

Table of Content

1	Introduction	1
1.1	Motivation	1
1.2	Structure	2
2	Methodical Background	3
2.1	Speech Dialogues	3
2.1.1	Speech Dialogue Initiatives.....	4
2.1.2	Speech Dialogue System Components.....	7
2.1.3	Interaction Problems and Solutions.....	8
2.2	Question Selection Strategies.....	10
2.2.1	Knowledge based Processing.....	12
2.2.2	Statistical Processing.....	13
2.2.3	Pre-Processing Versus On-The-Fly Computation.....	19
3	Technological Background	21
3.1	Collaborative Agent-based Knowledge Engine	21
3.1.1	CAKE Data Model	22
3.1.2	CAKE Workflow and CBR.....	23
3.1.3	CAKE Agent	23
3.2	Voice Server	24
3.2.1	IBM Voice Server Hardware and Software Requirements	25
3.2.2	IBM Voice Server Functions.....	25
3.3	VoiceXML	26
3.3.1	General Properties	27
3.3.2	Speech Synthesis Markup Language.....	29
3.3.3	Speech Recognition Grammar Specification	30
4	Creating a Dynamic Speech Dialogue	32
4.1	Functional Requirements.....	32
4.2	Choice of Speech Dialogue Initiative.....	34
4.3	Choice of Question Selection Strategy.....	35
4.4	Handling Speech Dialogue Specific Problems.....	35
4.4.1	General Speech Dialogue Problems	36
4.4.2	Data Type Specific Problems.....	39
4.5	Evaluation Criteria	44
5	Prototype Design and Implementation	46
5.1	Restrictions for the Prototype.....	46
5.2	Prototype Scenario in CAKE Model and Case Base.....	47
5.3	Component Overview	49
5.4	Functional Overview	50
5.4.1	User Interaction	51
5.4.2	Connecting IBM Voice Server to CAKE	52
5.4.3	CAKE Agent Communication	55
6	Conclusion and Outlook	60
	References	62
	Web References	66