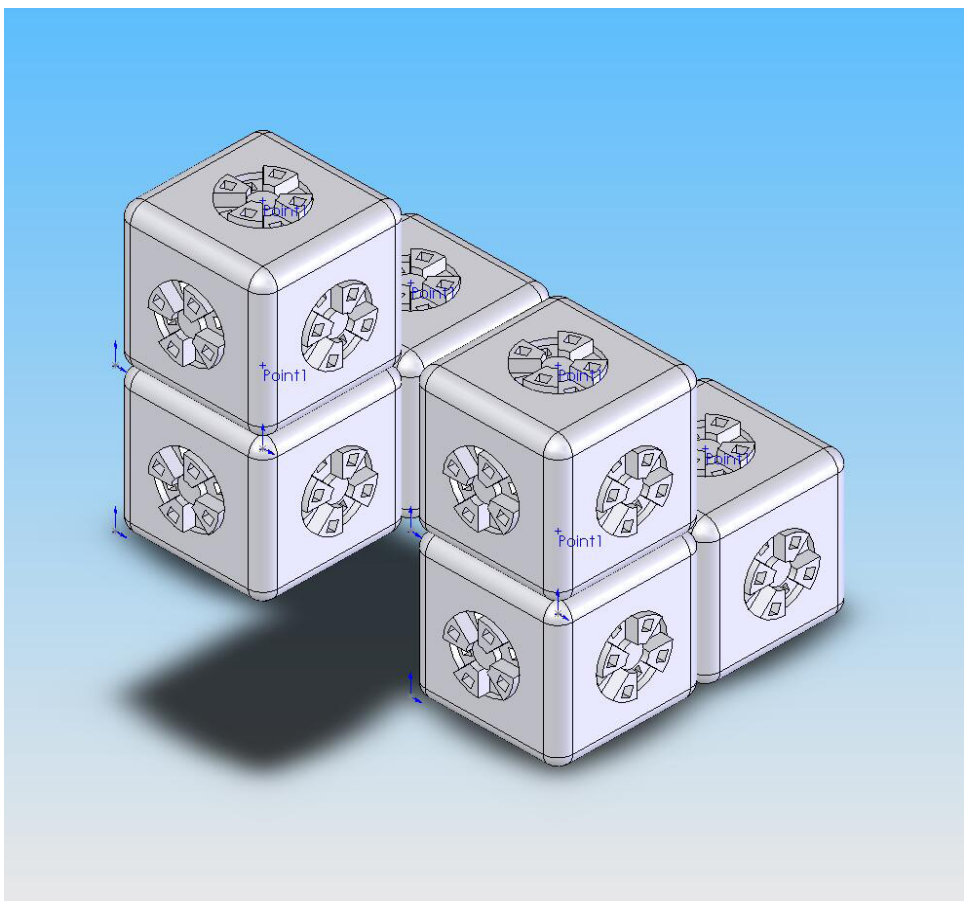
roBlocks

Constructional logic kit for kids

Eric Schweikardt



roBlocks are the basic modules of a computational construction kit created to scaffold children's learning of math, science and control theory concepts. By combining sensor, logic and actuator blocks, young kids can create simple reconfigurable robots which exhibit surprisingly complex behavior. roBlocks are self-describing, so they can provide helpful feedback to the user, and automatically adjust their functionality based on how they've been assembled.

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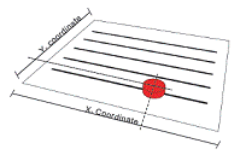
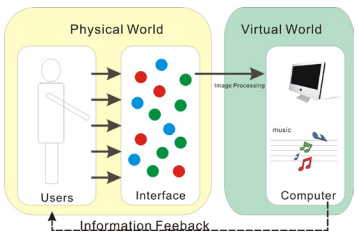
This project is supported by

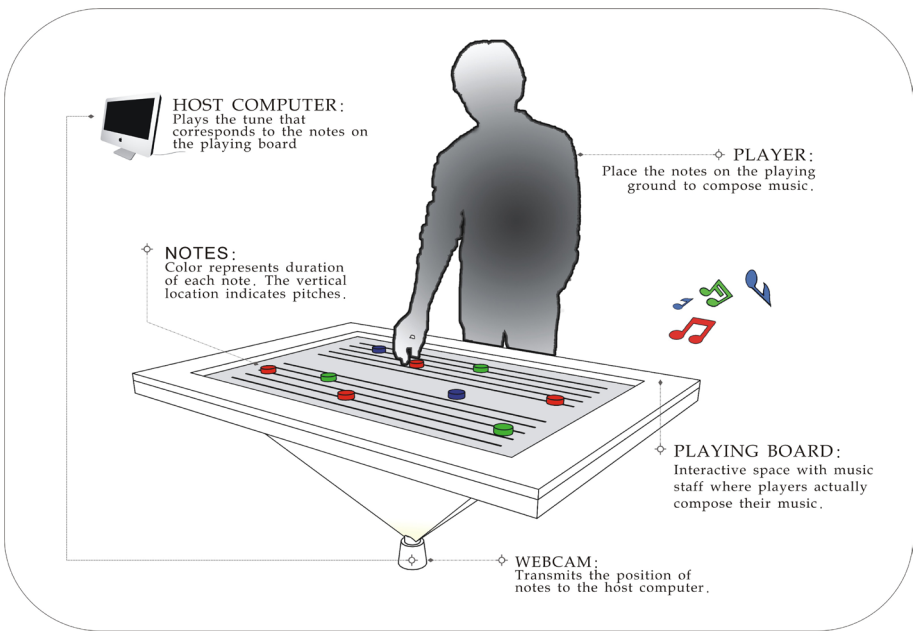
NSF Grant // ITR-0326054 "computationally enhanced construction kits and craft"
PITA Grant // "Thinking with Your Hands" // CMU Provost's Office //

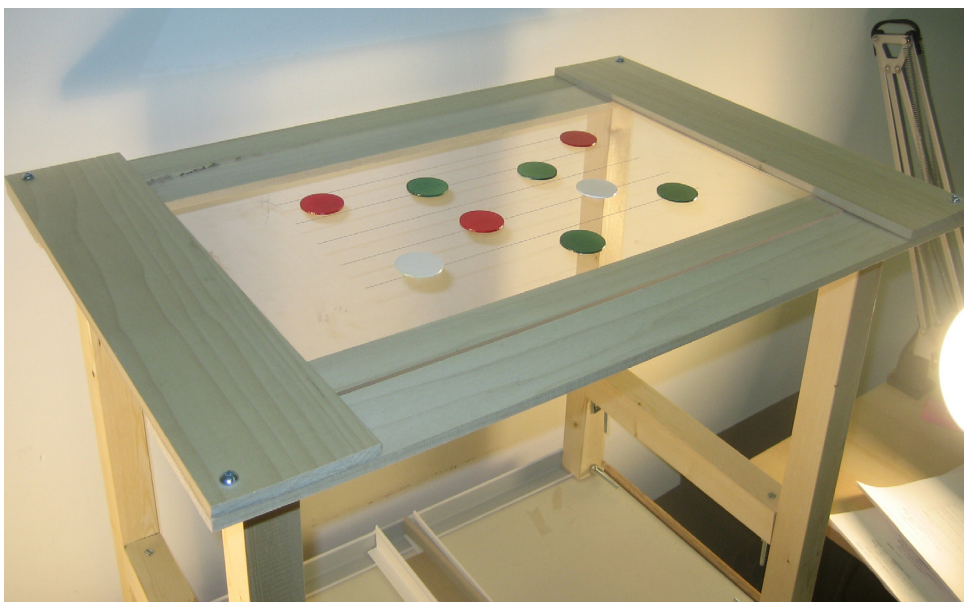


Tangible Notes

Making music palpable







Tsung-Hsien Wang

Tangible Notes is a tangible interface designed for preschool children to play with musical notes and scales. This interface provides touchable objects°XTangible Notes°Xto manipulate untouchable music through their haptic movement. Users explore virtual music by a touch-based fashion. The interface contains two parts: one is the play board and the other is physical notes. The play board is an interactive table where children can place physical tokens, the positions and color of which represent pitches and durations. Children translate their movements into musical composition.

Music notes are physical objects that allow children to play with. Each of three colors represents a different duration: red represent a whole note; green represents a half note and blue represents a quarter note. The horizontal and vertical values of notes determine their sequence in the tune and the corresponding pitches, respectively.

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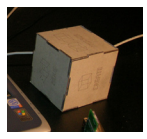
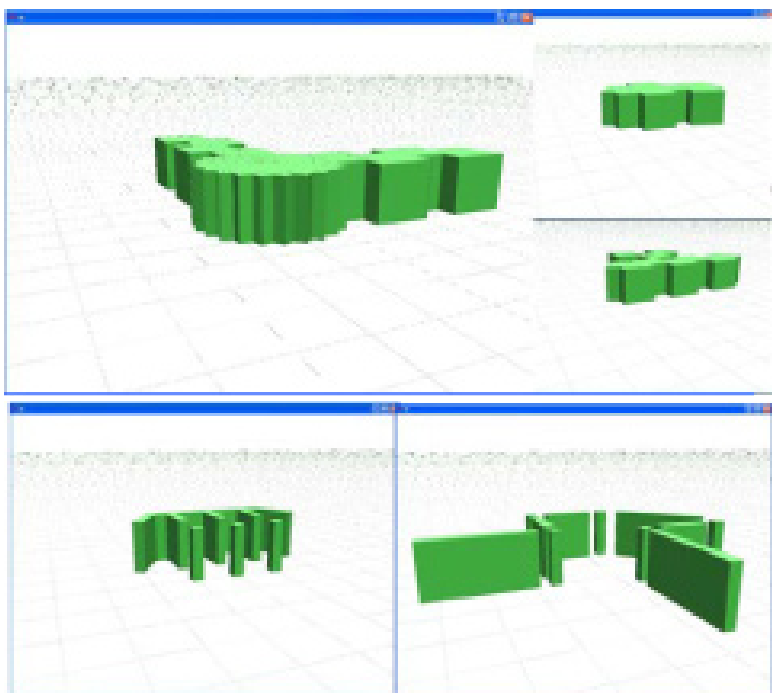


TangiCAD

subtitle here

Sherif Morad Abdelmohsen



The TangiCAD system is a tangible/virtual construction kit that allows architects and designers to make and edit computer graphics models by manipulating tangible cubes,instead of using a mouse-menu (WIMP) interface. A physical cube represents an architectural element (wall, column, slab, beam, brick, etc.). The cube communicates its orientation wirelessly to a PC where a corresponding 3D model is generated and edited. Each side of the cube triggers, when on top, some functions for constructing and editing virtual 3D models on the screen. For example, the user can Create, Select, Move, and Rotate an object on the screen by turning the cube to the corresponding orientation. Designers could use this tangible interface to carry out 3D mass modeling operations in an intuitive and easy-to-use way, using a“flip-the-box” hands-on motion.

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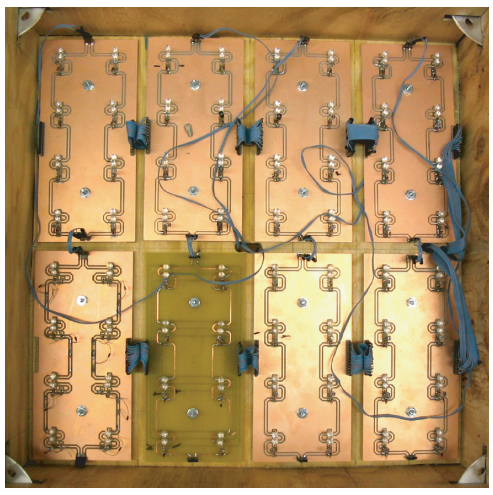

TeleTables

Michael Weller, Ken Camarata,
Yu-Chang Hu, Bridget Lewis, Kursat Ozenc

TeleTables are a pair of interactive tables where shadows cast on one table display as light on the other table.

The last decade has seen a tremendous change in communication technologies. Cell phones, email, and instant messaging are just a few of the new ways people keep in touch with friends and family. Those new technologies are based on our more traditional spoken and written forms of communication. In contrast, Teletables explores direct and indirect interaction as a means of telepresent communication.

The TeleTables support both direct and indirect interaction. By direct interaction we mean that people directly and intentionally interact with the system. In contrast, indirect interaction occurs when interaction with the system is a byproduct of another activity. Indirect interaction occurs when the user is focused on an activity other than interacting with the system.

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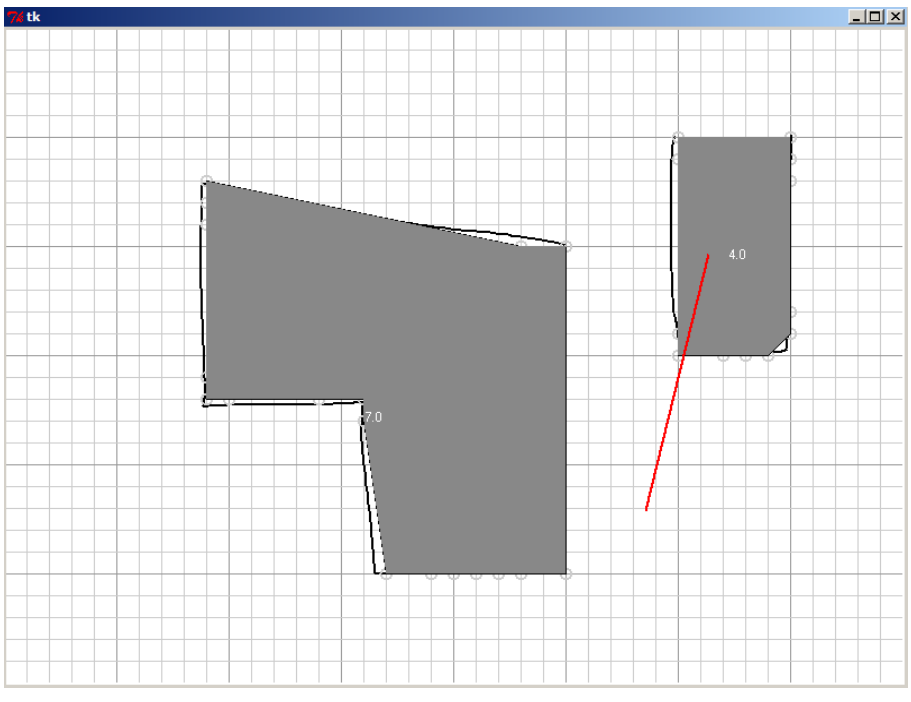
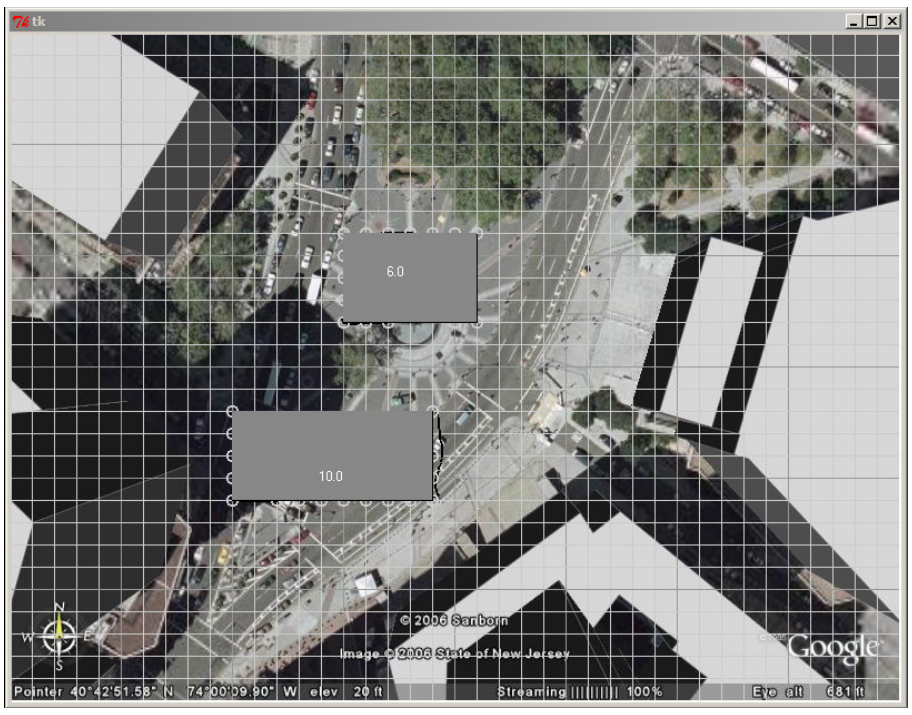
Tracing Paper

Prototyping tool for site planning

Yu-Chang Hu



Tracing Paper is a prototyping tool for site planning. It consists of three parts. Designers draw shapes that represent buildings and assign heights to those buildings by dragging. A presentation interface provides a 3D environment for a designer to evaluate a site plan visually. It also integrates those buildings with the environment that surrounds them. These two parts work seamlessly to provide a design environment where designers can see and evaluate their designs before making the next move. The third part deals with data. It involves in two missions in the system. One is to handle data stream communicated between drawing interface and presenting interface. The other one is to share data among multiple designers.



Users can import site images or use the default grid system the interface provides as a drawing reference. Users can draw freehand to enter building outlines. The interface will convert the drawing to polygons automatically when the user completes the drawing. Users assign the building heights by dragging.

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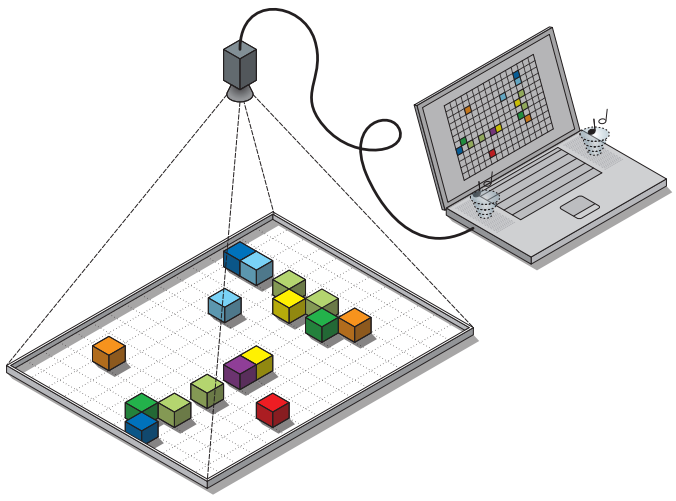
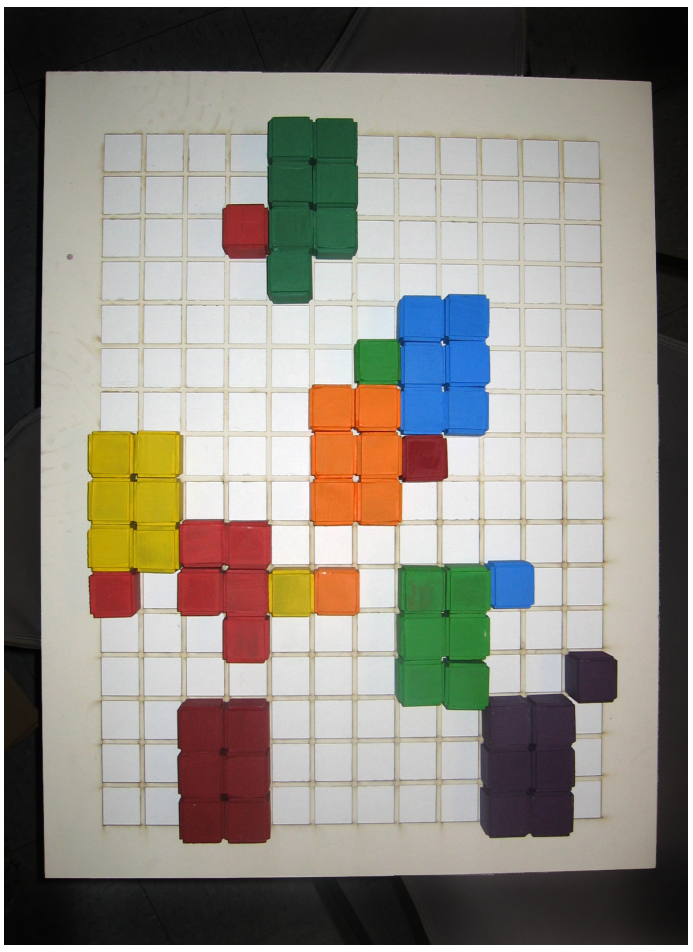


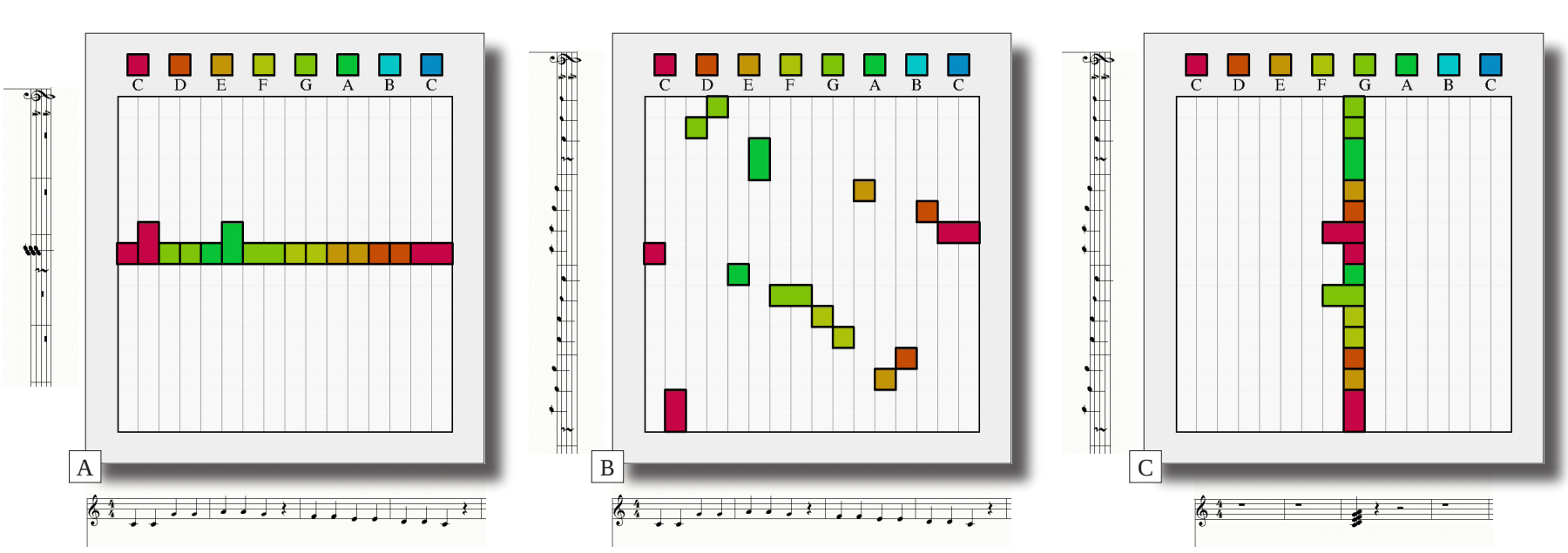
Bach Blocks

Making space, making music

Shaun Moon



Bach Blocks is a music composition game that encourages children to create original music. The blocks are physical analogs to musical notes with color associated to pitch and block size to beat length. As children arrange blocks on a play tray, image processing software determines the position and color of each block. Bach Blocks can play the musical output of block arrangements in one of four directions: up, down, left or right. This flexibility creates a rich play environment where the rhythm of one melody is the harmony in another. This encourages two-dimensional thinking about music and spatial relationships between blocks on the play tray.



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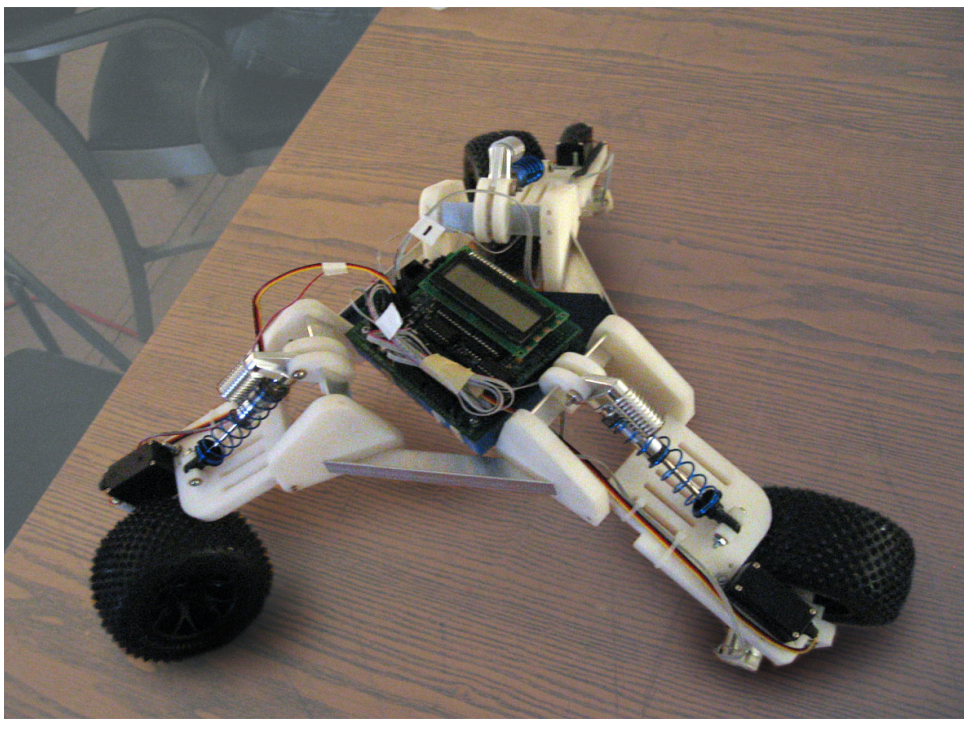
TriBoingus

3WD mobile robot platform for experimentation and play

Eric Schweikardt



The TriBoingus is a 3WD mobile robot platform for experimentation and play. It is built with parts fabricated on a layered deposition printer, and is a robust vehicle suitable for outdoor use and hazardous environments. With an omnidirectional three wheeled design, the triBoingus can achieve full holonomic motion and avoid the velocity singularities that plague tricycles and robots with Ackerman steering.

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