

Mihai Rotaru

- RESUME -

EDUCATION

Computer Science Department, University of Pittsburgh, USA.

- Ph.D. candidate, Advisor: Diane J. Litman, expected graduation: *June-July 2008*
Thesis: “Applications of Discourse Structure for Spoken Dialogue Systems”
Committee: Diane J. Litman, Rebecca Hwa, Carolyn P. Rosé, Janyce Wiebe

Computer Science Department, University of the West, Timisoara, Romania.

- Master of Science [1999]
- Bachelor of Science [1997]

PUBLICATIONS

Journal Articles

- Katherine Forbes-Riley, Mihai Rotaru, Diane J. Litman (2008) “*The Relative Impact of Student Affect on Performance Models in a Spoken Dialogue Tutoring System*” User Modeling and User Adapted Interaction (UMUAI) Special Issue on Affective Modeling and Adaptation, 18 (1-2).
- Greg Nicholas, Mihai Rotaru, Diane J. Litman (2008) “*An Investigation of Using Word-level Features for Emotion Prediction*” Submitted to Speech Communication.

Refereed Conference Papers

- Mihai Rotaru and Diane J. Litman (2007) “*The Utility of a Graphical Representation of Discourse Structure in Spoken Dialogue Systems*”. In Proceedings of the 45th Annual Meeting of the Association for Computational Linguistics (ACL), Prague, Czech Republic.
- Katherine Forbes-Riley, Diane J. Litman, Amruta Purandare, Mihai Rotaru and Joel Tetreault (2007) “*Comparing Linguistic Features for Modeling Learning in Computer Tutoring Dialogues*” In Proceedings of International Conference on Artificial Intelligence in Education (AIED 2007), Marina Del Rey, USA.
- Katherine Forbes-Riley, Mihai Rotaru, Diane J. Litman, Joel Tetreault (2007) “*Exploring Affect-Context Dependencies for Adaptive System Development*” In Proceedings of HLT/NAACL 2007.
- Greg Nicholas, Mihai Rotaru, and Diane J. Litman (2006) “*Exploiting Word-level Features for Emotion Prediction*” In Proceedings of IEEE/ACL Workshop on Spoken Language Technology (SLT). Aruba.
- Mihai Rotaru and Diane J. Litman (2006) “*Discourse Structure and Speech Recognition Problems*”. Proceedings of Interspeech 2006, Pittsburgh, USA.
- Hua Ai, Diane Litman, Kate Forbes-Riley, Mihai Rotaru, Joel Tetreault, and Amruta Purandare (2006) “*Using System and User Performance Features to Improve Emotion Detection in Spoken Tutoring Dialogs*”. Proceedings of Interspeech 2006, Pittsburgh, USA.
- Mihai Rotaru and Diane J. Litman (2006) “*Exploiting Discourse Structure for Spoken Dialogue Performance Analysis*”. Proceedings Conference on Empirical Methods in Natural Language Processing (EMNLP), Sydney, Australia.
- Mihai Rotaru and Diane J. Litman (2006) “*Dependencies between Student State and Speech Recognition Problems in Spoken Tutoring Dialogues*”. Proceedings Joint Conference of the International Committee on Computational Linguistics and the Association for Computational Linguistics (COLING/ACL), Sydney, Australia.
- Mihai Rotaru, Diane J. Litman, and Katherine Forbes-Riley (2005) “*Interactions between Speech Recognition Problems and User Emotions*”. Proceedings of the 9th European Conference on Speech Communication and Technology (Interspeech-2005/Eurospeech), Lisbon, Portugal.

- Mihai Rotaru and Diane J. Litman (2005) “*Using Word-level Pitch Features to Better Predict Student Emotions during Spoken Tutoring Dialogues*”. Proceedings of the 9th European Conference on Speech Communication and Technology (Interspeech-2005/Eurospeech), Lisbon, Portugal.
- Mihai Rotaru and Diane J. Litman (2005) “*Improving Question Answering for Reading Comprehension Tests by Combining Multiple Systems*”. Proceedings of the American Association for Artificial Intelligence (AAAI-2005) Workshop on Question Answering in Restricted Domains, Pittsburgh, USA.
- Mihai Rotaru and Diane J. Litman (2003) “*Exceptionality and Natural Language Learning*”. Conference on Computational Natural Language Learning (CoNLL), Edmonton, Canada.
- Viorel Negru, Calin Sandru and Mihai Rotaru (1999) “*A Multiagent System for Scientific Problem Solving*”, Central and Eastern Europe Workshop on Multi-agent Systems (CEEMAS), St. Petersburg, Russia.

Other Non-refereed Publications

- Mihai Rotaru (2007) “*Applications of Discourse Structure for Spoken Dialogue Systems*”. Ph.D. Thesis Proposal, Computer Science Department, University of Pittsburgh.
- Mihai Rotaru, Diane Litman, et al. (2006) “*Using Discourse Structure in Speech-based Computer Tutoring*” In the Demo Session of IEEE/ACL Workshop on Spoken Language Technology (SLT). Aruba.

Invited Talks

- *Applications of Discourse Structure for Spoken Dialogue Systems* - CNTS, University of Antwerp [2007]
- *Using Discourse Structure to Model Student Performance in Speech-based Tutoring Systems* – CS Lunchtime Seminars, Computer Science Department, University of Pittsburgh [2006]

RESEARCH EXPERIENCE

Thesis Research – University of Pittsburgh [2005-present]

- My dissertation investigates the utility of discourse structure for spoken dialogue systems by looking at two types of applications: system-side and user-side. For system-side applications, empirical analyses show that the discourse structure information is useful for various tasks: performance analysis, characterization of user affect and characterization of speech recognition problems. For user-side applications, a recent user study indicates that users find useful a graphical representation of discourse structure. A user study is currently being run to validate the modifications suggested by the performance analysis and the objective utility of the graphical representation of discourse structure.

Interactions between Dialogue Phenomena – University of Pittsburgh [2004-present]

- This research investigates the inherent interactions that exist between dialogue phenomena. Several phenomena are being investigated: speech recognition problems, user affect, user state and discourse transitions. An empirical approach is being used: statistical dependencies between dialogue phenomena are mined from a corpus of dialogues. Analyses of these dependencies offer additional insights about dialogue phenomena and suggests new handling strategies.

Emotion Prediction in Spoken Dialogue Systems – University of Pittsburgh [2003-present]

- This work explores the benefits of sub-turn level features (e.g. word-level features) for emotion prediction. Sub-turn features offer a better approximation of the acoustic-prosodic profile and account for the fact that that emotion might not be expressed over the entire turn. Using sub-turn level features is not straightforward as there is a mismatch between the label level (i.e. turn level) and the feature level. We explored various ways of solving this issue and showed that sub-turn level features are more informative than turn-level features in a variety of settings.

Summer Internship – IBM T.J. Watson Research Labs [2004]

- With Shimei Pan, I developed a graphical representation of the query history for users exploring a complex data space (e.g. real estate domain) in a multimodal dialogue system. The graphical representation enhances exploration by providing a structured view of the history and by predicting items of interest for the user. Applications include query relaxation, summarization, query refinement and information push.

Summer Internship – IBM T.J. Watson Research Labs [2003]

- With Shimei Pan, I developed a user preference model that automatically extracts user’s preferences from the interaction between the system and the user. The model was implemented in a multimodal dialogue system in the real estate domain and it was used to guide query relaxation.

WORK EXPERIENCE

Entalia Software SRL, Romania [1999-2002]

- Product manager and lead programmer for two commercial applications: “Internet-Detektiv” and “WebSearch”. The two applications allow users to simultaneously query many search engines in various categories and to aggregate and manage search results. The applications were published by Entalia Software’s partner Data Becker in Germany, France, Spain and Netherlands.

Freelancer, Romania [1996-1999]

- Developed software solutions for various businesses: advertisement time slot management and automated advertisement airing for commercial radio stations, location-aware database application for real estate agencies, inventory management.

TEACHING EXPERIENCE

Teaching assistant, Introduction to Natural Language Processing [Fall 2003]

- Contributed to the design and grading of laboratory assignments and exams; held office hours

Teaching assistant, Introduction to Computer Graphics [Fall 2001]

- Design and grading of laboratory assignments and exams; held office hours

Instructor, Computer Science Department, University of the West, Romania [1998-2001]

- Prepared and delivered weekly laboratory recitations; design and grading of laboratory assignments and exams; held office hours

AWARDS & HONORS

- Late-breaking News Award at NAACL 2007 for the paper “Exploring Affect-Context Dependencies for Adaptive System Development” [2007]
- People's Choice Best Paper Award at Interspeech 2006 for the paper “Discourse Structure and Speech Recognition Problems” [2006]
- Graduate Student Research Award, Computer Science Department, University of Pittsburgh [2005]
- Orrin E. & Margaret M. Taulbee Award for Excellence, University of Pittsburgh [2003]
- NAACL Summer School Scholarship for John Hopkins’ Summer School on Human Language Technologies [2002]
- Accepted for Ph.D. studies at University of Pittsburgh with Dean’s Award of Excellence [2001]
- Socrates scholarship at Ruprecht-Karls University, Heidelberg, Germany [1999]
- 1st place, Team Programming section, National Student Contest, Iasi, Romania [1995]
- Romanian team reserve, International Olympiad in Informatics [1993]
- 1st place, “Gheorge Titeica” National Mathematics Contest, Romania [1992]

PROFESSIONAL ACTIVITIES

- Reviewer for Journal of Natural Language Engineering (JNLE) [2008]
- Advisory committee member for the 3rd Young Researchers Roundtable on Spoken Dialogues Systems (YRRSDS) Workshop [2007]
- Reviewer for Journal of Artificial Intelligence Research (JAIR) [2006]
- Organizer of the 2nd Young Researchers Roundtable on Spoken Dialogues Systems (YRRSDS) Workshop [2006]
- Member of the Natural Language Processing Laboratory, University of Pittsburgh [2002-present]
- Member of the Dialogs on Dialogs Reading Group, Carnegie Mellon University [2002-present]

EMPLOYMENT & POSITIONS

- GSR/TA positions in the Computer Science Department, University of Pittsburgh [2001-present]
- Summer internship position at IBM T.J. Watson Research Labs [2003, 2004]
- Founder of Entalia Software SRL, Romania [1999-2001]
- Instructor, Computer Science Department, University of the West, Romania [1998-2001]

SKILLS

- Windows & Linux environment and tools
- Java, Perl, C, Borland Delphi, SPSS, Statistica

REFERENCES

- Available upon request