Toy Artificial Intelligence lab.
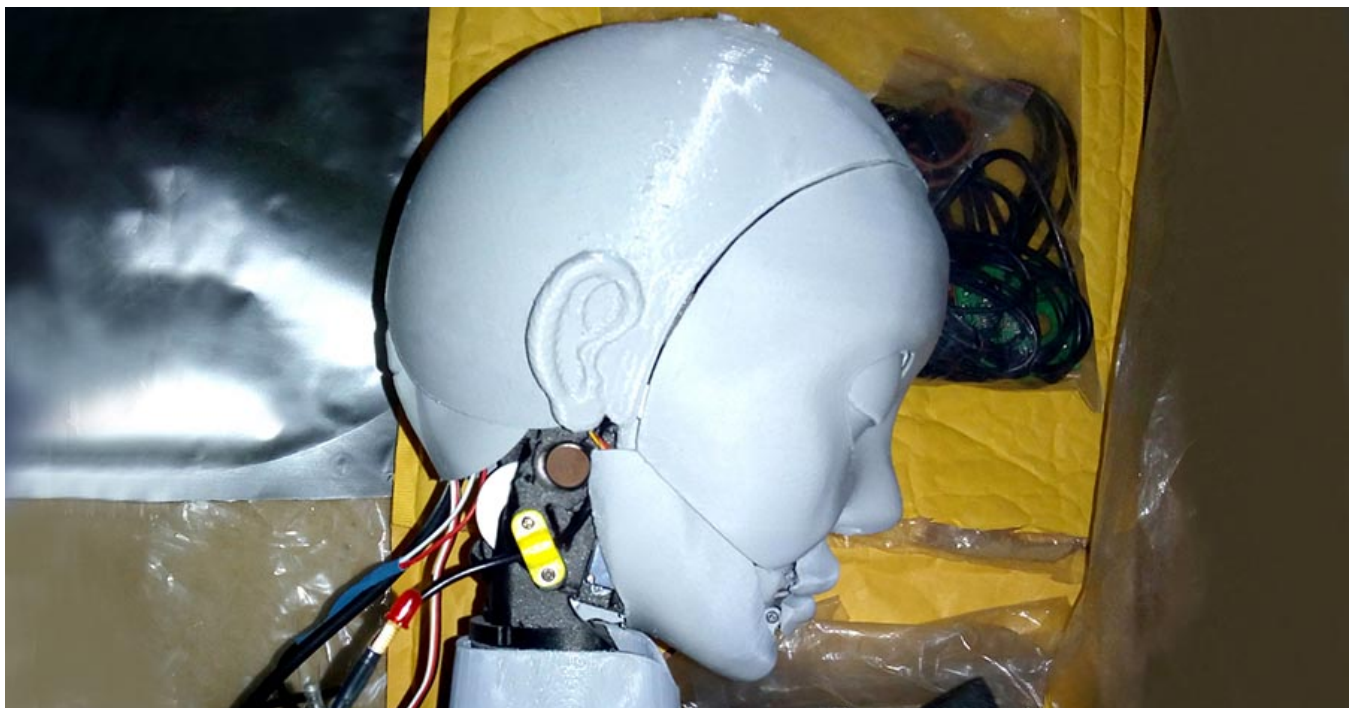

Toy Artificial Intelligence
Research, innovation and technology development
Intelligent systems and robotics laboratory

Terbinari - Operating program

CBM - Control Bot Mechanism robot device

Tet - Artificial conversational entity

✔ Content

- Software and device
- Conversations
- Overview
- Processing
- Functionality
- Research

Software and device

Terbinari operating program represents interactive training and conversation model, natural language processing, understanding and generation syntactic and semantic analysis/matching logic algorithms, and controller operating methods.

Learning and talking robot - Terbinari CBM (conv 1)

Artificial conversational entity performs input/output question-answering, learning, spoken dialog system with multi-function chat-bot interface and anthropomorphic humanoid robot Control Bot Mechanism animatronics operator. The cervical motility device implements mouth speech events motion and eyes/head tracking contact and response under facial detection/recognition process of computer vision.

The bot operates individual unique memory content updated by interlocutor input in frames of the system legal code. The answer defines output for dialogue as a tool of reflective analysis by returning efferent recall from human-like machine cognitive function. Embodies autonomous companion simulator as trainable virtual teaching assistant and agent of compensatory intercourse for various interactive communication tasks.
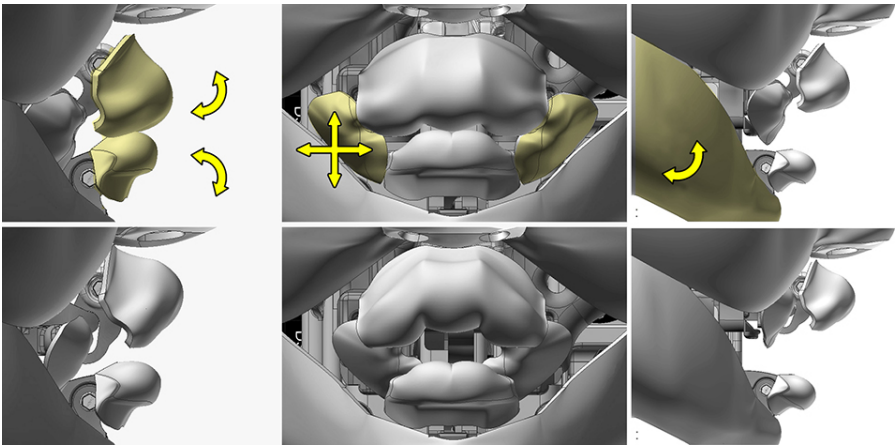
Conversations

The following video sessions represents interaction with Terbinari operating program artificial conversational entity training and dialogue model I/O QA system semantic processing algorithms with chat-bot interface and prototype humanoid robot CBM (Control Bot Mechanism) device.

Robot head mouth mechanism - Terbinari CBM (conv 5)

Overview

Operating program interface interacts with training and conversation slot, represents dialog processing models in text-to-text, text-to-voice, or voice-to-voice modes and robot control methods.

Mechanical response provides tracking orientation and eye contact with user/interlocutor, as well as mouth device synchronization with speech motility events.

*Conversational robot - Terbinari CBM (conv 4)*

Processing

The training and conversation model is close to the natural way of receiving information, asking for the question and answering, looking or requesting for the answer, filling memory with user/teacher interlocutor input, generating dialogue, following context, and content-based meaning (check reference: Inference root/derivative noun algorithm).
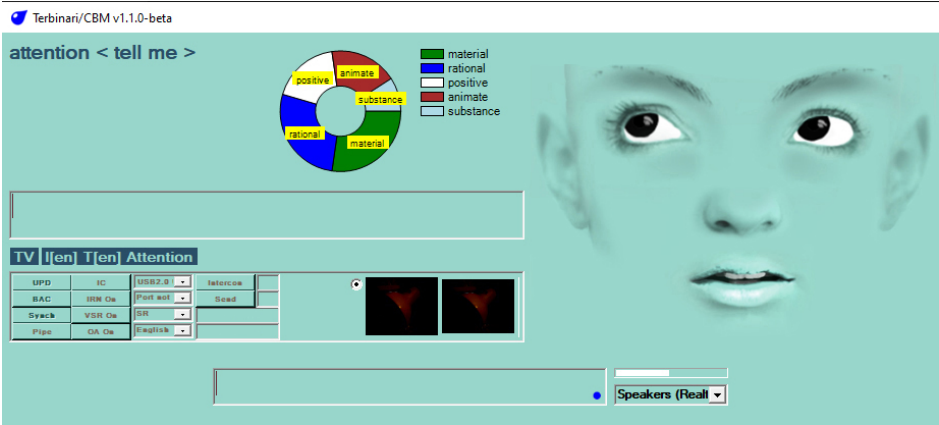

*Android robot - Terbinari CBM (conv 2)*
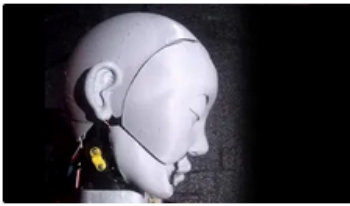
Synthetic entity able to learn, interact and deepening abstraction by inherent characteristics as functionally surrounded void, that does not knows anything by default, able receive and use information, become perceptive carrier to reflect and inference informational knowledge in the natural way of dynamic conversation, prescribable for such tasks as the assistance of topical training, autism educational/therapy exercise, as well psycho-linguistics and synthetic psychology human-robot interaction experiment, or any other specific usage with a requirement of creating memory content with dialog model contextual scenario performance.

Robot chatbot - Terbinari CBM (conv 8)
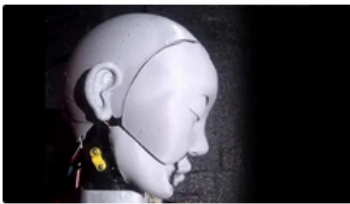
Functionality

Text analysis and operation control algorithms with multi-function chat-bot interface and head/eyes/mouth Control Bot Mechanism robot device with position/coordinate step receiver controller.
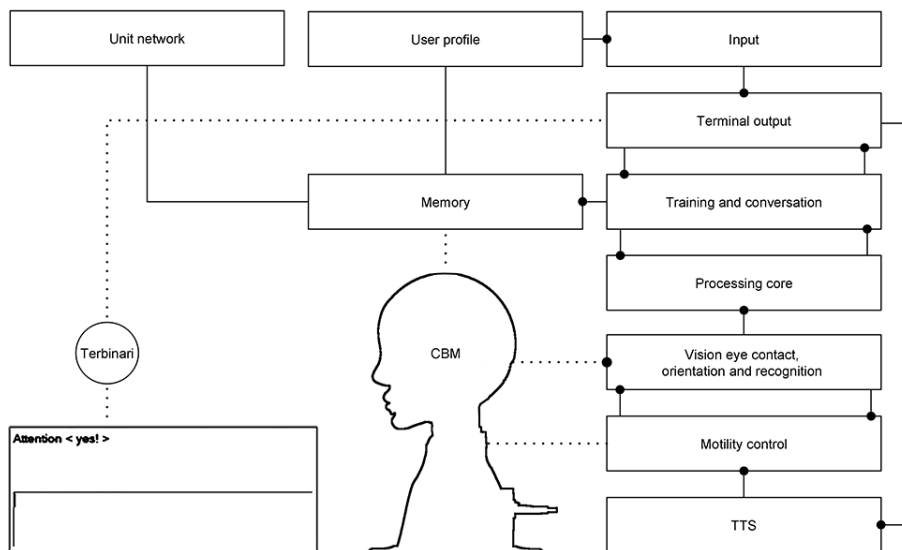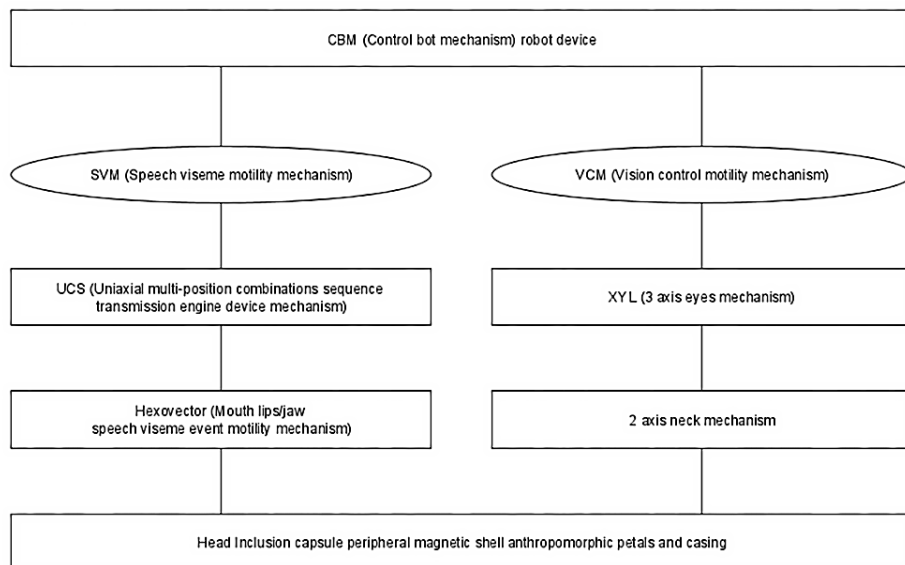

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- Learn from communication and talk to the interlocutor, answer and ask with memory adding/editing option, providing functions control built-in conversation interface in frames of system legal code filter, receive and react to action commands by attached request.

- Operate as topic teacher e.g. with "astronomy" appeal, question contexts, and answer output.

- Support conversation in text-to-text, text-to-voice, speech-to-voice with input pronunciation type chats and voice-to-voice speech recognition mode, operate in open training and close testing memory state, and speak with mouth lips viseme motility event.

- See – detect, recognize introduced person, a track with eye contact and head orientation following interlocutor position, blinking eyelids.

Mechanism

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Robot eye contact - Terbinari CBM (conv 7)

Desktop application software installation provides access to chat-bot terminal and 6V CBM robot controller device with USB serial port connection, going through registration in Unit Network user profile access to local and server-based memory storage with using of Microsoft OS speech references and available system display language.

Trainable robot - Terbinari CBM (conv 6)

Prototype application compatibility and usage

Particular Terbinari software implementation developed on Microsoft Windows OS platform with using of system speech synthesis/recognition references and external CV library output.

Research

"Toy Artificial Intelligence" laboratory is founded as a non-profit scientific and engineering organization. Operates on an independent creative platform of experimental research in the fields of intelligent systems and mechanics, involves such areas as computational logic, cognitive science, mechanical design/engineering, and industrial/artistic design.

CBM v.0 - 2016

Implementation startup was started in 2016 with a multidisciplinary engineering approach, based on computing techniques in computational linguistics, automatic natural language processing, understanding and generation, the machine and robot learning, computer vision, and mechatronics concepts of inventor Lado Oniani.

CBM v.1 - 2018

The development aims to create and investigate synthetic entity architecture and behavior, information processing algorithms, and operation control methods to design building blocks of learning/dialogue contextual association system, integrated with anthropomorphic humanoid and bio-inspired robotics architecture.

Interactive robot - Terbinari CBM (conv 3)

Invent custom assistive educational, therapeutic, social and humanitarian, interactive and robotic solution prototype, adaptable for specialized use with modeling and simulation conversational setup via a human-machine interface, behavior observation, study, development, optimization, and accumulation potentially derivative experiment.
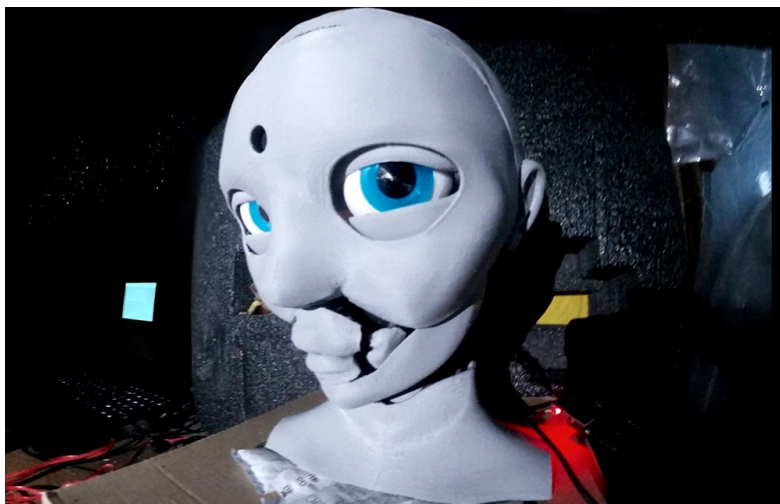
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