

## Myroslava O. Dzikovska

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### **EDUCATION**

Exp. fall 2003	<b>University of Rochester, Rochester, NY</b> <b>Ph.D.</b> in Computer Science Thesis topic: <i>A feature semantic type representation for natural language understanding</i> Advisor: James Allen
May 1999	<b>M.S.</b> in Computer Science <b>Ivan Franko Lviv State University, Lviv, Ukraine</b>
June 1997	<b>Diploma Cum Laude</b> (B.S. degree equivalent) in Applied Mathematics and Informatics

### **RESEARCH EXPERIENCE**

Fall 99 - present	<b>Research Assistant, University of Rochester</b> Currently working in the TRIPS research group to develop an intelligent conversational assistant. Maintain the TRIPS grammar and lexicon. Developed a lexical semantic feature representation to easily capture domain-independent semantic properties of words. Designed an algorithm to automatically adapt the lexicon to different application domains based on the domain knowledge representation model. Evaluation of the parser with the specialized lexicon demonstrated twofold increase in parsing speed and 32% error rate reduction for a wide coverage parser in two different application domains: a medication adviser and an emergency response assistant. Implemented a statistical method to learn semantic features of words from corpora using a discriminative estimation algorithm with a maximum entropy model. With the TRIPS parser group developed a corpus of syntactic parses and semantic interpretations for speech in the emergency response domain. Currently supervise an undergraduate student to develop Java tools for visual display of corpus data and grammar testing.
Spring 2000-2001	Supervised two undergraduate students to develop a Java interface to the TRIPS lexicon.
Spring 1998	Re-designed the TRIPS lexicon to facilitate maintenance and speed up addition of new words.
Fall 1997	Analyzed common speech recognition mistakes and ported a robust parsing algorithm from TRAINS-95 to the TRIPS system. Implemented additional robust rules in the TRIPS grammar.
Summer 2001	<b>Intern, Mitsubishi Electric Research Laboratories, Cambridge, MA</b> Implemented gestures synchronized with speech in a small non-mobile robot and integrated it with the COLLAGEN collaborative planning assistant using the BEAT expression animation toolkit. Developed Java software to control the robot.
1995-1997	<b>Intern, Institute of Applied Physics, Ivan Franko Lviv State University</b> Developed software for modeling light transport processes in optical materials.

### **TEACHING EXPERIENCE**

Fall 1998, Fall 1999,	<b>Teaching Assistant, University of Rochester</b>
Fall 2002	CSC244/444 Logical Foundations of Artificial Intelligence, an upper level undergraduate/graduate class in symbolic methods in artificial intelligence.
Spring 1999,	<b>Teaching Assistant, University of Rochester</b>
Spring 2003	CSC247/447 Natural Language Understanding, an upper level undergraduate/graduate class in symbolic natural language understanding techniques.

### **RELEVANT COURSES**

Statistical Natural Language Processing seminar, Understanding Real Language seminar, Sentence Processing seminar, Computational Linguistics and the Knowledge Bottleneck seminar, Phrase Structure Grammars, Syntactic Theory, Speech Recognition and Statistical Language Models, Sensory Motor Systems.

### **COMPUTER SKILLS**

<b>Languages:</b>	Proficient in Lisp, C/C++, Java, Perl; familiar with Prolog, Matlab
<b>Platforms:</b>	User level knowledge of Linux, Solaris, MS Windows

## **PUBLICATIONS**

### **Journal Articles and Book Chapters**

M. Dzikovska, M. Swift and J. Allen. *Customizing meaning: building domain-specific semantic representations from a generic lexicon*. To appear in Computing Meaning, Vol.3., 2004

J. Allen, D. Byron, M. Dzikovska, G. Ferguson, L. Galescu, and A. Stent. *Towards conversational human-computer interaction*. AI Magazine, 2001.

J. Allen, D. Byron, M. Dzikovska, G. Ferguson, L. Galescu, and A. Stent. *An Architecture for a Generic Dialogue Shell*. Journal of Natural Language Engineering, 6(3), December 2000.

M. Dzikovska, I. Konstankevych, M. Batenchuk, O. Kostiv *The use of object-oriented methods for calculating scintillator characteristics*. USIM(Control systems and Computers, Ukraine), vol 6, 1997.

### **Conference and Workshop Proceedings**

M. O. Dzikovska, M. D. Swift, J. F. Allen *Integrating linguistic and domain knowledge for spoken dialogue systems in multiple domains*, in Proceedings of IJCAI-03 Workshop on Knowledge and Reasoning in Practical Dialogue Systems, August 2003.

M. O. Dzikovska, M. D. Swift, J. F. Allen *Constructing custom semantic representations from a generic lexicon*, in Proceedings of 5th International Workshop on Computational Semantics, 2003

C. Sidner and M. Dzikovska. *Human - Robot Interaction: Engagement between Humans and Robots for Hosting Activities* Proceedings of ICMI-2002, October 2002.

M. O. Dzikovska, J. F. Allen and M. D. Swift. *Finding the balance between generic and domain-specific knowledge: a parser customization strategy*. In Proceedings of LREC 2002 workshop on Customizing Knowledge for NLP Applications.

C. L. Sidner and M. O. Dzikovska. *Hosting Activities: Experience with and Future Directions for a Robot Agent Host*. ACM International Conference on Intelligent User Interfaces, January 2002.

M. O. Dzikovska and D. K. Byron, *When is a union really an intersection? Problems resolving reference to locations in a dialogue system*. Proceedings of GOTALOG'2000, Gothenburg, June 2000.

M. Dzikovska, I. Konstankevych, M. Batenchuk and L. Lymarenko. *Computer modeling of light collection processes in scintillators of arbitrary shape*. Proceedings of SPIE, Vol. 2967, 1997.

### **Technical Reports**

G. M. Ferguson, J. F. Allen, N. J. Blaylock, D. K. Byron, N. W. Chambers, M. O. Dzikovska, L. Galescu, X. Shen, R. S. Swier, and M. D. Swift, "The Medication Advisor Project: Preliminary Report", Technical Report 776, Computer Science Dept., University of Rochester, May 2002.

M. Dzikovska. *A Practical Semantic Type Representation for Natural Language Understanding*. Technical Report 733 and a thesis proposal, Department of Computer Science, University of Rochester, August 2000.

## **LANGUAGES SPOKEN**

Fluent Ukrainian(native), English, Russian, good Polish, some French

## **HONORS**

December 1996      Recipient of scholarship for attending School "Logic, Algebra and Computer Science", Banach International Mathematical Center, Warsaw, Poland

1995                Recipient of International Soros Science Education Program Undergraduate Fellowship

1995                Winner of the Lviv University Computer Science competition

## **PROFESSIONAL ACTIVITIES**

Reviewer, The Seventh Pacific Rim International Conference on Artificial Intelligence (PRICAI-2002)

Reviewer, student session of ESSLLI-2002, student session of ESSLLI-2003

M.S. thesis committee member for Westerly Magnera, Rochester Institute of Technology, 2003. Thesis topic "Using Natural Language Parsers to Determine Authorship"