Octopus
A Multi Agent Chatbot
Overview

• What is chatbot?
• Existing chatbot systems
• Multi agent systems
• Sinhala chatbot: Octopus
  – Design
  – Framework
  – How system works
• Conclusions and further work
• References
Introduction

• **Chatbot**
  – A chatbot is a type of conversational agent or a computer program
  – Simulate an intelligent conversation with one or more human users via auditory or textual methods
  – Can be used as an intelligent mechanism to interact with computers
  – Next generation of human-machine and machine-machine interaction
Existing Chatbot systems

- **ELIZA**
- **ALICE**
- **CleverBot**
- **Sinhala chatbot**

Octopus: Multi Agent Chatbot (IRC 2015)
Existing Sinhala chatbot

• Developed by using Prolog based Natural Language processing modules
Octopus
A Multi Agent Chatbot
Multi Agent Systems

• The Multi agent system explores new software paradigms to model complex systems

• Most of these multi agent systems are large networks of small agents which run in parallel

• Development framework
  – Jade,
  – MadKit,
  – MaSMT
MaSMT Framework
Octopus - Design

- Core System
- GUI system
- Learning system
- Data access system
- NLP system
- Communication system
- Searching system
- Action system
- Ontology

Octopus: Multi Agent Chatbot (IRC 2015)
Design contd.

• **Core System**
  – Main system
  – Coordinates the other 7 sub systems
  – Core system can communicate with other Octopus which are running on the same network

• **GUI System**
  – Handles user input and output of the Octopus
  – Consists of
    • a manager agent
    • text agent
    • voice agent
Design contd.

- **Learning System**
  - Consists of a manager agent and number of learning agents
  - Update Ontology

- **Data Access System**
  - Consists of a manager agent and number of data access agents.
  - Collects required data
  - Uses client-server networking to access data through the network
Design contd.

• **NLP System**
  – Consists of a manager agent and number of natural language processing agents
    • Natural language analysis
    • Natural language generation

• **Communication system**
  – Handles all the required communication (Message parsing) of the Octopus including
    • agent-agent communication
    • agent-system communication
    • system-system communication
Design contd.

• **Searching System**
  – Search information from Ontology or Internet
  – Capable to update the knowledge base as required

• **Action System**
  – Consists of a manager agent and number of action agents
  – Use to execute relevant tasks
    • user required actions
    • automated actions

13 Octopus: Multi Agent Chatbot (IRC 2015)
Design contd.

- **Ontology**
  - Ontology has been designed through the AIML
  - Octopus system can update its own ontology
    - User ontology
    - Agent ontology
    - Language specific ontology
    - Knowledge ontology
Octopus in Action

- GUI System
- Core System
- Message Space

- Learning system
- Data access system
- Natural Language Processing system
- Communication system
- Searching system
- Action system

Octopus: Multi Agent Chatbot (IRC 2015)
Octopus in Action

Octopus: A multi agent chatbot
version 1.0 (Beeta)
System Status: ...OK

User: මෙය අදහා?
Octopus: මෙය Octopus
User: මෙය අදහා මෙම අදහා?
Octopus: මෙය අදහා ආදරයක්
User: මෙය අදහා අදහා අදහා?
Octopus: මෙය අදහා ආදරයක්
User: මෙය අදහා අදහා?
Octopus: මෙය අදහා ආදරයක්
Conclusions and Further works

• Octopus has been designed as a multi agent system and implemented through the multi agent system development framework MaSMT

• Update sub systems to enhance the system intelligence
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References


Thank You!