Research into Intelligent User Interfaces for Contact Centres

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Outline

• Introduction
• Contact centres (CCs)
• Intelligent user interfaces
• The NMMU ICT Help desk
• Research @NMMU
• Current projects
• Conclusions
Actual call centre conversations

- **Are the instructions clear?**
  - Customer: "I've been ringing 0800 2100 for two days and can't get through to enquiries, can you help?".
  - Operator: "Where did you get that number from, sir?".
  - Customer: "It was on the door to the Travel Centre".
  - Operator: "Sir, they are our opening hours".

- **Are the customers stupid?**
  - Tech Support: "I need you to right-click on the Open Desktop".
  - Customer: "OK".
  - Tech Support: "Did you get a pop-up menu?".
  - Customer: "No".
  - Tech Support: "OK. Right-Click again. Do you see a pop-up menu?"
  - Customer: "No".
  - Tech Support: "OK, sir. Can you tell me what you have done up until this point?"
  - Customer: "Sure. You told me to write 'click' and I wrote 'click'".
Introduction

• The role of a CC can vary from logging and solving customer queries and transactions to marketing.

• The 2005 Merchant Global Benchmarking Report revealed that:
  – 71% of all customer queries were resolved on the first call by the agent who answered the call.
  – 10% of all queries from calls answered were escalated to second and third tier agents.
  – 17% of all customer queries were not resolved on the first call.

• These problems result from the inability of the agents to analyse customer queries and find adequate solutions.

• A need thus exists for an efficient and effective solution that will enhance the problem solving process.
Contact centres

• A CC is a call centre that provides a value added service using more than one electronic medium.
• A CC can be classified as either being a Help Desk or a Service Desk.
• Service Desks provide:
  – Communication, information and resources to customers with IT-related problems.
  – Self-help or self-service facilities.
Field study

• A field study of three SA CCs was conducted in May 2006 by A Singh.
• Key factors identified as influencing call resolution rates:
  – Number of systems used to log and verify customer details and find relevant information (max = 13).
  – Lack of systems integration.
Intelligent user interfaces

- IUIs aim to increase the rate and quality of information flow between humans and computers.
- User, discourse, task and context models are used to support the interaction between the user and the interface.
- Intelligent agents (IAs) are also used to deliver autonomous actions based on the user’s habits and preferences.
- IUIs employ one/more techniques in order to make them intelligent, including:
  - User modelling,
  - Natural language technology,
  - Dialogue/discourse modelling, and
  - Plan recognition and generation.
The Architecture of an IUI
(Maybury 1998)
A Model of a CC using an IUI

- An IUI could assist in improving the process of diagnosing customer queries and providing support for CC operations.
- The information can be queried, validated and retrieved using multiple modes of interaction within an integrated IUI.
The NMMU ICT Help desk

- Provides the user community at NMMU with computing and networking services and technical support.
- Users can log a call via a web-portal, telephone or facsimile.
- Uses the FrontRange Solutions Heat Help Desk Package.
- Used as a case study for CC research.
Service desk operations
Research @NMMU

• Current CoE Project (2006-2008):
  – An Investigation into Developing Intelligent User Interfaces for Contact Centre Management and Coordination

• Primary goal:
  – To investigate and develop IUIs for CC management and coordination.

• Rationale:
  – IUIs can be used to make the communication between the CCs and the users more streamlined and efficient and support the coordination of CC activities.

• Techniques to be investigated:
  – Visualisation techniques,
  – Multimodal interfaces,
  – Context awareness, and
  – Mobile technologies.
# Some current projects

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An IUI model for CC Operations – A Singh

- **Aim of research:**
  - Extend an existing IUI model to support CC operations.
  - Develop a IUI prototype to validate the proposed model.

- **Proposed model:**
  - Highlighted section has been successfully implemented.
Adaptive User Interfaces for CC Agents – B Jason

• Objective is to improve the interaction with the user by constructing a User Model based on the user’s behaviour.
• The basic concept of an AUI involves adapting the UI based on the User Model.
• The primary motivation is to improve the users’ performance and satisfaction.
• Aim of research:
  – Develop several different AUIs for a CC.
  – Compare these AUIs with the static UI used by the CC.
  – Determine if an AUI can be used to improve the performance and satisfaction of the CCAs.
A Natural Language Interface for CC Operations – G Ravi Sankar

• Interactive Voice Response (IVR) provides automation that CCs need to reduce costs.
• Certain limitations and problems with IVR:
  – Inefficient interactions with customers.
  – Low resolution of calls and queries.
• Natural language interface (NLI) can provide more human-like interaction and reduce limitations.
• Possible NLIs:
  – Speech recognition and synthesis
  – Web bot
• Aim of research:
  – Identify shortcomings of current automation techniques.
  – Identify NLI modalities suitable for a CC.
  – Develop a NLI model to support CC operations.
An Adaptive Interface using the Focus-Metaphor Approach – E Senga

- The Focus-Metaphor Interface (FMI) approach:
  - Adapts the UI, maintaining one primary focus element with several secondary and peripheral focus elements located dynamically around it (Laqua 2005).

- Aim of research:
  - Investigate the usefulness of the FMI approach for designing UIs in a CC context.
Visualization of Time-Based CC Data – P Shidiwe

• The NMMU ICT Help desk’s clients (staff and students from all 7 campuses), log their faults in 1 of 3 ways namely;
  – Telephonically,
  – via email, or
  – web-based reporting.

• Once the call data is collected, it is recorded and stored in a database.

• Crystal Reports is used to generate simple, static reports.

• No system exists to interactively visualize the call data.

• Aim of research:
  – Develop a visualization tool to visualise call data and patterns for the NMMU Help desk using time searching techniques.
  – Utilise a TimeBox metaphor to support time-based searching.
Conclusions

• Traditional CC software does not adequately support problem solving and call resolution.
• IUIs and AUIs can offer several advantages for CCs.
• Research @ NMMU is exploring several innovative ways of supporting CC operations.
• This research is expected to inform and benefit the CC industry in SA.
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