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EDUCATION

NORTHWESTERN UNIVERSITY

1999 B.S., Computer Science
 Magna Cum Laude, with Departmental Honors
2002 M.S., Computer Science
2005, expected Ph.D., Computer Science
 Advisor: Ian Horswill

EXPERIENCE

IBM CORPORATION, SCHAUMBURG, IL

1997 Programming internship

NORTHWESTERN UNIVERSITY

1998 - 1999 Undergraduate Research Assistant
 Autonomous Mobile Robotics Group
1999 - 2003 Research Assistant
 Autonomous Mobile Robotics Group

HONORS AND AWARDS

1998 Tau Beta Pi Engineering Honors Society
1999 Northwestern University Fellowship
2001 International Game Developers Association Scholarship
2001 Nils Nilsson Award for Cerebus (with Horswill, Le and Khoo)
 The Seventeenth International Joint Conference on Artificial Intelligence
2002 Awards for GRACE (with Simmons et al.)
 The Eighteenth National Conference on Artificial Intelligence
 Ben Wegbreit Award for Integration of AI Technologies
 Judge's Award for Human-Computer Interaction
 Judge's Award for Robustness in Recovery from Action and
 Localization Errors

PUBLICATIONS

JOURNALS

Khoo, A., Zubeck, R. 2002. "Applying Inexpensive AI Techniques to Computer Games."
IEEE Intelligent Systems. 17(4): 48-53.

Simmons, R., Goldberg, D., Goode, A., Montemerlo, M., Roy, N., Sellner, B., Urmson, C., Schultz, A., Abramson, M., Adams, W., Atrash, A., Bugajska, M., Coblenz, M., MacMahon, M., Perzanowski, D., Horswill, I., Zubeck, R., Kortenkamp, D., Wolfe, B., Milam, T., and Maxwell, B. 2003. "GRACE: An Autonomous Robot for the AAAI Robot Challenge." *AI Magazine*. 23 (2): 51-71.

REFEREED SYMPOSIA AND WORKSHOPS

- Horswill, I. D., Zubek, R. 1999. "Robot architectures for believable game agents." Proceedings of the 1999 AAAI Spring Symposium on Artificial Intelligence and Computer Games. AAAI Technical Report SS-99-02.
- Horswill, I. D., Zubek, R., Khoo, A., Le, C., Nicholson, S. 2000. "The Cerebus Project." Proceedings of the 2000 AAAI Fall Symposium on Parallel Cognition and Embodied Agents.
- DePristo, M. A., Zubek, R. 2001. "being-in-the-world." Proceedings of the 2001 AAAI Spring Symposium on Artificial Intelligence and Interactive Entertainment. AAAI Technical Report SS-01-02.
- Khoo, A., Zubek, R. 2002. "Making the Human Care: On Building Engaging Bots." Proceedings of the 2002 AAAI Spring Symposium on Artificial Intelligence and Interactive Entertainment. AAAI Technical Report SS-02-01.
- Zubek, R. 2002. "Towards Implementation of Social Interaction." Proceedings of the 2002 AAAI Spring Symposium on Artificial Intelligence and Interactive Entertainment. AAAI Technical Report SS-02-01.
- Hunicke, R., LeBlanc, M., Zubek, R. (Forthcoming.) "MDA: A Formal Approach to Game Design and Game Research." Proceedings of the Challenges in Game AI Workshop, Nineteenth National Conference on Artificial Intelligence.
- Zubek, R. (Forthcoming.) "Character Participation in Social Interaction." Proceedings of the Challenges in Game AI Workshop, Nineteenth National Conference on Artificial Intelligence.

PRESENTATIONS

ROBOT DEMONSTRATIONS

- Cerebus, the self-demonstrating robot.* 2001. With Horswill, Le, and Khoo.
AAAI-2000: The Seventeenth National Conference on Artificial Intelligence
IJCAI-01: The Seventeenth International Joint Conference on Artificial Intelligence
- GRACE: Graduate Robot Attending Conference.* With Simmons, et al. (GRACE Team).
AAAI-02: The Eighteenth National Conference on Artificial Intelligence
IJCAI-03: The Eighteenth International Joint Conference on Artificial Intelligence

SYSTEM DEMONSTRATIONS

- AlphaSkaarj.* 1999. With Ian Horswill. AAAI Spring Symposium on Artificial Intelligence and Computer Games, 1999.
- tt14m.* 2002. With Aaron Khoo. AAAI Spring Symposium on Artificial Intelligence and Interactive Entertainment, 2002.

CONTRIBUTED PRESENTATIONS

- "being-in-the-world." AAAI Spring Symposium on Artificial Intelligence and Interactive Entertainment, 2001.
- "Towards Implementation of Social Interaction." Presentation and panel discussion. AAAI Spring Symposium on Artificial Intelligence and Interactive Entertainment, 2002.

“Making the Human Care.” Presentation with Aaron Khoo. AAAI Spring Symposium on Artificial Intelligence and Interactive Entertainment, 2002.

“Model for Participation in Social Interaction.” Graduate Student Forum, Northwestern University, 2004.

TEACHING EXPERIENCE

NORTHWESTERN UNIVERSITY, TEACHING ASSISTANT

1999 - 2001 Introduction to Programming, CS 111, 211

2002 Computer Science Colloquium, CS 395

2003 Computer Game Design, CS 370

Since 2003 Animate Arts, CS 396 / CAT 380

SELECTED PROJECTS AND SYSTEMS

1998 – 2002 *Mobile robotics* with *Autonomous Mobile Robotics Group*
Implemented real-time vision algorithms, navigation and behavior control code, and infrastructure elements for various mobile robots: Sony Pet Robots (a.k.a. AIBO), Kluge, and Cerebus.

1999 – 2000 *The Portal* with *Center for Arts and Technology*
Interactive installation at the Block Gallery and Museum in Evanston, IL, designed and build in collaboration with faculty and students of the Center for Arts and Technology.

2000 – 2003 *Cerebus* with *Ian Horswill, Dac Le, and Aaron Khoo*
Extension of parallel-reactive architectures to higher level cognitive tasks. Cerebus is intended to be a “self-demonstrating” robot – it is able to give a short, extemporaneous lecture about itself, field (slightly) more detailed natural language questions about itself, and demonstrate specific capabilities on demand. The Cerebus engine was used in the GRACE robot in 2002 - 2003.

2002 *tt14m* with *Aaron Khoo*
Engagement system for the first-person shooter game Counter Strike that uses domain constraints and simple text processing to attempt engagement in the social aspects of playing the multiplayer game. The “trash talking 14-year-old moron” models the two most common characteristics of players’ social interactions: displays of emotional involvement in the game, and verbal posturing.

Since 2002 *Hierarchical Interaction Protocol Engine*
Dissertation project. System for modeling structured social interaction as hierarchies of concurrent Markov decision processes. Allows for robust and believable interaction via natural language, and fits the computational constraints of computer game development.

Since 2004 *MetaGraphics* with *Ian Horswill*
Meta is a programming language used for teaching introductory programming in the context of electronic and interactive arts. MetaGraphics is a library with 3D graphics and game programming functionality.