

# Matthew Marge

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Language Technologies Institute  
School of Computer Science  
Carnegie Mellon University  
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Pittsburgh, PA 15213  
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## RESEARCH INTERESTS

Spoken Dialog Systems, Human-Robot Interaction, Natural Language Generation, User Interface Design, Robotic Interfaces.

## EDUCATION

University of Edinburgh, Edinburgh, Scotland  
**M.Sc., Artificial Intelligence**, expected August 2007  
Advisors: Johanna Moore and Austin Tate  
Specialization: Natural Language & Language Engineering

Stony Brook University, Stony Brook, New York  
**B.S., Computer Science & Applied Mathematics and Statistics**, May 2006  
Graduated *summa cum laude* from Honors College  
Advisors: Amanda Stent, Richard Gerrig, and Susan Brennan  
Specialization: Human-Computer Interaction  
**GPA: 3.91**

## RESEARCH EXPERIENCE

*Research Assistant*

**School of Informatics,  
University of Edinburgh  
9/2006 – Present**

Edinburgh, Scotland

Advisors: Johanna Moore and Austin Tate

- Developing a “Digital DJ” system designed to generate aggregated facts and comparisons in classical and jazz music between music pieces.
- Investigating the effectiveness of comparison generation in the Methodius natural language generation system.

*Student Contractor*

**Navy Center for Applied Research in Artificial Intelligence,  
Naval Research Laboratory  
5/2006 – 9/2006**

Washington, D.C.

Mentors: Greg Trafton, Alan Schultz, and Dennis Perzanowski

- Enhanced a cognitive model for spatial perspective-taking using ACT-R and Lisp.
- Designed a scenario for disambiguating dialog in human-robot task achieving teams.
- Developed line-of-sight calculation code for a robot navigating an environment in stealth.
- Co-authored papers regarding findings published by the 2007 Human-Robot Interaction Conference and the 2007 Association for the Advancement of Artificial Intelligence Conference.

*Research Assistant*

**Human-Computer Interaction Institute,  
Carnegie Mellon University  
6/2005 – 8/2005**

Pittsburgh, Pennsylvania

Advisor: Sara Kiesler

- Worked under the Research Experience for Undergraduates Program (REU) from the NSF for programming the intelligent conversation system of Pearl, a robot designed for investigating human-robot interaction.
- Designed and developed web surveys for experiments that examine human-robot interaction.

- Conducted experiments involving human subjects daily and gathered experimental data.
- Explored social impacts of a robot's expertise in cooking when conversing with novice and expert subjects.
- Co-authored paper regarding findings published by the 2006 Human-Robot Interaction Conference.

*Research Assistant*

**Computer Science & Psychology Departments,  
Stony Brook University  
12/2003 – 5/2006**

Stony Brook, New York

Adaptive Spoken Dialog with Human and Computer Partners 5/2004 – 5/2006

Advisors: Amanda Stent, Richard Gerrig, and Susan Brennan

- Worked under the Research Experience for Undergraduates Program (REU) from the NSF for building a voice-based "Rate-A-Course" system that allows students to evaluate their courses at Stony Brook.
- Designed and conducted experiments involving human subjects interacting with the "Rate-A-Course" system.
- Programmed and tested interactive spoken dialog systems using VoiceXML for at least ten hours per week.
- Built tools using Perl that analyze the frequency of words used in course surveys.
- Co-authored paper regarding findings published by the 2006 Workshop on Spoken Language Technology.

Contributions of Eye Movements and Shared Attention to Collaborative Tasks 9/2004 – 6/2005

Advisor: Greg Zelinsky

- Conducted experiments involving human-computer interaction weekly with human eye-trackers in cooperative and competitive environments between two subjects using Eyelink II software.
- Developed analysis tools using Java to quantify the degree of collaboration in particular tasks involving eye-trackers between two subjects.

Evaluating Evaluation Methods for Generation in the Presence of Variation 12/2003 - 5/2004

Advisor: Amanda Stent

- Assessed the effectiveness of software that analyzes the syntax, meaning, and readability of generated text.
- Modified metric implementations for ten hours per week for different types of automatically generated text.
- Built tools using Perl that modify data used for evaluation by metrics.
- Co-authored paper regarding findings published by CICLing 2005, the Conference on Intelligent Text Processing and Computational Linguistics.

## PUBLICATIONS

W.G. Kennedy, M.D. Bugajska, M. Marge, B.R. Fransen, W. Adams, D. Perzanowski, A.C. Schultz, and J.G. Trafton, "Spatial Representation and Reasoning for Human-Robot Interaction". AAAI 2007, July 22-26, 2007. Vancouver, Canada: AAAI Press.

B. Fransen, V. Morariu, E. Martinson, S. Blisard, M. Marge, S. Thomas, A. Schultz, and D. Perzanowski, "Using Vision, Acoustics, and Natural Language for Disambiguation". In *Proceedings of the 2nd ACM/IEEE Conference on Human-Robot Interaction* (Arlington, Virginia, USA, March 10 - 12, 2007). HRI '07. ACM Press, New York, NY, 73-80.

A. Stent, S. Stenchikova, and M. Marge, "Dialog Systems for Surveys: The Rate-A-Course System". In *Proceedings of the 1st IEEE/ACL Workshop on Spoken Language Technology*. SLT '06, December 10-13, 2006. Aruba: 210-213.

C. Torrey, A. Powers, M. Marge, S. Fussell, and S. Kiesler, "Effects of Adaptive Robot Dialogue on Information Exchange and Social Relations". In *Proceedings of the 1st ACM SIGCHI/SIGART Conference on Human-Robot Interaction* (Salt Lake City, Utah, USA, March 02 - 03, 2006). HRI '06. ACM Press, New York, NY, 126-133.

M. Marge, N. Alrawahi, M. Karim, A. Sawas, and C. Williams, "NavBot: The Navigational Search-and-Rescue Robot". *AAAI Mobile Robot Competition 2005*. In Press.

A. Stent, M. Marge, and M. Singhai, "Evaluating Evaluation Methods for Generation in the Presence of Variation". In *Proceedings of CICLing 2005*, Mexico City, Mexico, February 13-19, 2005: 341-351.

D. David, H. Yang, Z. Adika, H. Freund, Z. Altinbas, M. Karim, M. Marge, M. Muttreja, and T. Nasti, "JESTER: Joke Entertainment System with Trivia-Emitted Responses". *AAAI Mobile Robot Competition 2004*: 4-9.

CONFERENCE  
PRESENTATIONS

M. Marge, N. Alrawahi, M. Karim, A. Sawas, M. Molloy, and C. Williams, "NavBot: The Navigational Search-and-Rescue Robot". *AAAI 2005*, Pittsburgh, Pennsylvania, July 9-13, 2005.

M. Marge, "Evaluation of Text Generation: Automatic Evaluation vs. Variation". *CICLing 2005*, Mexico City, Mexico, February 13-19, 2005.

D. David, H. Yang, Z. Altinbas, M. Karim, M. Marge, M. Muttreja, and T. Nasti, "JESTER: Joke Entertainment System with Trivia-Emitted Responses". *AAAI 2004*, San Jose, California, July 27-28, 2004.

REVIEWER

2007 Human-Robot Interaction Conference  
2007 Special Issue of the IEEE Transactions of Robotics (T-RO) on 'Human-Robot Interaction'

ADDITIONAL  
EXPERIENCE

*Senior Student Supervisor*

**The Fund for Stony Brook,  
Stony Brook University  
9/2002 – 5/2005**

Stony Brook, New York

- Recruited approximately 60 Stony Brook students annually and trained them for obtaining \$1,000,000 goal.
- Evaluated performance of student callers and assistant supervisors.
- Analyzed and presented daily, monthly, and yearly fund raising reports to the Administration Department.
- Promoted from student caller to Head Assistant Supervisor in 3/2003; to Senior Student Supervisor in 12/2003.

LEADERSHIP  
EXPERIENCE

*Team Leader*

**Stony Brook Robot Design Team,  
Stony Brook University  
5/2004 – 5/2006**

Stony Brook, New York

Advisors: Amanda Stent, Imin Kao, and Dimitris Samaras

- Programmed the computer vision and navigation systems of the teams 2005 "NavBot" project.
- Programmed the intelligent conversation system of the teams 2004 "Jester" project.
- Won the American Association of Artificial Intelligence's 2005 Robot Competition Honor for Interdisciplinary Field Integration.
- Won the American Association of Artificial Intelligence's 2004 Robot Competition under Open Interaction as Audience Favorite.

- Responsible for raising over \$10,000 annually to construct a robot that was used in national competitions.
- Organized weekly meetings and registered for annual competitions for the benefit of the club.

*Chapter President*

**Sigma Alpha Lambda National Leadership and Honors  
Organization,  
Stony Brook Chapter  
12/2003 – 5/2006**

Stony Brook, New York

- Organized monthly general meetings, bi-weekly executive board meetings, and volunteer efforts for members.
- Served as the primary university liaison, meeting with administration and the chapter advisor as necessary and beneficial to the chapters growth and success.

*Chapter President*

**Upsilon Pi Epsilon Computer Science Honor Society,  
Stony Brook Chapter  
4/2004 – 5/2006**

Stony Brook, New York

- Organized general meetings, guest talks, and trips to locations of interest to members.

*President*

**Stony Brook Squash Club,  
Stony Brook University  
1/2004 – 5/2006**

Stony Brook, New York

- Organized tournaments that helped to benefit the relationship between the club and the campus community.
- Constructed proposals to the Undergraduate Student Government and the Director of Campus Recreation on the status of the club for funding purposes.

*University Ambassador & College of Engineering Ambassador*

**Dean of Students Office,  
Stony Brook University  
5/2004 – 5/2006**

Stony Brook, New York

- Hosted campus-wide affairs throughout the semester, including research and student recruiting events.

*Student Mentor*

**Stony Brook Mentoring Program,  
Stony Brook University  
9/2004 – 5/2006**

Stony Brook, New York

- Met weekly with academically challenged middle school students to assist them with schoolwork and to improve their self-esteem.

*Orientation Leader*

**Department of Student Orientation and Family Programs,  
Stony Brook University  
5/2004 – 1/2005**

Stony Brook, New York

- Answered incoming students' questions regarding academics and campus life.
- Responsible for registering incoming students and acquainting them with Stony Brook University.

*Vice President*

**College Bowl Club,  
Stony Brook University  
4/2004 – 5/2006**

Stony Brook, New York

- Organized meetings to prepare for academic competitions with nearby universities.

*Student Leader*

Stony Brook, New York

**2004 and 2005 Student-Faculty-Staff Retreat,  
Stony Brook University  
11/2004 & 11/2005**

- Collaborated with Stony Brook faculty, staff, and students on creative ideas for improving campus life.

*Student Co-Leader*

Stony Brook, New York

**Stony Brook Day in Albany,  
Stony Brook University  
12/2003 – 2/2004**

- Met with New York State legislators to increase awareness of the university's campus-related needs.

*Undergraduate Participant* - 2004 and 2005 URECA Undergraduate Research Celebrations.

*Volunteer Fundraiser* – 2005 Habitat for Humanity Tsunami Relief Fund.

*Mentor* – 2005 For Inspiration and Recognition of Science and Technology (FIRST) Robotics Competition.

*Volunteer* – 2003, 2004, and 2005 Stony Brook Homecoming Celebration.

*Assistant Coach* – 2002/2003, 2003/2004 Comsewogue High School Bowling Team.

AWARDS &  
MERITS

**2007**

- *National Science Foundation Graduate Research Fellowship*

**2006**

- *Saint Andrew's Society of the State of New York Scholar* (one United States recipient)
- *National Science Foundation Graduate Research Fellowship Honorable Mention*
- Science, Mathematics, And Research For Transformation Defense Scholarship (declined to pursue studies abroad)
- State University of New York Chancellor's Award (highest SUNY honor)
- Provost's Award for academic excellence and scholarship
- Outstanding Future Alumni Scholarship
- Sigma Alpha Lambda Emerging Leaders Scholarship
- Stony Brook Researcher of the Month
- Recognition Award for Leadership

**2005**

- *Barry M. Goldwater Scholarship* (one of nine computer scientists nationwide)
- Interdisciplinary Field Integration Award – American Association of Artificial Intelligence Robot Competition Exhibition
- Larry Roher Entrepreneurial Achievement Scholarship
- Montenaro 200% Student Leadership Award
- Recreational Leadership Award

- Research Experience for Undergraduates Scholarship from the National Science Foundation
- Gelfond Scholarship recognizing outstanding academics and leadership skills
- Symbol Technologies, Inc. Scholarship
- Sigma Alpha Lambda Path to Excellence Award
- Recognition Award for Expanded Learning

**2004**

- Audience Favorite – American Association of Artificial Intelligence Robot Competition Exhibition under Open Interaction
- Research Experience for Undergraduates Scholarship from the National Science Foundation
- Gelfond Scholarship recognizing outstanding academics and leadership skills

**2002**

- Honors College Scholarship
- New York State Scholarship for Academic Excellence

**SOCIETY  
MEMBERSHIPS**

Phi Beta Kappa Honor Society, Sigma Xi, Sigma Alpha Lambda National Leadership and Honors Organization, Upsilon Pi Epsilon Computer Science Honor Society, Golden Key International Honour Society, National Residence Hall Honorary, Sigma Beta Honor Society, Society of Automotive Engineers, Dean's List: Fall 2002 – Spring 2006