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This paper describes a search for the time-optimal "bang bang" control strategy for the three dimensional broom balancing (inverted pendulum) problem by genetically breeding populations of control strategies using a recently developed new "genetic computing" paradigm. The new paradigm produces results in the form of a control strategy consisting of a composition of functions, including arithmetic operations, conditional logical operations, and mathematical functions. This control strategy takes the problem's state variables as its inputs and generates the direction from which to apply the "bang bang" force as its output.