to a previous state; Clone, which duplicates a selected creature; Remove, which deletes a selected creature; and Clear, which deletes all creatures from the red window area.

Additionally, the system provides visualized suggestions in the form of blinking buttons to entice users to Freeze, Frame, or Flag animated creatures.



The Freeze toggle stops and restarts the action of all the creatures. The Flag button places a colored spot on a creature, marking it so the user can follow it in the fray. As in PatternMagix, the Frame button displays a colored square, which can be positioned around a creature so it can be saved to the library.

One section of the library holds these creature behaviors, another holds ready-made creature appearances, and another holds appearances that learners design themselves. These library entries are available at different times for use in various AnimMagix modes.

Like the PatternMagix design, the AnimMagix design has five modes. These modes afford different ways of playing with creatures and their behaviors, and varying degrees of control.

In Draw mode, not yet implemented in the prototype, basic draw and paint tools enable the user to design creatures' appearances.



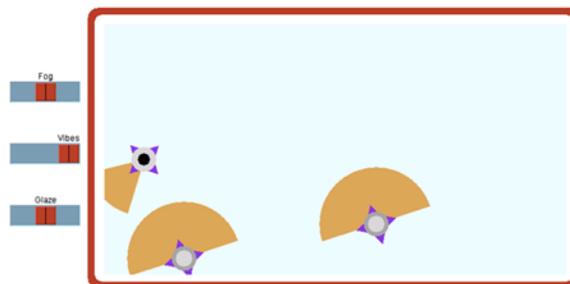
In Mingle mode, users can bring appearances and behaviors together. The creatures appear in frontal-view but behave as in the bird's-eye view. In a future implementation, the head, belly, and base aspects of creature's appearances will be interchangeable. We will generate new designs to consider how this interchangeability will occur in an updated prototype.



Furthermore we will consider how to effect a smoother transition as the user experiences moves between Mingle and Enact modes. A 3D platform may be most appropriate for a new implementation, which should facilitate users' understandings of the change from frontal view to bird's-eye view.

In Enact mode, users construct and launch geometric representations of creatures' behaviors as described above.

In Stage mode, users can adjust behavioral attributes of all of the creatures in the activation field. The sliders at left retain their pertinence to the behavioral attributes but operate at the level of the entire activation field rather than on individual creature representations. Reach becomes Fog; Appeal becomes Vibes; and Tempo becomes Glaze.

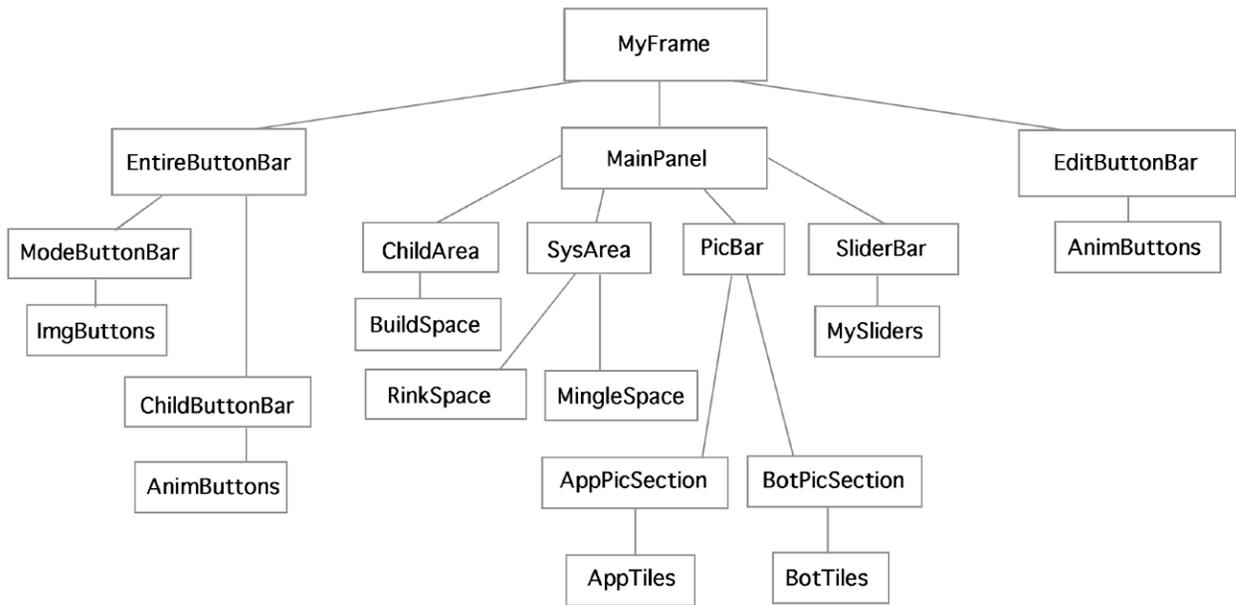


The Fog slider darkens and lightens the field, which has the effect of changing the depth of all the creatures' perceptual fields. The Vibes slider sends imaginary charges through the field, which has the effect of changing the degrees of all the creatures' sociabilities. The Glaze slider adjusts friction, which has the effect of changing all the creatures' motility.

The Stir mode is similar to the Stage mode in that changes affect the entire field. However, as in the Shuffle mode of PatternMagix, changes occur automatically. In this contemplative mode, the system adjusts environmental conditions as alternating sequences of Fog, Vibes, and Glaze effects.

The current AnimMagix prototype is implemented in Java. Functions operate at the level of the interface and are implemented as a set of nested objects and subclasses.

AnimMagix Object Hierarchy



Our considerations for new versions include a small, handheld platform and various inputs, such as stylus, camera, and manipulables.