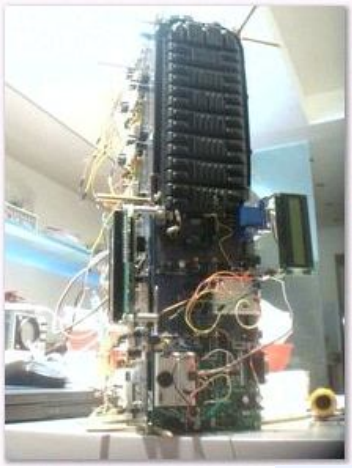
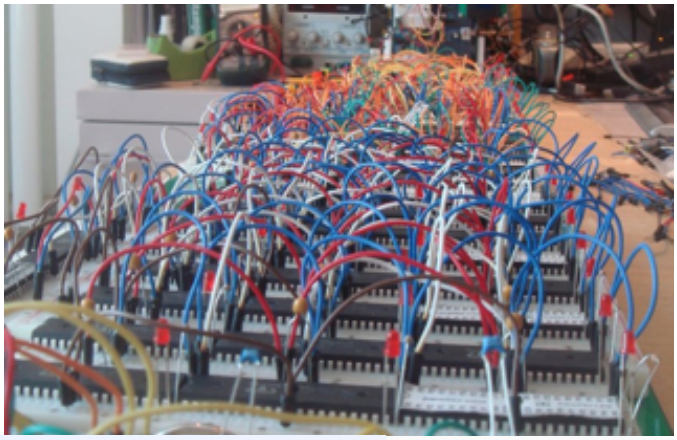
"Fill the Big Brain" Project Searchable Thread Index

Construction of a Parallax-Propeller-Based Brain

"I view the Big Brain as a powerful mind with a large domain that it wants to control, organize, and bring together for some higher unknown purpose. I am only the mediator, or moderator of the Big Brain, to help provide for its wants, desires and demands... Humanoido"





V1.1
Pages 1 through 71
Posts #1 through #1,415
by Humanoido

This project thread is an on-going experiment in Open Source posting. The thread is open source so the project can be constructed as others can follow along and/or contribute. It is different from some open source projects that are constructed and designed behind-the-scenes and then published as open source for use. The index is arranged by pages of consecutive thread numbers. Searching is possible by page number, post number, commentator, and post subject with post sub-title.

The Brain project began as an idea posted in the Parallax Robotics Forum, with the question posed about a big robotic brain, "What would you put in it?" After considerable discussion, I decided to build an actual brain while maintaining the open source status. Varying phases are explored throughout the posts, such as ideas, design, hardware, assembly, software, testing, mechanics, drawing, and research. It has led to the complete construction of a fully functioning Parallax-Propeller-based robot Brain. The thread may be ongoing as the Brain has now taken on interests of its own.

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#01 Humanoido: similarity to a human brain, vision processing, memory, autonomic nervous system
#02 P!-Ro: Use an extremely large array of sensors similar to that of the human nervous system.
#03 Leon: Consciousness.
#04 Erco: I would say that all the brainpower in the world needs to be supported by a robot with equally impressive sensors and mechanicals that use all that processing power to move around in and manipulate the world around it.
#05 Whit: keep "out of trouble." That is, keep it from running into things, running off drops or down stairs. keep itself powered, solar panels, calling out for help, trouble alarm. Basic robot safety (protecting itself) would be my first priority. I guess I would aim for the most basic brain functions first.
#06 TinkersALot: Tongue In Cheek Sardonic Grin Smart Aleck anthropocentric thinking human intelligence
#07 Humanoido: autonomic nervous system, react automatically, hot, cold, light, dark, hunger, full, touch, smell, noise, tilt, terrain, wind, hurt
#08 Sylvie369: NYT article link
#09 Humanoido: the brain can be bigger, faster and use more sophisticated AI
#10 Humanoido: Single skill evolution can become evolved, EXPO robots
#11 Lardom: Robot charging station
#12 Humanoido: Determine right from wrong, prioritize
#13 Humanoido: Personality mode
#14 Erco: A sense of duty
#15 P!-Ro: It can vote
#16 Humanoido: interpret the law, a philosophical center
#17 Humanoido: fuzzy logic, less rigid, average, approximate, result inconclusive, gray water, interpret vision, sets of general algorithms apply across the board
#18 Humanoido: snap decisions and judgements when there is limited or no time to think
#19 Humanoido: emotional center, interest heightened or lack, robust behaviors = interesting activities
#20 Humanoido: Transfer information, cog to cog wiring, special brain lobe

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#21 Humanoido: Thinking faster than original prop specs, internal pure thought should be the fastest
#22 Humanoido: algorithms to transport/understand information/thought, machine approximation
#24 Humanoido: smaller brain, model after the bigger brain, fit hobby budget/resources, go above and beyond the basics, basics include vision, obstacle avoidance, beeping,

moving in some patterns, determining location/orientation, sumo, maze solving, wandering, not falling off ledge, ranging, mapping, accepting input from sensors, recharge batteries, beyond basics include thinking, reasoning, ability to resolve problems, accept new challenges
#25 Humanoido: Multi-Brain Concept a duplicate brain, help Alzheimer's, double brain power
#26 Humanoido: (brain in a brain) 2nd brain housed inside the 1st. Though I expect the ability to connect and disconnect brains on the outside would be a useful feature in times of service, debugging or expanding with more brains. Maybe if brains are made inexpensively, they could be discarded and recycled. With multiple brains come dedicated brains. Brains could be located anywhere inside the robot. How about off-the-shelf brains. Companies could compete to see who can make the best brain.
#27 Humanoido: a big brain can be filled with interconnected hybrid processors
#28 Humanoido: A Brain Chart, Brain Stem - route information via nerve center to mobility center
#29 Ratronic: where is the link to the brain chart?
#30 Humanoido: provided link
#31 Humanoido: 1st Hybrid Brain Processor working, 2 languages, 1st successful prototype brain stem
#32 Humanoido: Robotic Brain Stem (with photo)
#33 Humanoido: with photo, Adding the Brain Base to the Big Brain
#34 Humanoido: Robotic Brain Filler
#35 Whit: Please continue posting, very interesting. Don't let the lack of posting discourage you
#36 Humanoido: moved into the next phase which is the actual construction of the brain.
#37 Humanoido: A Working Robot Brain Blob! (with photo)
#38 Humanoido: The Next Brain Blob Addition
#39 Humanoido: Brain Blob Software (Blobber Code)
#40 Humanoido: Open Source

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#41 Humanoido: Proto Board Brain Surgery Technique to Reduce Power Consumption
#42 Humanoido: Soldering Brain Pins
#43 Jonlink0: action potentials that can be sent are excitatory, and each neuron only has an 8-cell (moore) neighborhood, "waves" of action potentials will grow chaotically from a disturbance in the medium. Some method of creating inhibitory action potentials (perhaps utilizing extra cell states?), as well as input/output methods (easily done by changing certain cell states according to the states of the robot's sensors), may cause interesting behavior. Some sort of inhibitory action potentials are obviously necessary to prevent the automaton from becoming saturated with chaotic activity, which is what Brian's Brain will default to if given semi-random sensor input.
#44 Humanoido: more processors ideal for neural net neuron simulations
#45 Humanoido: software with self reasoning power. It doesn't need to be an Einstein but some intelligence greater than a bug would be appreciated. Memory needs to be added, as so far the sum total is reference eeprom at 20 x 32KRAM. Propeller can access PC and the PC has TeraBytes of operating storage, use a server to provide wireless data storage. Web access can provide a knowledge base to work with.
#46 Humanoido: Brain Guts Data Light Convert Power LED to a Data LED (Parallax Propeller Proto Board)
#47 Humanoido: Brain Definitions as Applied to the Brain Blob The list of Brain components…

#48 Humanoido: Jumper Leads
#49 Humanoido: Brain Span Construction
#50 Humanoido: Brain Blobatory Breadboard Retrofit
#51 Mike G: you do not need a big brain. You need a big network with many specialized processor nodes.
#52 Humanoido: Open Source Project
#53 Humanoido: acting upon information received from some giant server.
#54 Mike G: use one specialized processors for vision, one for hearing, one for voice recognition, and one for speech. Abstracting these tasks makes the whole much more extensible and it allows a device to contain only the nodes needed to fulfill a particular task. Plus it would be easier to place the specialized nodes anywhere on the device.
#55 Humanoido: Brain Blob Preliminary Specs
#56 Mike G: why use a full or half duplex bus over say an 8-bit or 16-bit parallel bus
#57 Humanoido: Brain Stem is using a BASIC Stamp which is capable of doing one thing at one time, full duplex would be meaningless. Half duplex is an ideal match because it's dedicated to motor mobility functions which happen relatively slowly anyway. The Propellers run at full duplex, which do the
upper thinking and higher brain data transfers at higher speeds, hence the hybrid terminology. The master can treat 21 EEPROMs across the slaves as one distributed EEPROM equal to the sum of the individual parts.
#58 Humanoido: Processors tasked out to do specific jobs. Generally in the OBEX we see apps that run in specific cogs. Dedicating cogs/processors to these specific areas of the brain is entirely feasible. The human brain is tasked out in a similar fashion, i.e. a place for vision, motor functions, speech, memory, etc.
#59 Mike G: I can't wrap my mind around the logic it would take to coordinate such memory access
#60 Humanoido: The master can assign indexing to each prop board to define its location which gets stored into eeprom. Slaves and Master can access this global eeprom memory storage location to determine who's who and where they're located. These character maps are drawn out and stored in eeprom, then globally accessed. It's also simple to write a routine to pass variables and store them in specific eeproms. Access is by asking the slave for the information. The IC2 connection is transparently local to any requests and of no global concern.

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#61 Mike G: I see code executing in a COG on every Prop that deals with bus arbitration and some kind of packet protocol. You'll need a way to process and organize the disparate EEPROM data.
#62 Ravenkallen: develop a weather forecasting module
#63 NikosG: Brain1: Survivability e.g. by returning to a recharging station, or keeping itself in light where it could receive recharging through solar panels or tracking the solar panels (at this point I can contribute) Brain2: Ability to move autonomous and avoid obstacles, and also to choose the best way (Maze problem) Brain4: Ability to take a variety of measurements (use any kind of sensors) (I agree with "Ravenkallen") Brain3: remote communication with it master (ability to send data and receive commands) Brain5: Ability to perform task using a robot arm Brain6: Ability to transform Itself (change shape or leave some mechanical parts in order to achieve something). Have you ever thought your robotic "big Brain" to have a mechanism that can add or remove the aproppriate card in a specific socket?
#64 Humanoido: brain ground based exploration, process telemetry from the probe or satellite

#65 Humanoido: Processing/organizing disparate EEPROMs assigned to master or sub master
#66 Humanoido: legs move, fix things, small hands to reach/grasp, control, perform tasks
#67 Humanoido: tasking interface that could serve as a standard connection point to the outside world
#68 Humanoido: link to USB cable powers Protoboards not over 500mA, for testing and development
#69 Software Overview
#70 Hardware Development
#71 Humanoido: staid algorithms, maze solving, faster, more efficient/sensors, sensors at each side, special sensor - high up telescoping mirror looks at maze top down, ascertain solution differently
#72 Humanoido: shape shifting brain, works with software/hardware, brain carries its own tools/parts,
removing one assembly and attaching another, assemblies store in a spare brain cavity
#73 Mike G: some kind of a bootstapper to "Self Load" code into the multiple Props? Maybe similar to the ZigBee bootloader blog/post?
#74 Humanoido: software currently uses BASIC Stamp commands beginning at the first level of the Brain Stem which filters upwards through the Brain Base and on through the Brain Span
#75 Humanoido: bus single wire, two wire, parallel interfaces, self loading, eeprom, crystal propagation, leave room for future development like the first model T car
#76 NikosG: personal projects with vision, maze, comments
#77 Humanoido: personal projects comments
#78 More about the LED Mod (with photos)
#79 Test Software code used to test the LED modification on the Parallax Propeller Proto Board
#80 Power Regulator Modification (with photo)

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#81 Humanoido: data light will be installed in as many boards as possible. testing will be a separate project.
#82 Humanoido: follow LED mod installs, decoupling capacitor installation, decoupling capacitor test?
#83 Brain Blob (Dangerous Growth Spurt?) (with photos)
#84 Brain Blob Mods Complete (with photos)
#85 Test Software - Brain Blob Test (with code) BRAIN BLOB TEST.zip
#86 Decoupling Capacitor
#87 Testing Phase
#88 Troubleshooting Phase
#89 MikeG: sorry for the rant
#90 Humanoido: these hobby machines are designed to satisfy my purposes
#91 Troubleshooting Results All boards are Operational
#92 Revised Test Software BRAIN BLOB TESTb.zip
#92 Johlink0: my robot cellular neural network similar to Brian's brain, genetic algorithm to allow learning
#94 Humanoido: The sharing of these ideas will undoubtedly lead to something remarkable.
#95 Software Test 2 brainblobtest2led.spin
#96 Boards on Boards This is the board attachment phase

#97 Power Testing
#98 Testing Conclusions
#99 Micro photo of 241 resistor
#100 Small breadboards are added to PPPBs (photo)

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#101 Building DIY Breadboards A DIY project for Brain boards (with photos of breadboards)
#102 Testing setup for LEDs using breadboards (photo)
#103 Getting ready to add more breadboards to these PPPBs (photo)
#104 the last PPPB gets a solderless breadboard (photo)
#105 Humanoido: simple examples of learning algorithms, 1 Propeller, apply to multiple processors
#106 Jonlink0: Propeller Life object modify cell-changing algorithm from line 362 onwards
#107 Humanoido: The brain should be able to solve problems in which man never even thought about.
#108 Brain Blob BUS The foundation of the Hybrid BBB (with photos)
#109 Green Brain Blob & Green Guts Approach to recycling hardware and software (with photos)
#110 Brain Cog Power Draw Managing current within a Brain Blob (with illustration)
#111 Brain Work Sheet
#112 All About Brain Serial Interfacing Deciding nature of various connecting interfaces (hookup diagrams)
#113 Resistor Selection Propeller Protection & Pull Down Considerations
#114 Regulator (with hookup diagram)
#115 Barrel Power Connector Basic connections (with PPPB power section illustration)
#116 LED and Surrounding Territory Pictorial Map of LED on PPPB (with illustration)
#117 LED Schematic Sketch for modifying the LED (with illustration)
#118 Connector Pictorial Identifying the Propeller pins on the added connector (with illustration)
#119 PPPB Sketchings & Schematics Useful data notes for hookup (with illustration)
#120 Another Mod to the LED Secondary mod brings power consumption within reason

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#121 LED Second Mod To bring LED power draw into proper range (with schematic)
#122 LED Resister Determination for 2nd Mod
#123 Introducing Brain Replicants Modular Brain Pieces for Assembly
#124 Humanoido: self repair/maintenance, degradation, dedicated sections, growing memory capacity,
electrical signals, upgrading/evolution, combining components, role in society, function/ purpose
#125 Humanoido: a ten year project of reverse engineering the human brain according to this source
#126 Human Brain Map References
#127 post reserved for books on building brains
#128 Pinout of First Connector
#129 Proposed Brain Concepts the current (in flux) brain concept
#130 Important Brain Concepts
#131 Reset Install Examination of method to install reset circuit (with photo)
#132 Basic PPPB with LED Mod Yellow lead from LED resistor to Propeller pin (with

photo)
#133 Brain Span Constructed (with photo)
#134 Brain Span Working LEDs indicate functioning (with photo)
#135 Brain Span Troubleshooter Repairs made the next day
#136 Brain Span Animation Showing cycles of two LEDs per board (with animated photo)
#137 Increasing Brain Span Power Reliability Discovering settings to increase reliability
#138 Jumper Data Simplified wiring with jumpers (with photo)
#138 Brain Span Boards Clean Room Kept in dust-free containers (with photo)
#140 Brain Span Test Spin Simple software test for Brain Span brainblobtest3led.spin

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#141 Brain Span Serial Communications Bspan_send.spin, Bspan_receive.spin (with screen capture)
#142 New Brain Exoskeleton Structure A different kind of Skyscraper (with photo)
#143 Software with BS2 Functions For use with the Brain Blob
#144 Brain Board Configuration Try Out Formulating a final form (with photo)
#145 Nylon Spacers and Hardware Keeping minimal weight
#146 Brain Blob Resistors Revisited Establishing resistor values (with diagram)
#147 Open Season on Serial Objects Serial communications sources abound
#148 Brain Blogging http://forums.parallax.com/entry.php...-Brain-Project
#149 Brain Exoskeleton Redesigned New design improvements
#150 Online LCD Eavesdropping on the Brain's thinking (with photos of LCDs)
#151 Another Question - a Keyboard on your Brain what functions would you assign to each key?
#152 The 1st Propeller Desktop Brain Horizontal Computational Brain Machine (photo)
#153 Whit: Your documentation of this is amazing. I always learn something reading this thread.
#154 Humanoido: hope you can build a brain
#155 Brain Blob and BASIC Stamp Supercomputer Software Similarities are striking
#156 Utilizing Liquid Crystals - the LCD
#157 The Dream World Four types of brain dreaming
#158 Multi-purposed Software
#159 Case of the Missing Software
#160 The EXO: Exoskeleton Physical Form Factor Design Creating a new exo design

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#161 Connecting EXO Boards Avoiding short circuits (with photo)
#162 Solderless Breadboard Results Favorable results offer permanent solutions
#163 Solderless Breadboard Positioning The critical position is established (with photos)
#164 Dialectric Insulating Strips Design These prevent short circuits (with photo)
#165 Solderless Breadboard Inverted Testing Making sure the breadboards do not disengage
#166 Standard Brain Topology
#167 Time Table New time schedule in effect
#168 Invention of Brain Wrap When parts of your brain stick out (with photos)
#169 Design with Fewer Parts New design is more efficient (with photo)
#170 Optical Illusion One side appears space larger than the other (with photo)
#171 Round Robin Rings Schematic Brain Blob Basic New Design Connections (diagram)
#172 EXO Board Rows Showing the assembly of one EXO side (with photo)

#173 Brain Span Assembly challenge
#174 Right Angle Hardware Selection Angle iron connects Brain Spans together
#175 Balance Focal Point How to balance three brain spans
#176 Brain Span Analysis In terms of weight and wire length (with diagrams)
#177 Brain Span Configuration Making the decision to position weight and wiring (with diagram)
#178 Powering up 5-volt sensors in the Brain
#179 Brain Hybrid Form Factor Establishing a dual form factor brain
#180 Brain Photos Showing Hybrid Exo Configs Days experimenting - various EXO configurations

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#181 Pyramid Brain - Just for Fun (with photo)
#182 Brain Span Assembly Adjusting the hardware (with photo)
#183 Longer Bolts Create Stubs for Extra Attachments
#184 Getting ready to Program the Brain The 1st version Brain assembly comes into the light (phto)
#185 Brain Slots & Exo Expansion
#186 Brain Secondary Phase Expansion
#187 Injecting & Measuring Power Connector pin header (photo)
#188 Standoff Spacers as Brain Protection Devices spacers protect Brain in desktop modes (photo)
#189 Humanoido: connect human brains, solve brain disease, restore sight, extend human knowledge
#190 Angle Iron for Attaching Host Boards Keeping expansion in mind (photos)
#191 Contemplating Brain Spin-offs Mobility Brain, self modifying hardware, morphing
#192 Self Rewiring Brain A Brain could rewire itself
#193 Brain Card Racks Going with a simple conventional approach (photo)
#194 Brain Boombox Size comparison (photo)
#195 Host Boards Increasing brain capacity (photo)
#196 Brain Span Positioning Important positioning improves interface (photo)
#197 Brain Protection Use of spacers serve multiple purposes (photo)
#198 Brain Dashboard - Vertice Set Utilize vertice for convenient positioning (photo)
#199 Brain Blob Wiring Assembly line wiring of multiple Propeller boards (photo)
#200 Brain Color Coded Wiring Use of color simplifies Brain identifications

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#201 Brain Wiring Jumpers Establishing wire jumper details
#202 Brain Twin Expansion Using twin Props to expand the Brain (photo)
#203 The Fourth Brain Span Benefit results from creating vertices
#204 Brain New Wiring Concept Sketch brings new ideas for Brain functions
#205 Brain Software Nanites Programmable concept introduces small Brain effectors
#206 Brain Swarms Swarming inside Brains leads to Intelligence
#207 Brain Weigh In How heavy or light is the brain? (photo)
#208 Brains Top Mounting Hardware Brain can host boards at top or sides (photo)
#209 Brain Board Hosting Example shows hosting Brain boards (photo)
#210 Phil Pilgrim: issues
#211 Humanoido: addressing Phil
#212 Brain Thread and Posts Structure
#213 Brain Structural Support Open side receives structural supports (photo)
#214 Brain Feet Increase stability and protection with feet (photo)

#215 Brain Assembly Line Reference Board Increasing the speed and ease of assembly
#216 Brain Class Now you can attend class to learn more about machine learning
#217 Brain Projects Reports on other Brain projects are welcomed
#218 Brain Vertice Defined Showing how to use Vertices (photo)
#219 Brain Reference Board for Assembly Line Use a reference for faster assembly (photo)
#220 Brain Spin Code, Reduce LED Current, small program reduces power consumed by Brain data lights LED_reduction.spin

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#221 Brain Photo Size Increased photos may appear larger
#222 Brain Logical Addressing Idea for identifying locations (diagram)
#223 Brain Data Light Measurements Setup (micro photo, schematic, photos)
#224 Brain Neighborhood Identification Labels DIY your own Brain Labels (photo)
#225 Power Connectors and Power Test (photos)
#226 Duane Degn: robot navigation, laser scan surrounding, multiProps/cogs analyze, create 3D map, re mobile, switching voltage regulator- they are much more efficient than linear regulators
#227 Humanoido: addressing the wire wrap issue
#228 Brain Address and Identification printed labels for PPPBs (photo)
#229 Humanoido: switching LED power is vastly different
#230 Duane Degn: current & voltage analysis
#231 Power Reduction
#232 Brain Reinforcement Repairing the bent Vertice (photo)
#233 Brain Handles Adjoining spacers double in purpose (photo)
#234 Brain 1st LCD Selected for Output Parallax 4x20 serial LCD (photo)
#235 Brain 4x20 LCD Connection Hardware connects the largest LCD (2 photos)
#236 Brain LCD Spacing not to bump the platform surface during the Brain flipping process (photo)
#237 Brain Large LCD Mod Reversal of hardware facilitates Brain mounting (2 photos)
#238 Brain Nylon Board Connects Connects from board to board use nylon hardware (photo)
#239 Brain Board Insulator and Changes Protecting circuit pathways from short circuits (photo)
#240 Introducing the Flip Brain The flip brain concept for use in any Brain position (5 photos)

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#241 Two Brain LCDs Intro of 2nd LCD serves multiple purposes (2 photos)
#242 Center Brain Span Reinforcement Center Span flex requires strengthening (2 photos)
#243 Peripheral Adapter Module A platform to hold and attach additional Brain peripherals
#244 Brain Construction - Transparent Plastic Common resource material for construction (photo)
#245 Brain LCD Prepping Small preparation before use (2 photos)
#246 List – projects & products with tiny solderless breadboard
#247 Brain Bagging Bag it - Brain bag your boards for longevity (photo)
#248 Brain Plumbing & Cryogenics Brain installation of piping and routing of service tubes (photo)
#249 Search for Brain Cryogenic Temperature Sensor (6 photos)

#250 Cryogenic Brain Fuels Examination of coolants and effects
#251 Brain Bundle Nerve Distribution (photo)
#252 Brain Hybrid Wiring Establishing a Truth Table for Communications Interfacing (diagram)
#253 Getting Started Brain Phases Checklist 1st Checklist for assembly showing Brain Phases
#254 Brain Schematic Drawing Program Finding a new drawing … (6 photos)
#255 Brain Drawing Program Selection The current choice of programs being explored (2 photos)
#256 Brain Cryo Development Brain Cryo material & removal (photo)
#257 Brain Breather 1 Weekend Brain development Update
#258 Brain Top Mount Real Estate Brain real estate at a premium (photo)
#259 Brain Open Span Board Move Moving a brain board on the open span side (2 photos)
#260 Brain Peripheral Adapter Mount Connecting the mounts (photo)

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#261 Brain LCD Repositioning Improvements to mounting the larger LCD (3 photos)
#262 How to Build a Brain LCD Mount Photos show left and right mount details (3 photos)
#263 Brain Summit Construction of the Brain Summit (3 photos)
#264 Brain 1st Cockpit Outline Cockpit Instrumentation Control Panel Design Ideas
#265 Brain Small LCD Repositioning Increasing Brain board density (2 photos)
#266 Brain Increase in Board Density
#267 Brain Outer Skin Cowling Outer Skin is introduced (photo)
#268 Current Brain Configuration
#269 Brain Summit Board The peak gets a new board! (photo)
#270 Brain Business End Definition of Brain Business End position (photo)
#271 Connecting the Brain Summit Board Hot melt glue is one possibility
#272 Brain Space Telemetry Designs for Telemetry of Brain Cockpit
#273 Duane Degn: project concepts, display, data, boards, communications, loss of spring constant
#274 Humanoido: photo size
#275 Humanoido: response to Duane
#276 The Brain CEO Board Expanding and positioning (photo)
#277 Duane Degn: photo size
#278 Duane Degn: photo beautiful
#279 Humanoido: enlargement in FireFox
#280 Brain Tests - TinyCAD Drawing Program Analysis TinyCAD as Brain drawing program

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281 Brain Design - Diagram Designer Designs.. Diagram Designer selection & analysis (2 photos)
282 Brain Schematic Elements List of Brain circuit schematic symbols required
283 Schematic Symbols Defined There is no standard so this is a suggested guide (2 photos)
284 Brain Breadboard Virtual Prototyping with Pebble Draw Brain circuits.. (photo)
285 Attaching the Brain Summit Board Hot glue anchors the Summit Board (2 photos)
286 Brain Board Numerical Increase New board total and arrangement
287 Brain Breadboard Virtual Prototyping with Fritzing for BASIC Stamp/Propeller Chips!

(photo)
288 Drawing Program Threads For Brain diagram drawing program research
289 Brain's Tiny Breadboard information about the Brain Tiny Breadboard (3 photos)
290 Brain Name Exploring the evolution of the Brain name
291 Brain I/O Ports as Sensors Ideas for I/O - touch sensing and nerve response
292 Brain Search Index Part One Brain thread Index by page, post number, content (photo)
293 Brain Posting Additions Method adds information to previous posts
294 Brain Processor Online/Offline Technique Method alters electronic Brain processors
295 Delegating Brain Components Brain components can reside in 3 places
296 Brain Peripheral Adapter Module Suspended New method speeds up development
297 Brain TV is a Reality Connecting TV via the internal stomach (2 entire brain photos)
298 Electronics & Electrical Tutorials as Brain Resources
299 New Brain Resource Cognition Cognition newsletter directly relates to Brain project (photo)
300 Brain AI News - Supercomputer Plays Jeopardy Machine playing against humans (photo)

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301 Propeller Brain Self Education Tutorials for Propeller Programming
302 Brain Searchable Photo Index Nearing completion
303 Brain Speech Recognition Talk to the Brain in your own language
304 New Fast Online Brain Search Index Faster searching without the PDF File
305 Creating Brain Speech - Parallax Propeller Takes the Lead as Speech Synthesizer Chip
306 Brain Senses - Focus on Vision Part 1 Color, Light Intensity, Ultrasonics (6 photos 1 vid)
307 Brain Senses - Focus on Vision Part 2 Image CAM, Object Detection, Infrared (5 photos)
308 Brain Senses - Focus on Vision Part 3 Human Detection (1 photo 1 vid)
309 Brain Capacity Question
310 Brain Capacity Reply
311 NMR Brain Map Neural Map & Interactive Brain Basics
312 Watson - Artificial Intelligence Brain Wins Jeopardy over humans (1 photo)
313 Brain Top Down Organization Organizing Brain modules
314 Brain Outer Skin Protection for wiring (1 photo)
315 Brain Inner Skin Covers TV (1 photo)
316 Installing Brain TV Simple methods to install tv (2 photos)
317 Celebrating The Brain's First Light Unveiling the Brain's 1st functions on TV (2 photos)
318 Brain Project Status Report on the current Brain Project (1 photo)
319 Play Chess Against the Brain Sources for Prop Chess (2 photos)
320 Brain Fresnel Tests Enlarging the image of a Parallax 3.5-inch TV (3 photos)

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321 Brain Color BASIC Programming Language - Adding Extended Color BASIC 1.0
322 Brain Text Test Demo
323 Brain Wireless Communications System - Connecting peripheral robots via wireless interface
324 Brain Receives Board 23 - Parallax board serves wireless transmit/receive
325 Spectacular Giant Brain Fly-Through! - Travel through the Brain's Inner space..

326 Brain Project Selects Google 3D SketchUp - Apps developed with free open source 3D package
327 Brain Senses - the Electric Tongue - Focus on Taste
328 Brain On EmbeddedBASIC - Adding languages to the Brain
329 Brain Voice Amplifier - Audio amp supplements headphones
330 Brain Sub-Index - Page 17 - Faster sub index gets pasted into the master index
331 Singing Brain - Brain singing on video with audio track
332 Opening Up Brain Channels - Brain is capable of multi channels
333 Brain Achieves Cellular Automatronic Life - Propeller Program gives life to the Brain
334 Brain Cellular Automaton Life Options - Screen, algorithm, resolution, cell, evolution
335 Brain Offsetting Technique - Maintaining multi-processing purity
336 Brain Talking Keyboard - Input by hearing the keys
337 Brain Lips - Vocalization sound series
338 Brain Automaton Singing - Beginning of Automatonic Brain Song
339 Teaching the Brain to Count - Regular, Slow & Slow-Fast Counting
340 Sovr: amazing project, working on moods

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341 Brain Mood 1st Considerations - Psychological state of mind
342 iBrain On LOGO for Unfolding Dream Worlds - Dimensionally Dream with LOGO
343 Brain X-RAY Machine - Developing Brain X-Rays now a Reality
344 Brain TV Tuning for BIG Characters - How to tune a TV driver
345 Brain Thought - Program bouncing in multi cog systems
346 Machine/Human Brain Time Travel - Speed up and slow down brain time
347 Mike G requesting code
348 Humanoido asking if MikeG wants to spend time on it
349 Mike G apologizes
350 Cde use a simulation
351 Humanoid re: code
352 Humanoido re: simulation
353 Brain Base Communications - Design, code, schematics, tests
354 Brain Geneology - From Stamps to Propellers
355 Brain Stem Communications - Revealing Brain Stem test code
356 Brain Appendage Mobility Contemplation
357 Cde simulator, floating point
358 Deriving the Brain Dream Equation - Moving closer to real Propeller dreaming
359 Integer Brain
360 humanoid re: integer, logo

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361 Cde re: data processing, fixed or float
362 Humanoido re: AI wish list
363 Cde re: need evolutionary software
364 Humanoido re: Six Objectives of Machine Intelligence
365 Prof_Braino re: float is less precise
366 Humanoido re: float etc.,supporting links
367 Six Objectives of Machine Intelligence
368 Prof_Braino re: dreaming is information digestion
369 Prof_Braino re: fixed point calculations
370 Humanoido re: dreaming benefits
371 Humanoido re: collective FP errors

372 The Benefits of Dreaming - The commonality of advanced life forms
373 Six Points of Dreaming - Paving the way towards AI dreaming
374 The Dream of AI
375 Multiple Life Permeation - Fitting life in multiple cogs
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