GreySmith Institute of Advanced Studies

Familiarization Tutorial

Part 2: Computer Science School

Two Schools

- NeuroPsychology
  - A sub-topic in Neuroscience this school is mostly interested in the interface between Neuroscience and Psychology
- Computer Science
  - The main topic under which we study computers and how they can be used to form an Artificial Consciousness

One Curriculum Division

- Neuropsychology Curriculum
- Computer Science Curriculum
- Artificial Consciousness Curriculum
- Related Topics Curriculum
- Miscellaneous Topics Curriculum

The GreySmith Institute

- Is a collaboration within a larger collaboration called Wikiversity-en
- Has about the same relationship to Wikiversity as a private Institute has to the University it operates from
- Is currently working on an Artificial Consciousness Project
- Is currently Unfunded.

Computer Science School

- The Computer Science School is responsible for developing theoretical and practical computer models, languages, and tests for evaluation of consciousness simulations.

Computer Science School

- Is broken up into Subdivisions such as:
  - Languages Division
  - Modeling (Phenomenal) Division
  - Functional and Hybrid Division
  - Evaluation Division
  - Cognitive Architectures Division
  - Research and Development Division

Computer Science School

- Is broken up into Subdivisions such as:
  - Languages Division
  - Modeling (Phenomenal) Division
  - Functional and Hybrid Division
  - Evaluation Division
  - Cognitive Architectures Division
  - Research and Development Division

Languages Division

- Is Broken into Subdivisions such as:
  - Languages Subdivision
  - Strategies Subdivision
  - Results Subdivision

Languages Division

- Is Broken into Subdivisions such as:
  - Languages Subdivision
  - Strategies Subdivision
  - Results Subdivision

Languages Subdivision

- Is responsible for researching the nature of languages that might be needed to implement an Artificial Consciousness

Languages Subdivision

- Is broken up into subdivisions such as:
  - Working Languages
  - Simulation Languages
  - Representational Languages
  - Redescription Languages
  - Natural Languages

Languages Subdivision

- Is broken up into subdivisions such as:
  - Working Languages
  - Simulation Languages
  - Representational Languages
  - Redescription Languages
  - Natural Languages

Working Languages subdivision

- The working languages subdivision is responsible for selecting and choosing implementations of working languages in which to build simulations

Languages subdivision

- Is broken down into further subdivisions such as:
  - Languages
  - Programming Aids
  - Repositories

Languages subdivision

- Is broken down into further subdivisions such as:
  - Languages
  - Programming Aids
  - Repositories

Languages Subdivision

- Is further subdivided into departments such as:
  - Java Languages Department
  - C Variants Department

Languages subdivision

- Is broken down into further subdivisions such as:
  - Languages
  - Programming Aids
  - Repositories

Programming Aids

- The programming Aids subdivision is responsible for the selection of Styles and Aids to programming such as:
  - Integrated Design Environments Dept.
  - Testing Protocols Department
  - Programming Styles Department

Languages subdivision

- Is broken down into further subdivisions such as:
  - Languages
  - Programming Aids
  - Repositories

Repositories

- Although the code repositories won't be on Wikiversity but on some system that implements CVS or SUBVERSION, the repositories subdivision is further subdivided by languages such as:
  - Java Repositories
  - C Variants Repositories

Languages Subdivision

- Is broken up into subdivisions such as:
  - Working Languages
  - Simulation Languages
  - Representational Languages
  - Redescription Languages
  - Natural Languages

Simulation Languages subdivision

- The Simulations Languages subdivision is responsible for finding or creating simulation languages or packages suitable for simulation of specific neural Models
- Currently it has not been subdivided if only because no simulations have been attempted.

Languages Subdivision

- Is broken up into subdivisions such as:
  - Working Languages
  - Simulation Languages
  - Representational Languages
  - Redescription Languages
  - Natural Languages

Representational Languages subdivision

- The Representational Languages subdivision is responsible for defining computer languages that simulate neural representations
- Currently this section has not been subdivided because no Representations have been properly defined to the point where a language is practical

Languages Subdivision

- Is broken up into subdivisions such as:
  - Working Languages
  - Simulation Languages
  - Representational Languages
  - Redescription Languages
  - Natural Languages

Redescription Languages subdivision

- The Redescription Languages subdivision, is responsible for implementing cross-compilers to convert between representational languages
- It has not been subdivided because no redescription languages can be defined until representational languages are implemented.

Languages Subdivision

- Is broken up into subdivisions such as:
  - Working Languages
  - Simulation Languages
  - Representational Languages
  - Redescription Languages
  - Natural Languages

Natural Languages subdivision

- The Natural Languages subdivision is responsible for evaluating existing work on Natural Languages and creating versions that are compatible with the Institutes work if required
- This section has not been subdivided if only because we are not yet ready to attempt to implement a natural language

Languages Division

- Is Broken into Subdivisions such as:
  - Languages Subdivision
  - Strategies Subdivision
  - Results Subdivision

Strategies Subdivision

- The Strategies Subdivision is further subdivided into subdivision such as:
  - Strategies for Working Languages
  - Strategies for Simulation Languages
  - Strategies for Representational Languages
  - Strategies for Redescription Languages
  - Strategies for Natural Languages

Strategies Subdivision

- The Strategies Subdivision is further subdivided into subdivision such as:
  - Strategies for Working Languages
  - Strategies for Simulation Languages
  - Strategies for Representational Languages
  - Strategies for Redescription Languages
  - Strategies for Natural Languages

Strategies for Working Languages subdivision

- The Strategies for Working Languages subdivision, is responsible for determining strategic choices that will make programming more efficient such as library versions for a specific function.
- It has not been subdivided further if only because there has not yet been a choice of languages to make decisions about

Strategies Subdivision

- The Strategies Subdivision is further subdivided into subdivision such as:
  - Strategies for Working Languages
  - Languages Strategies for Simulation
  - Strategies for Representational Languages
  - Strategies for Redescription Languages
  - Strategies for Natural Languages

Strategies for Simulation Languages subdivision

- The strategies for Simulation Languages subdivision is responsible for designing strategies for efficient use of simulation Languages and Packages
- It has not yet been subdivided if only because no simulation languages or packages have been selected yet.

Strategies Subdivision

- The Strategies Subdivision is further subdivided into subdivision such as:
  - Strategies for Working Languages
  - Strategies for Simulation Languages
  - Strategies for Representational Languages
  - Strategies for Redescription Languages
  - Strategies for Natural Languages

Strategies for Representational Languages subdivision

- The Strategies for representational Languages subdivision is responsible for the design of strategies for using representational languages in simulations
- It has not yet been subdivided if only because no Representational Languages have been specified

Strategies Subdivision

- The Strategies Subdivision is further subdivided into subdivision such as:
  - Strategies for Working Languages
  - Strategies for Simulation Languages
  - Strategies for Representational Languages
  - Strategies for Redescription Languages
  - Strategies for Natural Languages

Strategies for Redescription Languages subdivision

- The Strategies for Redescription Languages subdivision is responsible for the determination of strategies for using redescription languages in simulations
- This section has not been subdivided yet, if only because without any representational languages, strategies for redescription make no sense.

Strategies Subdivision

- The Strategies Subdivision is further subdivided into subdivision such as:
  - Strategies for Working Languages
  - Strategies for Simulation Languages
  - Strategies for Representational Languages
  - Strategies for Redescription Languages
  - Strategies for Natural Languages

Strategies for Natural Languages subdivision

- The Strategies for Natural Languages subdivision is responsible for determining strategies for the use of natural languages in simulations
- This section has not been subdivided yet, because none of the simulations are yet capable of doing natural language.

Languages Division

- Is Broken into Subdivisions such as:
  - Languages Subdivision
  - Strategies Subdivision
  - Results Subdivision

Results Subdivision

- Is broken down into subdivision such as:
  - Results from Working Languages
  - Results from Simulations Languages
  - Results from Representational Languages
  - Results from Redescription Languages
  - Results from Natural Languages
- None of these have been further subdivided

Computer Science School

- Is broken up into Subdivisions such as:
  - Languages Division
  - Modeling (Phenomenal) Division
  - Functional and Hybrid Division
  - Evaluation Division
  - Cognitive Architectures Division
  - Research and Development Division

Modeling (Phenomenal) Division

- The Modeling (Phenomenal) Division is responsible for Modeling phenomenal systems as such it's main role is to explain the function of the phenomenal system so that a functional model can be built that operates in the same manner.

Modeling Division

- The Modeling Division is subdivided into Subdivision such as:
  - Models
  - Theories
  - Implementation

Modeling Division

- The Modeling Division is subdivided into Subdivision such as:
  - Models
  - Theories
  - Implementation

Models subdivision

- The Models subdivision is further subdivided as follows:
  - Neural Network Models
  - Neural Group Models
  - Brain Based Devices
  - Integrated BBDs
  - High Integrated BBDs

Models subdivision

- The Models subdivision is further subdivided as follows:
  - Neural Network Models
  - Neural Group Models
  - Brain Based Devices
  - Integrated BBDs
  - High Integrated BBDs

Neural Network Models

- The Neural Network Models subdivision, is further broken down into subdivisions such as:
  - Model
  - Simulation Variants
  - Evaluations
  - Final Specifications

Neural Network Models

- The Neural Network Models subdivision, is further broken down into subdivisions such as:
  - Model
  - Simulation Variants
  - Evaluations
  - Final Specifications

The Model subdivision

- The Model subdivision is further subdivided into departments as follows:
  - Synaptic Models
  - Neuron Models Department
  - Network Models Department
- These Departments have not been further subdivided yet.

Neural Network Models

- The Neural Network Models subdivision, is further broken down into subdivisions such as:
  - Model
  - Simulation Variants
  - Evaluations
  - Final Specifications

Simulation Variants subdivision

- The Simulation Variants subdivision is responsible for simulation of models as defined by the models subdivision
- It is further subdivided as follows:
  - Java Neuron Project
  - C Variant Neuron Project
  - Java Neural Network Project
  - C Variant Neural Network Project
- None of these divisions are further subdivided

Neural Network Models

- The Neural Network Models subdivision, is further broken down into subdivisions such as:
  - Model
  - Simulation Variants
  - Evaluations
  - Final Specifications

Evaluations subdivision

- The Evaluations subdivision is responsible for evaluations of the variations of the neural models also being created in this Subdivision
- It has been subdivided into the following subdivisions:
  - Neuron Projects Evaluation
  - Neural Network Projects Evaluation
- Which have not been subdivided

Neural Network Models

- The Neural Network Models subdivision, is further broken down into subdivisions such as:
  - Model
  - Simulation Variants
  - Evaluations
  - Final Specifications

Final Specifications subdivision

- The Final Specifications subdivision is responsible for abstraction of specifications out of the designs of the Modeling Division, so that versions of the simulation software can be written to suit unspecified systems.

Final Specifications subdivision

- The final specifications subdivision, is further subdivided into the following:
  - Preliminary Neuron Specifications
  - Final Neuron Specificaiton
  - Preliminary Network Specifications
  - Final Network Specifications
- These sections have not been subdivided yet

Modeling Division

- The Modeling Division is subdivided into Subdivision such as:
  - Models
  - Theories
  - Implementation

Theories Subdivision

- The theories subdivision is responsible for deriving theories from the Models developed in the Division. It is further subdivided into:
  - Theories from Neural Models
  - Theories from Neural Groups
  - Theories from BBDs
  - Theories from Integrated BBDs
  - Theories from Highly Integrated BBDs

Theories subdivision

- The departments under the theories subdivision are not further subdivided yet

Modeling Division

- The Modeling Division is subdivided into Subdivision such as:
  - Models
  - Theories
  - Implementation

Implementation subdivision

- Is responsible for determining which theories are the most useful.
- Is further broken down into departments such as:
  - Implementations for Neural Models
  - Implementations for Neural Groups
  - Implementations for BBDs
  - Implementations for Integrated BBDs
  - Implementations for H-I BBDs
- These subdivisions are not further subdivided

Computer Science School

- Is broken up into Subdivisions such as:
  - Languages Division
  - Modeling (Phenomenal) Division
  - Functional and Hybrid Division
  - Evaluation Division
  - Cognitive Architectures Division
  - Research and Development Division

Functional and Hybrid Division

- The Functional and Hybrid Division is further subdivided into: Subdivisions such as:
  - Theories
  - Simulations
  - Evaluations

Functional and Hybrid Division

- The Functional and Hybrid Division is further subdivided into: Subdivisions such as:
  - Theories
  - Simulations
  - Evaluations

Theories Subdivision

- The Theories subdivision is meant to bring together theories of Consciousness of Functional and Hybrid nature as such it is further subdivided into:
  - Functional Theories
  - Hybrid theories

Theories Subdivision

- The Theories subdivision is meant to bring together theories of Consciousness of Functional and Hybrid nature as such it is further subdivided into:
  - Functional Theories
  - Hybrid theories

Functional Theories

- The Functional Theories subdivision is responsible for finding and explaining functional theories of Consciousness
- It is further subdivided into
  - ACT-R (Production System Theory)
  - Global Workspace Theory

Functional Theories

- The Functional Theories subdivision is responsible for finding and explaining functional theories of Consciousness
- It is further subdivided into
  - ACT-R (Production System Theory)
  - Global Workspace Theory

ACT-R (Production System Theory) Department

- ACT-R is an experimental system for implementing characteristics of consciousness using Production System Theory
- Currently It has not been subdivided but has a potential to model any functional system using a central executive model

Functional Theories

- The Functional Theories subdivision is responsible for finding and explaining functional theories of Consciousness
- It is further subdivided into
  - ACT-R (Production System Theory)
  - Global Workspace Theory

Global Workspace Theory Department

- The Global Workspace Theory is a theory in which a Multi-Agent architecture based on a Cartesian Theater concept that is an analog of a T.V. Network where every agent has full access to a single programming datastream
- It has not been subdivided yet.

Theories Subdivision

- The Theories subdivision is meant to bring together theories of Consciousness of Functional and Hybrid nature as such it is further subdivided into:
  - Functional Theories
  - Hybrid theories

Hybrid Theories subdivision

- The Hybrid Theories subdivision is about theories where Phenomenal and Functional components are mixed to make the theories work.
- The subdivision is subdivided into departments such as:
  - CLARION Architecture
  - GreySmith Virtual Architecture

Hybrid Theories subdivision

- The Hybrid Theories subdivision is about theories where Phenomenal and Functional components are mixed to make the theories work.
- The subdivision is subdivided into departments such as:
  - CLARION Architecture
  - GreySmith Virtual Architecture

Clarion Architecture Department

- The CLARION Architecture Department is responsible for theories based on the CLARION Cognitive Architecture
- It is currently not subdivided yet

Hybrid Theories subdivision

- The Hybrid Theories subdivision is about theories where Phenomenal and Functional components are mixed to make the theories work.
- The subdivision is subdivided into departments such as:
  - CLARION Architecture
  - GreySmith Virtual Architecture

GreySmith Virtual Architecture Theory Department

- The GreySmith Virtual Architecture Department is based on the GreySmith Virtual Architecture theory of consciousness, which states that consciousness is an architectural aspect of brains of a certain design probably shared by birds and mammals.

Functional and Hybrid Division

- The Functional and Hybrid Division is further subdivided into: Subdivisions such as:
  - Theories
  - Simulations
  - Evaluations

Simulations Subdivision

- The Simulations Subdivision is responsible for coming up with adequate simulations of consciousness theories so that they can be evaluated for impact
- It has been subdivided into departments such as:
  - Functional Simulations
  - Hybrid Simulations

Simulations Subdivision

- The Simulations Subdivision is responsible for coming up with adequate simulations of consciousness theories so that they can be evaluated for impact
- It has been subdivided into departments such as:
  - Functional Simulations
  - Hybrid Simulations

Functional Simulations subdivision

- The Functional Simulations subdivision is responsible for simulations of functional theories
- It has been subdivided as follows:
  - ACT-R Simulations
  - Global Workspace Simulations

Functional Simulations subdivision

- The Functional Simulations subdivision is responsible for simulations of functional theories
- It has been subdivided as follows:
  - ACT-R Simulations
  - Global Workspace Simulations

ACT-R Simulations Department

- ACT-R was originally written in LISP a language suited for use in production systems because it was list based and did rule-bases well.
- Although this department has yet to be subdivided, JACT-R, a Java simulation of ACT-R may become one of the simulations listed.

Functional Simulations subdivision

- The Functional Simulations subdivision is responsible for simulations of functional theories
- It has been subdivided as follows:
  - ACT-R Simulations
  - Global Workspace Simulations

Global Workspace Simulations Department

- The Global Workspace Simulations Department is responsible for finding or designing simulations of the Global Workspace Theory so that it can be evaluated.
- Although the Department has not be subdivided existing simulations include CMattie, IDA and LIDA

Functional and Hybrid Division

- The Functional and Hybrid Division is further subdivided into: Subdivisions such as:
  - Theories
  - Simulations
  - Evaluations

Evaluations Subdivision

- The Evaluation Subdivision is responsible for evaluating the simulations done in the simulation Subdivision to indicate the relative value of these subdivisions
- It has been subdivided into subdivisions such as:
  - Functional Theory Evaluations
  - Hybrid Theory Evaluations

Evaluations Subdivision

- The Evaluation Subdivision is responsible for evaluating the simulations done in the simulation Subdivision to indicate the relative value of these subdivisions
- It has been subdivided into subdivisions such as:
  - Functional Theory Evaluations
  - Hybrid Theory Evaluations

Functional Theories Evaluations subdivision

- The functional theories Evaluations subdivision, is responsible for evaluation of functional theories
- It is subdivided into the following departments:
  - ACT-R Evaluations
  - Global Workspace Evaluations

Functional Theories Evaluations subdivision

- The functional theories Evaluations subdivision, is responsible for evaluation of functional theories
- It is subdivided into the following departments:
  - ACT-R Evaluations
  - Global Workspace Evaluations

ACT-R Evaluations Department

- The ACT-R Evaluations Department is responislble for evaluation of any simulations based on ACT-R done by the simulations subdivision
- It has not been further subdivided

Functional Theories Evaluations subdivision

- The functional theories Evaluations subdivision, is responsible for evaluation of functional theories
- It is subdivided into the following departments:
  - ACT-R Evaluations
  - Global Workspace Evaluations

Global Workspace Evaluations Department

- The Global Workspace Evaluations Department is responsible for the evaluation of any Global Workspace simulations done in the simulations subdivision
- It has not been subdivided yet

Evaluations Subdivision

- The Evaluation Subdivision is responsible for evaluating the simulations done in the simulation Subdivision to indicate the relative value of these subdivisions
- It has been subdivided into subdivisions such as:
  - Functional Theory Evaluations
  - Hybrid Theory Evaluations

Hybrid Theories Evaluations subdivision

- The Hybrid Theories Evaluations subdivision, is responsible for evaluation of any Hybrid Theories Simulated in the Simulations Subdivision
- It has been subdivided into:
  - CLARION theory Evaluation
  - GreySmith Virtual Architecture Evaluation

Hybrid Theories Evaluations subdivision

- The Hybrid Theories Evaluations subdivision, is responsible for evaluation of any Hybrid Theories Simulated in the Simulations Subdivision
- It has been subdivided into:
  - CLARION theory Evaluation
  - GreySmith Virtual Architecture Evaluation

Clarion Theory Evaluation Department

- The CLARION Theory Evaluation Department is responsible for evaluation of the simulations based on the CLARION Architecture done in the Simulations Subdivision
- It has not been currently subdivided yet

Hybrid Theories Evaluations subdivision

- The Hybrid Theories Evaluations subdivision, is responsible for evaluation of any Hybrid Theories Simulated in the Simulations Subdivision
- It has been subdivided into:
  - CLARION theory Evaluation
  - GreySmith Virtual Architecture Evaluation

GreySmith Virtual Architecture Evaluations Department

- The GreySmith Virtual Architecture Evaluations Department is responsible for evaluation of any simulations of the GreySmith Virtual Architecture done under the Simulations Subdivision
- It has not been subdivided yet.

Computer Science School

- Is broken up into Subdivisions such as:
  - Languages Division
  - Modeling (Phenomenal) Division
  - Functional and Hybrid Division
  - Evaluation Division
  - Cognitive Architectures Division
  - Research and Development Division

Evaluations Division

- The Evaluations Division is responsible for developing Protocols for testing Simulations of consciousness theories To be able to rank them according to some measure of consciousness
- It is divided into the following Subdivisions
  - Simulations, Protocols, Results

Evaluations Division

- The Evaluations Division is responsible for developing Protocols for testing Simulations of consciousness theories To be able to rank them according to some measure of consciousness
- It is divided into the following Subdivisions
  - Simulations, Protocols, Results

Simulations Subdivision

- The Simulations Subdivision is responsible for gaining access to the simulations in order to evaluate them
- It is subdivided into the following:
  - Evaluations of Phenomenal Simulations
  - Evaluation of Functional Simulations
  - Evaluation of Hybrid Simulations
  - Evaluation of Proprietary Simulations
  - Evaluation of Obscure Simulations
  - Evaluation of Non-English Simulations

Evaluations Division

- The Evaluations Division is responsible for developing Protocols for testing Simulations of consciousness theories To be able to rank them according to some measure of consciousness
- It is divided into the following Subdivisions
  - Simulations, Protocols, Results

Protocols Subdivision

- The Protocols Subdivision is responsible for coming up with protocols by which to evaluate Consciousness Simulations
- It is subdivided as follows:
  - Protocols for phenomenal simulations
  - Protocols for Functional simulations
  - Protocols for Hybrid simulations
  - Protocols for Proprietary simulations
  - Protocols for Obscure simulations
  - Protocols for Non-English simulations

Evaluations Division

- The Evaluations Division is responsible for developing Protocols for testing Simulations of consciousness theories To be able to rank them according to some measure of consciousness
- It is divided into the following Subdivisions
  - Simulations, Protocols, Results

Results Subdivision

- The results Subdivision is responsible for tabulating the results of experiments based on protocols developed by the protocol Subdivision.
- It is subdivided as follows:
  - Results on Phenomenal simulations
  - Results on Functional simulations
  - Results on Hybrid simulations
  - Results on Proprietary simulations
  - Results on Obscure simulations
  - Results on Non-English simulations

Computer Science School

- Is broken up into Subdivisions such as:
  - Languages Division
  - Modeling (Phenomenal) Division
  - Functional and Hybrid Division
  - Evaluation Division
  - Cognitive Architectures Division
  - Research and Development Division

Cognitive Architectures Division

- The cognitive Architectures Division is responsible for Evaluating Cognitive Architectures.
- It has been broken down into:
  - Phenomenal Architectures
  - Hybrid Architectures
  - Functional Architectures

Cognitive Architectures Division

- The cognitive Architectures Division is responsible for Evaluating Cognitive Architectures.
- It has been broken down into:
  - Phenomenal Architectures
  - Hybrid Architectures
  - Functional Architectures

Phenomenal Architectures Subdivision

- The Phenomenal Architectures Subdivision, is responsible for the evaluation of the Architectures based on Phenomenal Systems:
- It is subdivided into the following:
  - TNGS Cognitive Architecture

TNGS Cognitive Architecture Department

- The TNGS Cognitive Architecture Department is responsible for evaluation of the extended TNGS theory as written by Dr. George M. Edelman
- It has not yet been further subdivided

Cognitive Architectures Division

- The cognitive Architectures Division is responsible for Evaluating Cognitive Architectures.
- It has been broken down into:
  - Phenomenal Architectures
  - Hybrid Architectures
  - Functional Architectures

Hybrid Architectures Subdivision

- Hybrid Architectures are architectures that have neural simulations as part of their structure, but are not phenomenal because they also have functional elements as part of their structure
- This Subdivision is subdivided as follows:
  - CLARION Cognitive Architecture
  - GreySmith Virtual Architecture

Hybrid Architectures Subdivision

- Hybrid Architectures are architectures that have neural simulations as part of their structure, but are not phenomenal because they also have functional elements as part of their structure
- This Subdivision is subdivided as follows:
  - CLARION Cognitive Architecture
  - GreySmith Virtual Architecture

CLARION Cognitive Architecture subdivision

- The CLARION Cognitve Architecture subdivision is responsible for evaluation of the CLARION cognitive architecture.
- It is broken up into Departments such as:
  - Modules
  - Components
  - Architecture

CLARION Cognitive Architecture subdivision

- The CLARION Cognitve Architecture subdivision is responsible for evaluation of the CLARION cognitive architecture.
- It is broken up into Departments such as:
  - Modules
  - Components
  - Architecture

Modules subdivision

- The Modules subdivision of the CLARION architecture is responsible for explaining how the various modules of CLARION work
- It is subdivided into departments such as:
  - ACS Module
  - NACS Module
  - MS Module
  - MCS Module

Modules subdivision

- The Modules subdivision of the CLARION architecture is responsible for explaining how the various modules of CLARION work
- It is subdivided into departments such as:
  - ACS Module
  - NACS Module
  - MS Module
  - MCS Module

ACS Module Department

- The ACS Module or Action Centered System Module is responsible for evaluation of the ACS Module of CLARION
- It has not been further subdivided yet

Modules subdivision

- The Modules subdivision of the CLARION architecture is responsible for explaining how the various modules of CLARION work
- It is subdivided into departments such as:
  - ACS Module
  - NACS Module
  - MS Module
  - MCS Module

NACS MODULE DEPARTMENT

- The NACS module department is responsible for evaluation of the Non-Action Centered System or NACS Module
- It has not been subdivided yet.

Modules subdivision

- The Modules subdivision of the CLARION architecture is responsible for explaining how the various modules of CLARION work
- It is subdivided into departments such as:
  - ACS Module
  - NACS Module
  - MS Module
  - MCS Module

MS Module Department

- The MS Module Department is responsible for evaluation of the Motivation System or MS Module of CLARION
- It has not been subdivided yet

Modules subdivision

- The Modules subdivision of the CLARION architecture is responsible for explaining how the various modules of CLARION work
- It is subdivided into departments such as:
  - ACS Module
  - NACS Module
  - MS Module
  - MCS Module

MCS Module Department

- The MCS Module Department is responsible for evaluation of the Motor Control System or MCS of CLARION
- It has not been subdivided yet

CLARION Cognitive Architecture subdivision

- The CLARION Cognitve Architecture subdivision is responsible for evaluation of the CLARION cognitive architecture.
- It is broken up into Departments such as:
  - Modules
  - Components
  - Architecture

Components Subdivision

- The Components subdivision is responsible for the evaluation of the components of the CLARION architecture
- It has been subdivided as follows:
  - ACS Components
  - NACS Components
  - MS Components
  - MCS Components

Components Subdivision

- The Components subdivision is responsible for the evaluation of the components of the CLARION architecture
- It has been subdivided as follows:
  - ACS Components
  - NACS Components
  - MS Components
  - MCS Components

ACS Components Department

- The ACS Components Department is responsible for evaluation of the Action Centered System of CLARION's components
- It has not been further subdivided yet

Components Subdivision

- The Components subdivision is responsible for the evaluation of the components of the CLARION architecture
- It has been subdivided as follows:
  - ACS Components
  - NACS Components
  - MS Components
  - MCS Components

NACS Components Department

- The NACS Components Department is responsible for evaluation of the Non-Action Centered System of CLARION's components.
- It has not been further subdivided yet

Components Subdivision

- The Components subdivision is responsible for the evaluation of the components of the CLARION architecture
- It has been subdivided as follows:
  - ACS Components
  - NACS Components
  - MS Components
  - MCS Components

MS Components Department

- The MS components Department is responsible for the Evaluation of the Motivation System of CLARION's Components
- It has not been subdivided yet

Components Subdivision

- The Components subdivision is responsible for the evaluation of the components of the CLARION architecture
- It has been subdivided as follows:
  - ACS Components
  - NACS Components
  - MS Components
  - MCS Components

MCS Components Department

- The MCS Components Department is responsible for the evaluation of the Motor Control System of CLARION's components.
- It has not been further subdivided yet

CLARION Cognitive Architecture subdivision

- The CLARION Cognitve Architecture subdivision is responsible for evaluation of the CLARION cognitive architecture.
- It is broken up into Departments such as:
  - Modules
  - Components
  - Architecture

Architecture subdivision

- The Architecture subdivision is responsible for evaluation of the CLARION Cognitve Architecture
- It has been subdivided into:
  - CLARION Architectural Diagram
  - CLARION Component Maps
  - CLARION Architecture Description
  - CLARION Module Description
  - CLARION Component Description

Architecture subdivision

- The Architecture subdivision is responsible for evaluation of the CLARION Cognitve Architecture
- It has been subdivided into:
  - CLARION Architectural Diagram
  - CLARION Component Maps
  - CLARION Architecture Description
  - CLARION Module Description
  - CLARION Component Description

CLARION Architectural Diagram

- A Top-Level Diagram of the CLARION Architecture
- No further subdivision is necessary

Architecture subdivision

- The Architecture subdivision is responsible for evaluation of the CLARION Cognitve Architecture
- It has been subdivided into:
  - CLARION Architectural Diagram
  - CLARION Component Maps
  - CLARION Architecture Description
  - CLARION Module Description
  - CLARION Component Description

CLARION Component Maps

- This will be a collection of Diagrams of the different components of CLARION
- It has not been subdivided yet

Architecture subdivision

- The Architecture subdivision is responsible for evaluation of the CLARION Cognitve Architecture
- It has been subdivided into:
  - CLARION Architectural Diagram
  - CLARION Component Maps
  - CLARION Architecture Description
  - CLARION Module Description
  - CLARION Component Description

CLARION Architecture Description

- A file giving a top-level description of the CLARION Architecture
- No further subdivision is necessary

Architecture subdivision

- The Architecture subdivision is responsible for evaluation of the CLARION Cognitve Architecture
- It has been subdivided into:
  - CLARION Architectural Diagram
  - CLARION Component Maps
  - CLARION Architecture Description
  - CLARION Module Description
  - CLARION Component Description

CLARION Module Description

- A collection of Module Description papers
- Not subdivided yet

Architecture subdivision

- The Architecture subdivision is responsible for evaluation of the CLARION Cognitve Architecture
- It has been subdivided into:
  - CLARION Architectural Diagram
  - CLARION Component Maps
  - CLARION Architecture Description
  - CLARION Module Description
  - CLARION Component Description

CLARION Component Description

- A collection of papers on the CLARION Components
- Not subdivided yet

Hybrid Architectures Subdivision

- Hybrid Architectures are architectures that have neural simulations as part of their structure, but are not phenomenal because they also have functional elements as part of their structure
- This Subdivision is subdivided as follows:
  - CLARION Cognitive Architecture
  - GreySmith Virtual Architecture

GreySmith Virtual Architecture Subdivision

- The GreySmith V.A. subdivision is responsible for the evaluation of the GSVA Cognitive Architecture.
- It is subdivided as follows:
  - Modules
  - Components
  - Architecture

GreySmith Virtual Architecture Subdivision

- The GreySmith V.A. subdivision is responsible for the evaluation of the GSVA Cognitive Architecture.
- It is subdivided as follows:
  - Modules
  - Components
  - Architecture

Modules subdivision

- The Modules subdivision is responsible for evaluation of the Modules of GSVA
- It is broken down as follows:
  - Dual Mode Cortex Device
  - Attention System
  - Bottleneck Device
  - Instinct and cortex Device
- Continued on next page

Modules subdivision -2

- Meta-Index Device
- Skill Memory System
  - More Modules:
- Limbic System Device
- RAS Device
- Sensory System
- SMA Device

- None of these Departments are subdivided

GreySmith Virtual Architecture Subdivision

- The GreySmith V.A. subdivision is responsible for the evaluation of the GSVA Cognitive Architecture.
- It is subdivided as follows:
  - Modules
  - Components
  - Architecture

Components subdivision

- The Components subdivision is responsible for evaluation of the Components of the GSVA
- It is subdivided as follows:
  - Dual Mode Cortex Components
  - Attention System Components
  - Bottleneck Components
  - Instincts and Context Components
- Continued on next page

Components subdivision -2

- Continued from previous page:
  - Meta-Index components
  - Skill Memory Components
    - More Components
  - Limbic System components
  - RAS Components
  - Sensory System Components
  - SMA Components
- None of these sections are subdivided yet.

GreySmith Virtual Architecture Subdivision

- The GreySmith V.A. subdivision is responsible for the evaluation of the GSVA Cognitive Architecture.
- It is subdivided as follows:
  - Modules
  - Components
  - Architecture

Architecture subdivision

- The Architecture subdivision is responsible for evaluation of the GSVA Architecture as a whole
- It is subdivided as follows:
  - Cognitve Architecture Module Map
  - Cognitive Module Component Maps
  - Tutorials and Slide Shows
  - Cognitive Architecture Description
- Continued on next page

Architecture subdivision -2

- Continued from previous page:
  - Module Descriptions
  - Component Descriptions
    - Virtual Architecture Extension
  - Meta Cognition Module
  - Intention Virtual Machine Module
  - Volition Virtual Machine Module

Architecture subdivision

- The Architecture subdivision is responsible for evaluation of the GSVA Architecture as a whole
- It is subdivided as follows:
  - Cognitve Architecture Module Map
  - Cognitive Module Component Maps
  - Tutorials and Slide Shows
  - Cognitive Architecture Description

Cognitive Architecture Module Map

- This link connects to the GSVA Diagram a top level diagram mapping the modules of the GSVA
- No subdivisions are necessary

Architecture subdivision

- The Architecture subdivision is responsible for evaluation of the GSVA Architecture as a whole
- It is subdivided as follows:
  - Cognitve Architecture Module Map
  - Cognitive Module Component Maps
  - Tutorials and Slide Shows
  - Cognitive Architecture Description

Cognitive Module Component Maps

- This will be a collection of maps of the Components of the GSVA, subdivided by Module
- No subdivision has yet been done

Architecture subdivision

- The Architecture subdivision is responsible for evaluation of the GSVA Architecture as a whole
- It is subdivided as follows:
  - Cognitve Architecture Module Map
  - Cognitive Module Component Maps
  - Tutorials and Slide Shows
  - Cognitive Architecture Description

Tutorials and Slideshows

- This is a collection of Tutorial papers and slide shows about the GSVA
- No further subdivision is necessary

Architecture subdivision

- The Architecture subdivision is responsible for evaluation of the GSVA Architecture as a whole
- It is subdivided as follows:
  - Cognitve Architecture Module Map
  - Cognitive Module Component Maps
  - Tutorials and Slide Shows
  - Cognitive Architecture Description

Cognitive Architecture Description

- This is an article on the GSVA Cognitive Architecture described down to the Modular level.
- No further subdivision is necessary

Architecture subdivision -2

:

- Module Descriptions
- Component Descriptions
  - Virtual Architecture Extension
- Meta Cognition Module
- Intention Virtual Machine Module
- Volition Virtual Machine Module

- Not Subdivided yet

Cognitive Architectures Division

- The cognitive Architectures Division is responsible for Evaluating Cognitive Architectures.
- It has been broken down into:
  - Phenomenal Architectures
  - Hybrid Architectures
  - Functional Architectures

Functional Architectures Subdivision

- The Functional Architectures Subdivision is responsible for evaluation of functionally determined Architectures
- It is subdivides as follows:
  - ACT-R Cognitive Architecture
  - SOAR Cognitive Architecture
  - DUAL Architecture
  - Psi Architecture
- Continued on next page

Functional Architectures Subdivision -2

- Continued from previous page:
  - Copycat and Fargitecture
  - Independent Distribution Agent Architecture
- Other Architectures will undoubtedly be added in the future

Functional Architectures Subdivision

- The Functional Architectures Subdivision is responsible for evaluation of functionally determined Architectures
- It is subdivides as follows:
  - ACT-R Cognitive Architecture
  - SOAR Cognitive Architecture
  - DUAL Architecture
  - Psi Architecture

ACT-R Cognitive Architecture subdivision

- The ACT-R Cognitive Architecture subdivision, is responsible for evaluation of the ACT-R Cognitive Architecture
- It is broken down into the following:
  - Modules
  - Components
  - Architecture

ACT-R Cognitive Architecture subdivision

- The ACT-R Cognitive Architecture subdivision, is responsible for evaluation of the ACT-R Cognitive Architecture
- It is broken down into the following:
  - Modules
  - Components
  - Architecture

Modules subdivision

- The Modules Subdivision is responsible for analysis and evaluation of the modules of the ACT-R Architecture
- It is currenly not broken down further

ACT-R Cognitive Architecture subdivision

- The ACT-R Cognitive Architecture subdivision, is responsible for evaluation of the ACT-R Cognitive Architecture
- It is broken down into the following:
  - Modules
  - Components
  - Architecture

Components subdivision

- The Components subdivision is responsible for analysis and evaluation of the components of the ACT-R Architecture
- It is currently not broken down any further

ACT-R Cognitive Architecture subdivision

- The ACT-R Cognitive Architecture subdivision, is responsible for evaluation of the ACT-R Cognitive Architecture
- It is broken down into the following:
  - Modules
  - Components
  - Architecture

Architecture subdivision

- The Architecture subdivision is responsible for explaining the nature of the ACT-R Architecture
- It is currently broken down as follows:
  - ACT-R Cognitive Architecture Diagram
  - ACT-R Component Maps
  - ACT-R Cognitive Architecture Description
  - Java ACT-R Project

Architecture subdivision

- The Architecture subdivision is responsible for explaining the nature of the ACT-R Architecture
- It is currently broken down as follows:
  - ACT-R Cognitive Architecture Diagram
  - ACT-R Component Maps
  - ACT-R Cognitive Architecture Description
  - Java ACT-R Project

ACT Cognitive Architecture Diagram

- The ACT-R Cognitive Architecture Diagram is a top-level diagram of the ACT-R Architecture
- Currently the diagram is missing

Architecture subdivision

- The Architecture subdivision is responsible for explaining the nature of the ACT-R Architecture
- It is currently broken down as follows:
  - ACT-R Cognitive Architecture Diagram
  - ACT-R Component Maps
  - ACT-R Cognitive Architecture Description
  - Java ACT-R Project

ACT-R Component Maps

- The ACT-R Component Maps are a collection of Module level Maps describing the Components of the ACT-R Cognitive Architecture
- Currently this has not been broken down further.

Architecture subdivision

- The Architecture subdivision is responsible for explaining the nature of the ACT-R Architecture
- It is currently broken down as follows:
  - ACT-R Cognitive Architecture Diagram
  - ACT-R Component Maps
  - ACT-R Cognitive Architecture Description
  - Java ACT-R Project

ACT-R Cognitive Architecture Description

- A paper describing the ACT-R Cognitive Architecture
- Currently the paper is missing

Architecture subdivision

- The Architecture subdivision is responsible for explaining the nature of the ACT-R Architecture
- It is currently broken down as follows:
  - ACT-R Cognitive Architecture Diagram
  - ACT-R Component Maps
  - ACT-R Cognitive Architecture Description
  - Java ACT-R Project

Java ACT-R Project

- A Java ACT-R implementation that can be accessed via the Eclipse IDE, comes with a number of Modules that simulate particular brain functions.
- Also available from the same location is Tutorial information on how to use it
- The link is currently active

Functional Architectures Subdivision

- The Functional Architectures Subdivision is responsible for evaluation of functionally determined Architectures
- It is subdivides as follows:
  - ACT-R Cognitive Architecture
  - SOAR Cognitive Architecture
  - DUAL Architecture
  - Psi Architecture

Soar Cognitive Architecture Subdivision

- The SOAR Cognitive Architecture Subdivision, is responsible for evaluating the SOAR Cognitive Architecture
- Currently this section has not been broken down any further

Functional Architectures Subdivision

- The Functional Architectures Subdivision is responsible for evaluation of functionally determined Architectures
- It is subdivides as follows:
  - ACT-R Cognitive Architecture
  - SOAR Cognitive Architecture
  - DUAL Architecture
  - Psi Architecture

DUAL Architecture Subdivision

- The DUAL Architecture subdivision, is responsible for evaluation of the DUAL cognitive architecture
- This section has not been broken down any further.

Functional Architectures Subdivision

- The Functional Architectures Subdivision is responsible for evaluation of functionally determined Architectures
- It is subdivides as follows:
  - ACT-R Cognitive Architecture
  - SOAR Cognitive Architecture
  - DUAL Architecture
  - Psi Architecture

PSI Emotional-Cognitive Architecture subdivision

- The PSI Emotional-Cognitive Architecture subdivision is responsible for evaluation of the PSI architecture
- Currently this has not been broken down any further.

Functional Architectures Subdivision -2

- Copycat and Fargitecture
- Independent Distribution Agent Architecture

- Other Architectures will undoubtedly be added in the future

Copycat and Fargitecture subdivision

- The Copycat and Fargitecture subdivision is responsible for evaluating copycat and the Fargitecture that came from it.
- Currently this has not been broken down further.

Functional Architectures Subdivision -2

:

- Copycat and Fargitecture
- Independent Distribution Agent Architecture

- Other Architectures will undoubtedly be added in the future

Independent Distribution Agent Architecture subdivision

- The Independent Distribution Agent Architecture subdivision, is responsible for the evaluation of the IDA, and LIDA cognitive Architectures
- It is currently broken down into:
  - Modules
  - Components
  - Architecture

Independent Distribution Agent Architecture subdivision

- The Independent Distribution Agent Architecture subdivision, is responsible for the evaluation of the IDA, and LIDA cognitive Architectures
- It is currently broken down into:
  - Modules
  - Components
  - Architecture

Modules subdivision

- The Modules subdivision is responsible for evaluating the IDA architecture at the module level
- It is currently broken up into:
  - Metacognition Module
  - Database Perception Module
  - Constraint Satisfaction Module
  - Deliberation Module
- Continued on next page

Modules subdivision -2

- Continued from previous page
  - Negotiation Module
  - Problem Solving Module
    - More Modules
  - Behavior Net Module
  - Perception Module
  - Consciousness Module
  - Expectation Automation Module
- Continued on next page

Modules subdivision -3

- Continued from previous page
  - Working Memory Module
  - Episodal Memory Module
- None of these sections are further subdivided yet

Independent Distribution Agent Architecture subdivision

- The Independent Distribution Agent Architecture subdivision, is responsible for the evaluation of the IDA, and LIDA cognitive Architectures
- It is currently broken down into:
  - Modules
  - Components
  - Architecture

Components subdivision

- The Components subdivision is responsible for evaluation of the components that make up the IDA and LIDA architectures
- This section is broken down as follows:
  - Metacognition components
  - Database Perception Components
  - Constraint Satisfaction Components
  - Deliberation Components
- Continued on next page:

Components subdivision -2

- Continued from previous page:
  - Negotiation Components
  - Problem Solving Components
    - More Components
  - Behavior Net Components
  - Perception Components
  - Consciousness Components
  - Expectation Automation Components
- Continued on the next page

Components subdivision

- Continued from previous page:
  - Working Memory Components
  - Episodal Memory Components
- None of the sections described above are broken down further.

Independent Distribution Agent Architecture subdivision

- The Independent Distribution Agent Architecture subdivision, is responsible for the evaluation of the IDA, and LIDA cognitive Architectures
- It is currently broken down into:
  - Modules
  - Components
  - Architecture

Architecture subdivision

- The Architecture subdivision is responsible for explaining the IDA, and LIDA architectures
- It is broken down as follows:
  - IDA Architecture Diagram
  - IDA Cognitive Cycle Diagram
  - IDA Architecture Description

Architecture subdivision

- The Architecture subdivision is responsible for explaining the IDA, and LIDA architectures
- It is broken down as follows:
  - IDA Architecture Diagram
  - IDA Cognitive Cycle Diagram
  - IDA Architecture Description

IDA Architecture Diagram

- A Top Level Diagram of the IDA Cognitive Architecture with Modules clearly labelled.
- No further breakdown is necessary

Architecture subdivision

- The Architecture subdivision is responsible for explaining the IDA, and LIDA architectures
- It is broken down as follows:
  - IDA Architecture Diagram
  - IDA Cognitive Cycle Diagram
  - IDA Architecture Description

IDA Cognitive Cycle Diagram

- A Diagram depicting the cognitive cycle of the Independent Distribution Agent Architecture
- No further breakdown is needed.

Architecture subdivision

- The Architecture subdivision is responsible for explaining the IDA, and LIDA architectures
- It is broken down as follows:
  - IDA Architecture Diagram
  - IDA Cognitive Cycle Diagram
  - IDA Architecture Description

IDA Architecture Description

- A paper describing the Independent Distributed Agent Architecture down to the Modular level
- No further breakdown is needed

Computer Science School

- Is broken up into Subdivisions such as:
  - Languages Division
  - Modeling (Phenomenal) Division
  - Functional and Hybrid Division
  - Evaluation Division
  - Cognitive Architectures Division
  - Research and Development Division

Research and Development Division

- The Research and Development Division, is responsible for turning experimental systems into saleable products
- It is broken down into:
  - Simulations
  - Variations
  - Products

Research and Development Division

- The Research and Development Division, is responsible for turning experimental systems into saleable products
- It is broken down into:
  - Simulations
  - Variations
  - Products

Simulations Subdivision

- The simulations subdivision is responsible for gathering simulations from the other Divisions, in order to develop products from them.
- It is broken down as follows:
  - Neural Network Simulations
  - Group and Heterogeneous Group Sims
  - Functional Simulations
- Continued on the next page

Simulations subdivision -2

- Continued from the previous page:
  - Organ Level BBD's
  - Inter-BBD Simulations
  - High Integration Simulations
  - Hybrid Simulations
- None of the above are subdivided

Research and Development Division

- The Research and Development Division, is responsible for turning experimental systems into saleable products
- It is broken down into:
  - Simulations
  - Variations
  - Products

Variations subdivision

- The Variations subdivision is responsible to come up with different variations on the original simulations in order to stimulate the development of new products
- The subdivision is broken into:
  - Variations of Neural Simulations
  - Variations of Group Simulations
- Continued on next page

Variations subdivision -2

- Continued from previous page:
  - Variations on Functional Simulations
  - Variations on Organ Level BBDs
  - Varaitions on Integrated BBDs
  - Variations on H-I BBDs
  - Variations on Hybrid Simulations
- None of the above have been subdivided

Research and Development Division

- The Research and Development Division, is responsible for turning experimental systems into saleable products
- It is broken down into:
  - Simulations
  - Variations
  - Products

Products subdivision

- The products subdivision is responsible for developing products out of the variations found by the Variations subdivision
- It has been broken down into the following subdivisions:
  - Products from Neural Simulations
  - Products from Neural Groups
- Continued on next page

Products subdivision -2

- Continued from previous page:
  - Products from Functional Simulations
  - Products from BBD's
  - Products from Integrated BBD's
  - Products from H-I BBD's
  - Products from Hybrid Simulations
- None of the above have been subdivided