SILVIA
a System for Conversational Artificial Intelligence

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Introductions

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- Background
  - Electronic Arts
  - Disney
  - Sony
  - 3D Gaming Engines and Tools
  - Architectures for Web Content Sharing/Delivery

- SILVIA and Cognitive Code
Introduction to SILVIA

• **S I L V I A** stands for:
  - Symbolically
  - Isolated
  - Linguistically
  - Variable
  - Intelligence
  - Algorithms
Introduction to SILVIA

- **Symbolically Isolated:**
  - SILVIA uses an isolated layer of conceptual filters to transform human language(s) into mathematical nodes.
  - SILVIA then works very rapidly, using numeric representations of concepts and their mathematical and ontological relationships to one another to determine appropriate responses.
  - This “symbolic isolation” also allows the system to infer human language rules directly from human-language training data, allowing for rapid application development and easy localization.
Introduction to SILVIA

- **Linguistically Variable:**
  - SILVIA extracts concepts from human language input, allowing users to speak or type input in their own way, yet still have their thoughts “understood” by the AI.
  - SILVIA’s response construction and wording are dynamic so that, depending on various factors, concepts can be expressed by the AI in multiple grammatically correct ways.
  - The SILVIA technology is language independent and multi-lingual, working with any one or more human languages in which it is trained.
Components of the SILVIA technology:

- **SILVIA Core**, a high-performance runtime engine, configurable for client, server, or mobile/embedded

- **SILVIA Server**, a configurable system for automated management of $n$ SILVIA Cores on one or more networked servers

- **SILVIA Voice**, a modular add-on component for accepting voice input and rendering voice output within a client application, a web page, or as part of SILVIA Server for optimized streaming media

- **SILVIA Studio**, a graphical system for application-specific behaviour development, with integrated scripting

- **SILVIA API**, allows programmers to create new applications and plug-in based functionality
What does SILVIA do?

SILVIA-enabled intelligent applications can:
- Take in human input whether through speech, written text, or other input methods
- Understand the context of the input and execute a set of commands based on that input and context
- Interact with operating systems and applications where an API or web service has been provided
- Interact directly with file systems, networked systems, web content, and more
- Operate as a client application, a managed server application, a node in a peer-to-peer network, or freely change states dynamically according to application needs
What can SILVIA be used for?

- Smart Toys
- Automotive Telematics
- Mobile Devices
- Video Games
- Avatars and Personal Assistants
- Integrated Solutions
SILVIA is highly modular and scalable

- You can create different **personalities or characters**
  - Vocabularies, and instructions for how to respond stored in different “BRAIN” files
  - SILVIA can load multiple BRAIN files and swap between them

- You can swap in different **skins and voices**
  - Import any 2D or 3D character or avatar graphics
  - Load different voice fonts
  - Operate with dialog recordings (similar to IVR systems)

- You can dynamically **increase its knowledge blocks**
  - Create new BRAINS for math, reading, movies, books politics
  - Have SILVIA log on and download new BRAINS
  - Now it “knows kung fu!”
How does SILVIA work?

SILVIA parses speech or text inputs into mathematical concept symbols, and then uses modular AI Brain files to execute contextual system commands.
What platforms can SILVIA run on?

- SILVIA Core is operating system and platform independent.
- XP/Vista/Win7/WinMobile, Apple OS-X, iPhone/iPad, Linux, BSD, Solaris, Palm OS, etc.
- SILVIA Core is lightweight, with a footprint under 5M, and can be loaded on ARM processors and chipsets
- SILVIA Core is fully integrated with Unity, a rich, cross-platform 3D game development system
**Sample Application Architecture**

- **SILVIA CORE**
- **Enabling Technologies**
- **SILVIA CORE Data**
  - Filters
  - Behaviors
  - Concepts
- **Plugins**
- **External Interfaces**
- **User Data**
Sample Application Architecture

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Content Management for Application Data
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Q&A