APPLICATIONS OF BOUNDARY MATHEMATICS
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from 9.7.93 biz-notes

smart spatial engine
        simulated physics
        articulated bodies
        mechanical assembly
        virtual machines
        factory floor modeling
        spatial interface
        declarative logic accelerator
        general purpose declarative computing
        real-time control
        constraint-based modeling
* 3D modeling and interaction within multimedia windows
* virtual reality arcade games with natural feedback
* theme park rides using sensory enhancement and realistic environments
* competitive computer gambling
* spatial effects in digital filming
* theatrical staging and production
* environmental modeling and coordination of effects in clubs
* prototyping machine and product designs
* engineering analysis of objects and architectural spaces
* simulation of manufacturing and production processes
* human factors engineering for ergonomics and ease of use
* just-in-time training and educational simulation
* computer-assisted cooperative work
* spatial medical imaging and modeling technologies
* remote laparoscopic surgery
* medical training
* psychological visualization and rehearsal therapies
* military war fighting simulation
* infantry close combat tactical training
* spaceflight simulation
* planetary exploration
* oceanic exploration
* molecular configuration and drug manufacturing
* human genome modeling
* fluid dynamics visualization
* weather modeling and visualization
* historical reconstruction
* emergency training and disaster rehearsal
* interaction and training in dangerous environments
* situated learning environments
* multimedia home communications systems

Functional utility

parallel decomposition of programs
knowledge organization
contradiction maintenance
abstract inference
constraint programming

automated deduction
planning
program verification
database query management
knowledge-base optimization and minimization
parallel processing

[from overheads]

parallel deduction
contradiction maintenance
expert system rulebase verification, optimization, partitioning
visual programming language

inference engine/theorem prover (planning, learning)
programmer's associate
      (analyze, standardize, optimize, verify, partition, document)
circuit minimization
database query management (optimize, search)
parallel optimizer

Boundary Mathematics Potential for Application

    logic
        theorem proving
        expert system inference
        rulebase organization
        database management
        program verification and optimization
        contradiction maintenance
    parallel computation
        distinction networks
        boundary numbers
        transparent conversion of programs
    other applications
        visual programming
        cognitive models
        diagrammatic formalisms

Losp Development Potential

boundary mathematics
      boundary calculi
            interpretations
                  cognitive psychology
                  developmental psychology
                  education
                  metaphysics
            uses
                  cognitive models
                  training
                  elementary education
                  mathematics education
      calculus of indications
            interpretations
                  atomic physics
                  cosmology
                  philosophy
                  general systems theory
            propositional logic
            first-order logic
                  integers
                  strings
                  lists
                  trees
                  sets
                  maps
            uses for computer science
                  linear implementation
                        knowledge-based programming
                        inference engines
                  parallel implementation
                        theorem proving
                              state transition models
                                    planning
                              program verification
                                    optimization
                              database management
                              parallel programming
                                    transparent translation
                                    parallel software
                                    distributed computing
                              expert system tools
                                    knowledge compilation
                                    structuring
                                    acquisition
                        uncertainty calculi
                  machine learning

visual interface and visual programming
waveform calculi
timed circuits
imaginary numbers
contradiction maintenance

Products

real-time deductive engine
expert system compiler
knowledge-based graphics
programmer's associate
visual programming system
parallel implementation engine
contradiction tolerant deduction