

Frank E. Ritter

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Research interests

I am interested in using cognitive modeling within unified theories of cognition to improve human-computer interaction and to test theories of learning, interaction, and behavior moderators. I have built several models that help explain how people learn and sets of tools to make model building, protocol analysis, and statistical analysis easier. I am also interested in developing stochastic learning and optimization algorithms to model behavior and to improve other analyses. We are currently applying many of these techniques to a long-term attempt to study and model the effects of stress on cognition, and are exploring how to use high-performance computing to understand and optimize the fit of data to models.

Education

PhD, Carnegie-Mellon University, 1992 (Psychology, AI & psychology program).
MS, Carnegie-Mellon University, 1989 (Psychology).
Part-time graduate course work, Brandeis University, 1986 (Computer Science).
Graduate course work, Yale University, 1983 to 1984 (Computer Science).
BSEE (cum laude), University of Illinois/Urbana, 1983 (Electrical Engineering).

Honors and awards

Sarah Palin Shameless Self-promotion of a Book Award, Human-Computer Interaction Consortium Workshop, Spring 2010, Spring 2011.
Evertsz, Ritter, Russell, & Shephardson (2007). Best Paper award, at the *16th Conference on Behavior Representation in Modeling and Simulation*.
Fulbright Senior Scholar, Autumn 2005, Institute of Psychology, Technical University - Chemnitz, Germany.
Who's Who Among America's Teachers, 2004-2005.
St. Amant & Ritter (2004) selected as "Siegel-Wolf Award for Best Applied Modeling Paper" at the *International Conference on Cognitive Modeling*.
"Large Passenger Van", 100% score, 11 June 2003 (PSU sponsored, obligatory accreditation to drive PSU large passenger vans).
Faculty Marshall (student selected), Fall graduation 2002, School of Information Sciences and Technology.
Avraamides & Ritter. (2002) selected by the Conference Program Committee for the "Recommended Reading List" at the *11th Conference on Computer-Generated Forces and Behavior Representation*.
European Science Foundation Research Programme "Learning in Humans and Machines", Junior Scientist Fellowship, 1995 to 1997.

ACM Doctoral Dissertation Award Nominee, 1993 competition.
Sigma Xi, inducted at Carnegie-Mellon University.
US Air Force Laboratory Fellowship, Fall 1988 to Spring 1992.
BBN Unendowed couch in the AI Labs, 1987.
National Science Foundation Fellowship Honorable Mention, 1983.
Eastman Kodak Employee Suggestion Plan, Monetary Award, 1983.
Eta Kappa Nu (electrical engineering honorary), University of Illinois
Outstanding Senior, 1983.
Tau Beta Pi (engineering honorary), University of Illinois, 1982.
James Scholar, University of Illinois, Fall 1979 to Spring 1983.
Kodak Scholar, Fall 1980 to Spring 1983.

Experience

At Penn State

Professor of Information Sciences and Technology, of Psychology, and of Computer Science and Engineering, since July 2009.
Associate Professor of Information Sciences and Technology, College of Information Sciences and Technology, the Pennsylvania State University, since October 1999. (Tenured July 1999 in IST.)
Affiliate Faculty in the Department of Industrial and Manufacturing Engineering, since May, 2009.
Associate Professor of Computer Science & Engineering, December 2001 to June 2009.
Member of Computer Science and Engineering Graduate Faculty, since May 2000.
Associate Professor of Psychology, October 1999 to June 2009.
Visitor, Computer Science Department, Tufts University, Spring 2006.
Visiting Professor, Institute of Psychology, Technical University - Chemnitz, Autumn 2005.

At the University of Nottingham

Lecturer (approximately equivalent to US assistant professor) Dept. of Psychology, U. of Nottingham, January 1993 to September 1999. Completed probationary period and new lecturers induction course (approximately equivalent to tenure in the US), Summer, 1995.
Associate Lecturer (approximately equivalent to affiliated tenured US assistant professor), School of Computer Science and Information Technology, U. of Nottingham, June 1995 to September 1999.
Visiting distinguished professor, Psychology Department, U. of Chemnitz (Germany), Fall, 1998.

Industry and Consulting Experience

Charles River Associates, since June 2009.
Applied Systems Intelligence, Inc., June 2009.
RPI Sequential analysis DTO project, July 2007 to December 2007.
CMU DARPA BICA project, 2005-2006.
Soar Technology, 2000-2001.
Staff scientist, BBN Laboratories, Cambridge, MA, 1984 to 1987.
Digital interface engineer, Kodak Research Labs, Rochester, NY (Summer 1981, 1983) and Harrow, England (1982).

Professional Activities

External committee work (selected)

Government service

- Committee on Human-System Design, National Academy of Sciences' National Research Council (NRC). May 2005 to May 2007.
- US/UK OOS Programme Agreement Workshop, 11/12 April 2006, participant.
- Army Research Laboratory Technical Assessment Board (ARLTAB) at the National Academy of Sciences' National Research Council (NRC). Soldier Systems Panel. (April 2004 to December 2006).
- Participant, NSF Workshop on Human-Centered Computing, September 2006.
- Participant, Air Force Investments in Computational Cognitive Process Modeling Working Group, Human Effectiveness Directorate, February 2005.
- Member, NSF IGERT Analytic Meeting Panel, 2-3 June 2003.
- Visiting reviewer, "Computational Analysis of Social and Organizational Systems (CASOS) Integrative Graduate Education and Research Traineeship (IGERT) NSF program at CMU, Spring 2003.

Editorial and leadership board memberships

- Series editor, *Oxford Series on Cognitive Models and Architectures*, Oxford University Press, since June 2003. (also noted below.)
- Action editor: *Cognitive Systems Research*, since January 2010.
- Editorial boards: *Human Factors*, since September 2000.
AI and Simulation of Behaviour Quarterly, January 2003 to March 2009.
AI and Simulation of Behaviour Journal, February 2004 to January 2008.
Journal of Educational Psychology, April 2008 to October 2011.
- Central Pennsylvania Chapter of the American Civil Liberties Union of Pennsylvania, since September 2000.
- Governing board representative from Penn State, Human-Computer Interaction Consortium, since August 2009.
- Alumni Advisory Committee, Electrical and Computer Engineering Alumni Association University of Illinois, May 1984 to June 2004.
- Governing board, Society for the Study of Artificial Intelligence and Simulation of Behaviour, February 1998 to November 2003.
- Member, Alumni Board of Directors, Electrical and Computer Engineering Alumni Association University of Illinois, Fall 1982 to Spring 1983.

External reviewer

- External examiner for the MSc in Knowledge Management Systems (KMS), RMCS, Cranfield University (UK). September 2002 to September 2005, extended to 2006.
- External examiner for the BSc in Cognitive Science, U. of Hertfordshire. January 1997 to June 2000.
- University College London, HCI Unit review, 1999.

Proposal reviewer

- Air Force Office of Scientific Research.
- Austrian National Science Foundation.

Belgian Federal Public Planning Service.
British Academy.
Defense Threat Reduction Agency.
Netherlands Organisation for Scientific Research.
UK Economic and Social Research Council.
UK Engineering and Physical Sciences Research Council.
UK Joint Research Council's Human-Computer Interaction / Cognitive Science Initiative.
Vienna Science and Technology Fund (WWTF).

Conference organizer

Technical program co-chair, Human-Computer Interaction Consortium Workshop, 2011.
Technical program co-chair, Conference on Behavior Representation in Modeling and Simulation, 2009, 2010, 2011.
Founding co-chair, tutorial program, Cognitive Science Conference 1999. Co-chair, 2001, 2002, 2003, 2004.
Tutorial Chair, International Conference on Cognitive Modeling, 2004, 2006, 2007, 2009, 2010, 2012.
Co-chair, 2nd European Conference on Cognitive Modeling, 1998.
Chair, EuroSoar 7 Workshop, U. of Nottingham, 1993.

Program committees

AAAI, 2011.
Biologically Inspired Cognitive Architectures (BICA), 2010.
Tenth International Cognitive Modeling Conference, 2010.
Ninth International Cognitive Modeling Conference, 2009.
Executive Committee, Conference on Behavior Representation in Modeling and Simulation, 2008, 2009, 2010, 2011.
Brain Informatics—BI 2010.
Associate Chair, CHI Notes, 2007.
Tutorial Program, Cognitive Science Conference, 2005, 2007, 2009.
Cognitive Science 1999, 2001, 2002, 2003, 2004, 2005.
IJCAI Modeling Natural Action Selection Workshop, July 2005.
6th German Workshop on Artificial Life, April 2004.
Information Resources Management Association 2004 Conference (reviewer).
Tutorials committee member for European Cognitive Science Conference, 2003.
Eighth International Cognitive Modeling Conference, 2007.
Seventh International Conference on Cognitive Modeling 2006.
Sixth International Conference on Cognitive Modeling, 2004.
Fifth International Cognitive Modeling Conference, 2003.
Fourth International Conference on Cognitive Modeling, July 2001.
Simulating Human Agents, AAAI Fall Symposium Series, 2000.
Third International Conference on Cognitive Modelling, 2000.
Postgraduate Workshop, AISB Convention 1999.
Human learning meets machine learning, Workshop at 10th European Conference on Machine Learning, 1998.
1st European Workshop on Cognitive Modeling, November 1996.

Interact'95.

CHI '94 Research Symposium.

Occasional editorial reviewer (journals and conferences)

ACM Transactions on Computer-Human Interaction.

Adaptive Behavior.

Advances in Cognitive Systems, 2011.

AI and Simulation of Behaviour Journal.

Behavior Representation in Modeling and Simulation Conference 2003, 2004, 2007, 2008.

Behavior Research Methods, Instruments, and Computers.

CHI conferences 1996 to 2001, 2003 to 2006, 2008.

Cognitive Science Conference 1995 to 1997, 1999 to 2002, 2004.

Cognitive Science.

Cognitive Systems Research.

Computational and Mathematical Organization Theory.

Computers and Education.

Current Psychology of Cognition.

Encyclopedia of Information Science and Technology, Idea Group Publishing.

European Journal of Cognitive Psychology.

Human-Computer Interaction.

Human Factors and Ergonomics Society Annual Conference, 2008.

IEEE Expert Special Track on Applications of Machine Learning.

IEEE Intelligent Systems.

IEEE Systems, Man, and Cybernetics: Part A, Systems and Humans.

International Conference on Information Systems, 2009.

Interacting with Computers.

International Joint Conference on AI (IJCAI), 2011.

International Journal of Human-Computer Studies.

Journal of Behavioral Decision Making

Journal of Experimental Child Psychology.

Journal of Experimental Psychology: Learning, Memory and Cognition.

Journal of Virtual Culture.

Learning & Instruction.

Neural Computing & Applications.

Software: Practice and Experience

Topics in Cognitive Science User Modeling and User Adaptive Interfaces.

Work & Stress.

Occasional editorial reviewer (books)

Cambridge University Press

Jones and Bartlett

Lawrence Earlbaum.

Oxford University Press (non-cognitive modeling books, trade books).

Sage.

Other service (selected)

Doctoral Consortium commentator, International Conference on Cognitive Modeling, 2003.
Tutor, AI & Simulation of Behaviour Post-Graduate Workshop, Spring 1994, 1995, 1996.
Invited participant, DRA Workshop on Integrated Performance Modelling, November, 1995.

Committee work at Penn State University (selected)

Chair, Academic Integrity Committee, Fall 2011 to Spring 2012.
Member, Internal advisory committee for the Survey Research Center, a unit within the Social Science Research Institute, Penn State, since Fall 2010.
Chair, Promotion and tenure committee, Fall 2010 to Spring 2011.
Member, IST Classroom Software Committee, since Fall 2006.
Course Committee Chair, IST 331, The User, since Summer 2008.
Member, University Graduate Council, since Fall 2007.
Member, Graduate Council Committee on Academic Standards, since Fall 2007.

Chair, Faculty search committee, Fall 2009.

Member, Graduate Recruiting Committee, Fall 2007 to Spring 2009.
Member, Graduate Advisory Committee, Fall 2007 to Spring 2009.
Member, University Hearing Board, January 2003 to August 2005, and August 2006 to August 2008.

Member, Select ad hoc Committee to Review Endowed Chairs Review Processes, Spring 2007.

Member, PhD Comprehensive Exam Committee, Spring 2007.
Member, Dean's review of John Bagby Committee (similar to HR40), Spring 2007.
Member, Committee to evaluate IST web site and presence, Fall 2006 to Spring 2007.

Developer and chair, IST Classroom Software Committee, April 2004 to August 2005.
Member, Undergraduate Advisory Committee, September 2004 to August 2005.
Member, Publications Committee, Computer Science and Engineering, Fall 2002 to August 2005, and since Fall 2006.
Chair, Evaluation of IST 331, The user, since Fall 2002.

Member, Committee to develop Professional MSc IST, Spring 2000 to Spring 2004.
Director, IST Summer Undergraduate Research Fellowship Program, Summer 2000 to Summer 2004.

Co-chair, HCI Institute development committee, Fall 2000 to Spring 2003.
Member, Evaluation of IST 230, Discrete math, Fall 2002 to Spring 2004.

Solutions Institute Fellow, Spring 2001 to Spring 2002.
Member, Committee to evaluate IST web site and presence, Spring 2000 to Spring 2002.
Member, Faculty Advisory Evaluation Committee to the Dean, Spring 2002.
Symposium organizer: "At the Intersection of Arts & Technology", College of Arts and Architecture and School of Information Sciences and Technology, Fall 2001.
Chair, HCI faculty search, September 2001 to May 2002.

Co-chair, Detailed Design of IST Graduate Courses, 521, HCI topics, Spring 2001 to Spring 2002.
Member, Committee to develop MSc and Phd in IST, Spring 2000 to Spring 2002.
Member, IST Faculty Chair committee, Fall 2000 to Spring 2002.
Member and occasional chair, Promotion and tenure committee, Spring 2000 to Spring 2002.

Advisor, Dean's Student Advisory Committee, Spring 2000 to Spring 2001.
Chair, Committee to develop IST 301, The user, Fall 2000 to Spring 2001.
Member, IST Faculty search committee, Fall 1999, Spring 2000, Spring 2001.
Member, IST Minor Committee, Spring 2001.
Chair, Committee to develop IST 521, Theories of users in human-computer interaction, Fall 2000.
Member, Committee to develop IST 531, Human Information Behavior: Information and the User, Fall 2000.
Chair, Committee to develop IST 230, Logic, language, and discrete math for information science, 2000.
Chair, Tenure committee in IST, Spring 2000.

Committee work at the U. of Nottingham (selected)

Director of Studies, Masters in Intelligent Systems, February, 1999 to September 1999.
Web foreman, School of Psychology, January 1999 to September 1999.
Director, Institute for Applied Cognitive Science, August 1998 to September 1999. HCI Studies
Director for Psychology, IT MSc degree, ICL Institute of IT, U. of Nottingham, 1997 to 1999.
International Admissions Tutor, Dept. of Psychology, Spring 1994 to September 1999.
Occasional Student Examinations Officer, Spring 1995 to Spring 1999. (Equivalent to Director of studies for visiting and part-time students.)
Department Computing Sub-committee, Spring 1994 to September 1999.

Professional and honorary society memberships

Association for Computing Machinery, 1990-2005.
Special interest group on computer-human interaction (SIGCHI)
American Association for Artificial Intelligence (AAAI)
Association for Psychological Science, 1992-2005.
Brain and Behavioral Sciences, Associate, since October, 2004.
British Psychological Society
Chartered Psychologist, since 1997.
Cognitive Science Society
Human Factors and Ergonomics Society
Institute of Electrical and Electronics Engineers, 1982-2005.
Computer Society
Systems, Man, and Cybernetics Society
League for Programming Freedom
Society of the Study of Artificial Intelligence and Simulation of Behavior (AISB)

Eta Kappa Nu (electrical engineering)
Phi Kappa Phi (scholastic)
Shorter Board (leadership)
Sigma Xi (research)

Tau Beta Pi (engineering)

Teaching and Advising

Primary modules taught, co-taught, or convened (organized). * indicates new courses developed.

At Penn State

IST 597*: Simulating human behavior
PSY 524: Cognitive Pro-seminar (one week of semester course, biannually)
IST 597D: HCI models and theories (Guest lecture)
IST 594*: Symposium on Cognitive Modeling
IST 590*: Research Colloquium (Professional seminar version)
IST 521*: HCI (graduate methods)
IST 402*: Emerging Technologies: Models of human behavior
IST 331*: Organization and design of information systems: User and system principles (The User)
IST 230*: Language, logic, and discrete math
IST 110: Introduction to information sciences and technology

At the University of Nottingham

(C8 is Psychology; G5 undergraduate computer science, and G6 graduate computer science)

C8 D OEO: Issues in ergonomics
C8 1 HBP*: Introduction to British psychology
C8 C XCE: People and computers in the workplace
C8 C DPC*: Programming cognitive models
C8 D EAI*: Exploring architectures for AI
G5 B UID: User interface design
G6 D IHF: Introduction to human factors
G6 D COG: Introduction to cognitive psychology
C8 C XAR: Cognitive architectures
C8 3 TUB*: Cognitive modelling
C8 C XES: Expert systems
C8 2 COG: Cognitive psychology
G6 D FAI: Foundations of AI
C8 1 IA A&B: Introduction to AI
C8 3 XPL: Lisp & cognitive modeling
Problem solving and visual cognition*, Second year tutorial
C8 2 MH A&B*: The keystroke level model

At CMU

Chairman and founder, *Interfacing the Science and the Profession* seminar series, Department of Psychology, CMU, 1991.

Current students

Jaehyon Paik (IE PhD, expected August 2011).
Ryan Kaulakis (IST PhD expected 2013).
Changkun Zhao (IST PhD expected 2013).
Bill Stevenson (IST PhD expected May 2012).

Chris Dancy (IST PhD expected May 2014, co-advised with Mike McNeese).
Razvan Orendovici (CSE MS expected December 2011).

Vivek Kaushal (CSE MS expected August 2011 committee).
Leslie Aderhold (Psychology PhD committee).
Thomas George (IST PhD committee).

Previous students

Supervised PhD students

Mark Cohen (IST PhD, December 2008).
Sue Kase (IST PhD, December 2008).
Jong Kim (Industrial Engineering PhD, co-advisor, August 2008).
Roman Belavkin (CS PhD July 2003, co-supervised with David Elliman at Nottingham).
Gordon Baxter (Psy PhD December 2000, co-supervised by Fernand Gobet at Nottingham).
Gary Jones (Psy PhD 1998, co-supervised by David Wood).
David Golightly (Psy PhD 1999, co-supervised by David Gilmore).

Externally examined PhD students

Matthew Rutledge-Taylor (Carleton U., external examiner, Cognitive Science PhD, 2010).
Duncan Brumby (University of Wales/Cardiff, external examiner, HCI PhD, 2005).
Tossapon Boongeon (Cranfield University, external examiner, Intelligent Systems, PhD 2004).
Dan Allsopp (Cranfield University, external examiner, Intelligent Systems, PhD 2003).
Ed Butler (internal examiner for Psy PhD May 1999 and June 2000).

Supervised MS and MSc students

Robert Stark (IST MS, May 2010, co-supervised with John Yen).
Maik Friedrich (U. of Bamberg, CS, MS May 2008, co-supervised with Prof. Dr. Ute Schmidt).
Urmila Kukreja (CSE MS, December 2004).
Kevin Tor (CSE MS, May 2004).
Doug Hogan (CSE MEng. May 2004, co-supervised with John Hannan).
Andrew Freed (CSE BS/MS Honors May 2003).
Atin Bansal (CSE MS, December 2002).
Peter Lonsdale (MSc in Intelligent Knowledge-Based Systems, 1999).
Rajinder Singh Rajoo (MSc in IKBS, 1997).
Jalal Rassouli (MSc in IKBS, 1995).
Roberto Ong (MSc in Intelligent Knowledge-Based Systems, 1994).

Visiting scholars and post-docs

Dr. Junya Morita, PhD (visiting professor from Japan Advanced Institute of Science and Technology, October 2010 to December 2011)
Dr. Jong Kim (August 2008 to August 2009).
Dr. Olivier Georgeon (March 2008 to July 2010).
Maik Friedrich (visiting CS student from the University of Bamberg, May 2007 to December 2007).

Dr. Lucio Inguscio (visiting scholar from Psychology, The University of Rome "La Sapienza", January to June 2004).

Dr. Dirk van Rooy (March 2001 to October 2002).

Emma Norling (visiting CS student from the University of Melbourne, March to June 2004).

Ellen Bass (visiting IE student from Georgia Tech. October 1994 to June 1995).

Previous committees

Jennifer Bittner (Psychology PhD committee, awarded May 2011)

Maria Velazquez (IE PhD committee, awarded May 2011).

Shabnam Sodagari (EE PhD committee, September 2010).

Joshua Gross (IST PhD committee, May 2009).

Christina Kokini (Industrial Engineering, MS external reader, April 2009).

Georgios Christou (Tufts Computer Science, PhD committee, May 2007).

Damodar Bhandarkar (Industrial Engineering, PhD, August 2008).

Theodore Kinney (Psychology, PhD, March 2007).

Boyan Brodaric (GIS PhD Comprehensive exam committee, 2000-2004).

Dan Cassenti (Psy PhD committee member, PhD 2004).

Steve Jax (Psy Master's committee, MS 2001).

Marios Avraamides (Psy PhD committee, May 2002).

Undergraduate theses

Peter Gregory Plumb (senior IST thesis, December 2010).

Alex Wood (senior IST thesis May 2003).

Jason Cornwell (Psy BS honors thesis 2001).

5 Diplomas in Applied Psychology, 1994 to 1999. 3 Practicum visiting scholars from German CS Departments, 1994 to 1999.

Other teaching activities

Seminars on Scientific writing and on HCI at TU/Chemnitz, Fall 2005.

Several lectures of Introduction to Cognitive and Brain Science, and a graduate seminar on cognitive science in Computer Science, Tufts University, Spring 2006.

Mentor, Women in Science and Engineering Research program, since Spring 2000.

Mentor, Minority Undergraduate Research Experience, since Spring 2002.

Mentor, Graduate teaching faculty mentor to Mithu Bhattacharya, Fall 2010.

The Psychological Soar Tutorial (with Richard M. Young): EuroSoar 7, 8, 9 Workshops, 1993 to 1995; AISB Spring Symposium Series, 1994, 1996; 1997; HCI '94; HCI International 1995; European Workshop on Cognitive Modeling, 1st (1996) and 2nd (1998); Cognitive Science Conference, 1999. Given as staff development, U. of Hertfordshire, 1998. Used by others to teach cognitive modelling in Australia, Japan, Scotland, and Bulgaria.
(with Tony Kalus and Richard Young) Fifth International Conference on Cognitive Modeling, 2003.

The Herbal High Level Behavior Representation Language Tutorial (with Mark Cohen and others):

Behavior Representation in Modeling and Simulation Conference 2005.

Dstl, Farnborough, June 2006. (including an introduction to ACT-R)

A summary of *Human-System Integration in the System Development Process*:
ICCM 2009.

Research Grants

Lifetime total of \$6,565k as PI.

- Charles River Analytics, Inc. (June 2011 to December 2011). STTR: Support for high-level tools for faster tutoring. Ritter (PI). Haynes and Yeh (Co-PIs). \$49.7k
- Office of Naval Research. (October 2010 to September 2012). Expanding a smart tutoring system supporting acquisition and retention of skills. Ritter (PI). \$598k (\$40k+\$240k increments).
- Office of Naval Research to Charles River Analytics (March 2010 to February 2014). EasyCog SBIR Phase II. Ritter, PI, Haynes, Co-PI. \$100k awarded, with \$40k and \$100k proposed extensions.
- DTRA (August 2009 to July 2012). Pathway-based integration of relational networks and textual information for detecting motivation and intent of WMD-related threats. Ritter, PI, Liu, Haynes, Horgan, Kreager, Mitra, Ivanova, Shemanski, & Hall, Co-PIs. \$1,047k.
- Office of Naval Research. (March 2010 to December 2010). A smart tutoring system supporting acquisition and retention of skills. Ritter (PI), Kim (named researcher). \$115k + 35k (\$150k total)
- Office of Naval Research (January 2008 to September 2010). Linking UK Content Expertise with Computer-Based Analysis for Prediction of Individual and Group-Related Activities. Weiss, PI. Ritter (Subcontractor-CoPI). Approximately \$100k out of \$500k.
- Office of Naval Research (August 2009 to July 2010). Interacting with a Massively Multiplayer Online Games (MMOGs) Environment using Herbal and SegMan. Ritter, PI. St. Amant (Subcontractor-CoPI). Approximately \$307k. (reduced to 20k based on funding cuts)
- Office of Naval Research. (June 2007 to December 2009). Establishing a novel training paradigm by investigating learning and forgetting of procedural skills. Ritter (PI), Koubek (Co-PI), Kim (named researcher). \$168k + 16k + 32k (\$222,810 total)
- Office of Naval Research. (October 2005 to August 2009). Real world behavioral modeling with the Herbal high-level language. Ritter (PI), Haynes (Co-PI). \$769k.
- Office of Naval Research. (October 2005 to September 2008). Model and study of threatening tasks and fatigue. Ritter (PI), Klein (Co-PI). \$380k.
- UK MoD. (May 2003 to March 2008). Improving the representation of human variability within computer generated forces. PI: Agent Oriented Software Limited. Intitial 2 year total to PSU of \$59k, plus \$2.5k + \$40k + \$250k extensions.
- DMSO. (2004). Human Performance in Modeling and Simulation. PI: Agent Oriented Software. \$46k.
- Office of Naval Research. (January 2003 to December 2005). Integrated explanation and visualization for intelligent synthetic forces. Jones, R. M., & Taylor, G. (PIs), with Ritter and Haynes (sub-contract). \$667k, with \$181k to PSU.
- Office of Naval Research. (January 2003 to September 2005). Designing, building, and testing behavioral moderators with the ACT-R cognitive architecture. Ritter (PI), Klein (Co-PI). \$541k.
- Naval Air Warfare Center (2002). Dynamic task allocation. Dr. J. Wise (PI for ARL), Ritter (Co-PI). Naval Air Warfare Center Aircraft Division. \$25k.
- Lucent Foundation Funding (2002). Niche search engine for mobile search. Giles (PI), Ritter (Co-PI). \$50k.
- Office of Naval Research. (November 2001 to May 2005). An architectural overlay: Modifying an architecture to help cognitive models understand and explain themselves. Ritter (PI), Haynes (Co-PI). \$228k.

DARPA. (May 2001 to September 2002). Using cognitive models to examine human-robot interfaces: An exploratory study. Ritter (PI). \$198k.

Office of Naval Research. (March 2001 to September 2001). Designing behavioral moderators for cognitive architectures. Ritter (PI), Quigley, McNeese, and Klein (Co-PIs). \$74.9k.

Office of Naval Research (January 2001 to September 2001). Testing an interface to explain cognitive models to experts. Ritter (PI). \$32k.

DERA. April 2000 to September 2000. Tasks toward supporting realistic synthetic forces behaviour representation. Ritter (PI). £11.5k.

DERA. Techniques for modelling human performance in synthetic environments accepted as: A detailed review of approaches that might be used to model human behaviour predominantly, although not exclusively, in a military context. (1999). Ritter (PI) with Shadbolt, Elliman, Young, and Gobet (Co-PIs). £19.9k.

DRA. Computer support for rapid decision making using Soar. (June 1994 to June 1997). Gilmore and Ritter (joint-PIs). £176k.

JCI Diagrammatic reasoning grant (January 1993 to June 1994). Ritter and Bibby (joint PIs). Approximately £200k.

US Air Force Laboratory Fellowship, Fall 1988 to Spring 1992. US\$ 129k.

Other Support (selected)

NSF Teragrid. 2008. Visualizing the parameter space of a serial subtraction cognitive model. 30,000 units of supercomputer time. Sue Kase, Co-PI. NSF Teragrid. 2007. Optimizing the fitting of a serial subtraction cognitive model. 10,000 units of supercomputer time. Extended to 30,000 units. Sue Kase, Co-PI.

ARL (May 2003 to May 2005). Optimizing the fit of cognitive models using genetic algorithms. CRADA for 2,500 hours of supercomputer time.

The Office of Undergraduate Education, Summer Session Enhancement Fund. Summer, 2002. Support for two students in Summer Undergraduate Research Fellowship program. \$3k.

ONR travel grant. January, 2002. To attend ONR Contractors meeting on Cognitive Architectures. Orlando, FL. \$1.1k.

US Air Force Warfighter Research Lab travel grant. January, 2002. To attend ACT-R Workshop. Mesa, AZ. \$1.1k.

DARPA/NSF travel grant. September 2001. To attend DARPA/NSF Study on Human-Robot Interaction, San Luis Obispo, CA. \$1.1k.

Penn State Fund for Excellence in Learning and Teaching (FELT). (July 2001 to July 2002). Java-based teaching of mathematics in information sciences and technology. \$3.2k.

DARPA. December, 2000. To attend DARPA Workshop on Human-Robot Interaction, Washington, DC.

Lockheed/Martin. 2000. with Lambert. Research in advanced human-computer interaction: Future applications of cognitive models. \$7k.

KPN Research (NL). June to September 2000. Building a Sim-eye and Sim-hand in Visual Basic. \$5.6k.

Soar Technology. March 2000. Human-computer interface issues. \$3.1k.

President's fund for Undergraduate Research (Penn State). January 2000. with Amanda Spink. How people search the web. \$2k.

Lockheed/Martin. 1999. with Lambert. Research in advanced human-computer interaction: Future applications of cognitive models. \$5k.

Defence Science and Technology Organisation (Australia). January 1999. with Prof. Shadbolt.
Cognitive modelling requirements for operational research simulations. \$AUS 10k.

Engineering and Physical Science Research Council; US Army Research, Development, and Standardization Group (UK); and US Air Force European Office of Aerospace Research and Development. March 1993. with Prof. Young, to support the 2nd European Conference on Cognitive Modelling. \$7.3k.

US Air Force European Office of Aerospace Research and Development. 3/97. with Prof. Young, 2nd European Conference on Cognitive Modelling. \$2k.

US Army Research, Development, and Standardization Group (UK). 3/97. with Prof. Young, 2nd European Conference on Cognitive Modelling. \$1,860.

EPSRC, 2/97. with Prof. Young, Support for ECCM'98. £2,346. Grant ref: GR/M08165.

Enterprise in Higher Education grant to develop the Soar Tutorial (April 1995 to April 1997). £2k.

US Office of Naval Research/Europe (1996) with Gary Jones for Jones to travel to cognitive modelling sites in the US and attend summer schools on cognitive modelling. US \$1.1k.

Social and Economic Research Council. 1993. Support for the EuroSoar7 workshop. £800.

Royal Society travel grant, 1993. £200.

Publications

Drafts of most papers are available at acs.ist.psu.edu/papers/.

Book series

Series editor, *Oxford Series on Cognitive Models and Architectures*, Oxford University Press, since June 2003. 5 books published, no book(s) in press, 4 book(s) under contract, and 1 book(s) under review or in process.

Books

- B6 Ritter, F. E., Baxter, G. D., & Churchill, E. F. (drafted). *The ABCS of HCI*. 380 + xx pages. Currently available through LuLu.com. Under contract to Springer.
- B5 Ritter, F. E., Kim, J. W., Morgan, J. H., & Carlson, R. A. (under contract). Running behavioral experiments with human participants: A practical guide (for students of HCI, IE, and cognitive science—things they didn't teach you in classrooms about running studies. (105 pages). Sage.
- B4 Ritter, F. E., Nerb, J., O'Shea, T., & Lehtinen, E. (Eds.), (2007). *In order to learn: How the sequence of topics influence learning*. New York, NY: Oxford University Press.
- B3 Ritter, F. E. [member], Committee on Human-System Design Support for Changing Technology. (2007). *Human-system integration in the system development process: A new look*. Richard W. Pew and Anne S. Mavor (eds.). National Research Council, National Academy Press. Washington DC.
- B2 Ritter, F. E., Shadbolt, N. R., Elliman, D., Young, R., Gobet, F., & Baxter, G. D. (2003). *Techniques for modeling human performance in synthetic environments: A supplementary review*. Wright-Patterson Air Force Base, OH: Human Systems Information Analysis Center.
- B1 Ritter, F. E., & Young, R. M. (Eds.). (1998). *Proceedings of the Second European Conference on Cognitive Modelling*. Thrumpton (UK): Nottingham University Press.

Special issues

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- J30 Georgeon, O. L., Mille, A., Bellet, T., Mathern, B., Ritter, F. E. (accepted). Supporting activity modeling from activity traces. *Expert Systems*.
- J29 Qiu, B., Ivanova, K., Yen, J., Liu, P., & Ritter, F. E. (accepted, November 2010) Event-driven modeling of social networks. *Journal of Social Computing and Cyber-Physical Systems*.
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- C27 Shah, K., Rajyaguru, S., St. Amant, R., & Ritter, F. E. (2003). Connecting a cognitive model to dynamic gaming environments: Architectural and image processing issues. In F. Detje, D. Doerner, & H. Schaub (Eds.), *Proceedings of the Fifth International Conference on Cognitive Modeling*. 189-194. Bamberg, Germany: Universitats-Verlag Bamberg.
- C26 Councill, I. G., Haynes, S. R., & Ritter, F. E. (2003). Explaining Soar: Analysis of existing tools and user information requirements. In F. Detje, D. Doerner, & H. Schaub (Eds.), *Proceedings of the Fifth International Conference on Cognitive Modeling*. 63-68. Bamberg, Germany: Universitats-Verlag Bamberg.
- C25 Belavkin, R. V., & Ritter, F. E. (2003). The use of entropy for analysis and control of cognitive models. In F. Detje, D. Doerner, & H. Schaub (Eds.), *Proceedings of the Fifth International Conference on Cognitive Modeling*. 21-26. Bamberg, Germany: Universitats-Verlag Bamberg.
- C24 Ritter, F. E., Avraamides, M., & Councill, I. G. (2002). An approach for accurately modeling the effects of behavior moderators. In *Proceedings of the 11th Computer Generated Forces Conference*. 29-40, 02-CGF-002. Orlando, FL: U. of Central Florida.
- C23 Avraamides, M., & Ritter, F. E. (2002). Using multidisciplinary expert evaluations to test and improve cognitive model interfaces. In *Proceedings of the 11th Computer Generated Forces Conference*. 553-562, 02-CGF-100. Orlando, FL: U. of Central Florida.
- One of only seven papers selected by the Conference Program Committee for the Recommended Reading List from the 11th Conference on Computer-Generated Forces and Behavior Representation. www.sisostds.org/conference/View_Public_Reading.cfm?Phase_ID=2
- C22 Ritter, F. E., Van Rooy, D., & St. Amant, R. (2002). A user modeling design tool based on a cognitive architecture for comparing interfaces. In C. Kolski & J. Vanderdonckt (Eds.),

Computer-Aided Design of User Interfaces III, Proceedings of the 4th International Conference on Computer-Aided Design of User Interfaces CADUI'2002. 111-118. Kluwer Academics Publisher, Dordrecht.

- C21 Norling, E., & Ritter, F. E. (2001). Embodying the JACK agent architecture. In M. Stumptner, D. Corbett, & M. Brooks (Eds.), *AI 2001: Advances in Artificial Intelligence. Proceedings of the 14th Australian Joint Conference on Artificial Intelligence.* 368-377. Berlin: Springer.
- C20 Ritter, F. E., & Bibby, P. (2001). Modeling how and when learning happens in a simple fault-finding task. In *Proceedings of ICCM - 2001 - Fourth International Conference on Cognitive Modeling.* 187-192. Mahwah, NJ: Erlbaum.
- C19 Ritter, F. E., & Lonsdale, P. (2000). Extending Tcl/Tk to provide a functional eye and hand for the Soar cognitive modelling architecture. To have appeared in *Proceedings of the Fifth Biennial Australasian Cognitive Science Conference.*
- C18 Lonsdale, P. R., & Ritter, F. E. (2000). Soar/Tcl-PM: Extending the Soar architecture to include a widely applicable virtual eye and hand. In N. Taatgen & J. Aasman (Eds.), *Proceedings of the 3rd International Conference on Cognitive Modelling.* 202-209. Veenendaal (NL): Universal Press.
- C17 Gobet, F., & Ritter, F. E. (2000). Individual Data Analysis and Unified Theories of Cognition: A methodological proposal. In N. Taatgen & J. Aasman (Eds.), *Proceedings of the 3rd International Conference on Cognitive Modelling.* 150-157. Veenendaal (NL): Universal Press.
- C16 Byrne, M., Chong, R., Freed, M., Ritter, F. E., & Gray, W. (1999). Symposium on integrated models of perception, cognition, and action. In *Proceedings of the 1999 Conference of the Cognitive Science Society.* 1. Mahwah, NJ: Erlbaum.
- C15 Golightly, D., Hone, K. S., & Ritter, F. E. (1999). Speech interaction can support problem solving. In M. A. Sasse & C. Johnson (Eds.), *Human-Computer Interaction -- Interact '99.* 149-155. IOS Press.
- C14 Baxter, G. D., & Ritter, F. E. (1999). Towards a classification of state misinterpretation. In D. Harris (Ed.), *The 2nd International Conference on Engineering Psychology and Cognitive Ergonomics.* 35-42. Oxford: Ashgate.
- C13 Jones, G., & Ritter, F. E. (1998). Simulating development by modifying architectures. In *Proceedings of the Cognitive Science Society.* 543-548. Madison, WI: Lawrence Earlbaum.
- C12 Jones, G., & Ritter, F. E. (1998). Initial explorations of modifying architectures to simulate cognitive and perceptual development. In *Proceedings of the Second European Conference on Cognitive Modelling.* 44-51. Thrumpton, UK: Nottingham University Press.
- C11 Baxter, G. D., & Ritter, F. E. (1997). Model-computer interaction: Implementing the action-perception loop for cognitive models. In D. Harris (Ed.), *The 1st International Conference on Engineering Psychology and Cognitive Ergonomics.* vol. 2 215-223. October 1996, Stratford-upon-Avon: Ashgate.
- C10 Jones, G., & Ritter, F. E. (1997). Modelling transitions in childrens' development by starting with adults. In *European Conference on Cognitive Science,* 62-67. Manchester, UK.
- C9 Ritter, F. E., & Baxter, G. D. (1996). Able, III: Learning in a more visibly principled way. In U. Schmid, J. Krems, & F. Wysotzki (Eds.), *Proceedings of the First European Workshop on Cognitive Modeling.* 22-30. Berlin: Forschungsberichte des Fachbereichs Informatik, Technische Universität Berlin.
- C8 Nichols, S., & Ritter, F. E. (1995). Theoretically motivated tool for automatically generating command aliases. *Proceedings of CHI '95.* 393-400.
- C7 Ong, R., & Ritter, F. E. (1995). Mechanisms for routinely tying cognitive models to interactive simulations. In *HCI International '95.* Osaka, Japan: July 1995.
- C6 Ritter, F. E., Lochun, S., Bibby, P. A., & Marshall, S. (1994). Dismal: A free spreadsheet for sequential data analysis and HCI experimentation. In A. Trapp & N. Hammond (Eds.),

Computers in Psychology '94, 62-63. York (UK): CTI Centre for Psychology, U. of York.
Reprinted in *Psychology Software News*, 5(2) (November 1994), Computers in Teaching
Initiative Centre for Psychology, U. of York. pp. 57-58.

- C5 Nerb, J., Krems, J., & Ritter, F. E. (1993). Rule learning and the powerlaw: A computational model and empirical results. In *Proceedings of the Fifteenth Annual Conference of the Cognitive Science Society* 765-770. Hillsdale, NJ: Erlbaum.
- C4 Ritter, F. E. (1993) Using a cognitive architecture to add to protocol theory. Abstract included in the *Proceedings of the III European Congress of Psychology*, Tampere, Finland, July 1993.
Also presented as colloquia at Queen Mary and Westfield College (U. of London), and the U. of Regensburg, Germany, July, 1993.
- C3 Ritter, F. E. (1993) Creating a prototype environment for testing process models with protocol data. In the *Proceedings of the InterCHI Research Symposium*, Amsterdam, April, 1993.
- C2 Ritter, F. E. (1991). Towards fair comparisons of connectionist algorithms through automatically generated parameter sets. In *Proceedings of the Thirteenth Annual Conference of the Cognitive Science Society*. 877-881. Hillsdale, NJ: Erlbaum
- C1 Davis, L. W., & Ritter, F. (1987). Schedule optimization with probabilistic search. *Proceedings of the Third Conference on Artificial Intelligence Applications*. IEEE Computer Society. 231-236.

Invited talks

- Ritter, F. E., Paik, J., & Kim, J. W. (2010). A learning model of a long, non-iterative spreadsheet task. Cognitive Science Distinguished Lecture. Carleton University, 1 Oct 2010.
- Ritter, F. E., Kase, S. E., Klein, L. C., Bennett, J., & Schoelles, M. (2009). Fitting a model to behavior tells us what changes cognitively when under stress and with caffeine. In *Proceedings of the Biologically Inspired Cognitive Architectures Symposium at the AAAI Fall Symposium. Keynote presentation*, Technical Report FS-09-01. 109-115. AAAI Press: Menlo Park, CA.
- Ritter, F. E., & Bibby, P. (2004). Modeling how and when learning happens in a diagrammatic reasoning task. ONR / NSF / DARPA Symposium on Reasoning and Learning in Cognitive Systems, CSLI, Stanford, March 20-21, 2004. (invited)
- Ritter, F. E. (2002). An introduction to cognitive modeling and knowledge management. Royal Military College of Science, U. of Cranfield, November, 2002 (Inaugural lecture for the Knowledge Management Systems degree programme).
- Ritter, F. E., Avraamides, M. N., Council, I., Rooy, D. V., Quigley, K. S., Klein, L. C., McNeese, M. D., Stine, M. M., & Rodrigues, I. M. (2002). Pre-task appraisal and caffeine: An architectural overlay for ACT-R. Air Force Workshop on ACT-R Models of Human-System Interaction, Mesa, AZ, January 2002. www.dtic.mil/AFRL/afri.html
ONR Cognitive Architectures Workshop, January 2002.
- Ritter, F. E. (1999). Frontiers of cognitive modelling: Emotions! Symposium Cognitive Modelling, Department of Cognitive Science and Engineering, in collaboration with the Centre for Behavioral and Cognitive Neurosciences, University of Groningen (The Netherlands). 25 June 1999.
- Ritter, F. E., & Young, R. M. (1997). Invited lectures and practicals on Soar, German Autumn School in Cognitive Science, 18-22 September, 1997.
- Ritter, F. E. (1997). An approach for routinely including interaction in cognitive architectures. Invited presenter, ONR Hybrid Architectures Meeting, Corvallis, OR, August 12-13, 1997.
- Ritter, F. E. (1995). Empirical constraints and cognitive modelling. Invited talk presented at "The Turing-Hypothesis revisited: New perspectives on Architectures of Cognition" Symposium at the Zentrum fuer Kognitive Studien, U. of Potsdam and the Einstein-Forum. Ritter, F. E. (1985). ICAI Systems: TRIO and Quest at BBN. Invited presentation to the New England Computer Institute.

Published reviews and reports (selected)

- R20 Ritter, F. E., & Nerb, J. (2008). #836. In Order to Learn: How the Sequences of Topics Affect Learning. *Tomorrow's Professor eMail Newsletter*. January 14, 2008.
- R19 Inguscio, L., & Ritter, F. E. (2005). Applied Cognitive Science Laboratory at the Pennsylvania State University (Laboratory Notes). *Cognitive Processing: International Quarterly of Cognitive Science*. 6(2). 142-146. [refereed].
- R17 Daughtry, J. M., & Ritter, F. E. (2005). Understanding the behaviour of agents and cognitive models: CaDaDis 2.1. *AI and the Simulation of Behaviour Quarterly*. 119. 4
- R16 Ritter, F. E., & Councill, I. G. (2002). A review of the Twenty-Second Soar Workshop. *AI Magazine*, 23(3), 107-109.
- R15 Mudgett, D. R., Freed, A. R., & Ritter, F. E. (2002). Web-based resources for teaching discrete mathematics to students of information sciences and technology. *IEEE Learning Technology*, 4(3). 9-10. ltx.ieee.org/learn_tech/issues/july2002/index.html#3
- R14 Baxter, G. D., & Ritter, F. E. (2002). A review of "A multidisciplinary approach to human-machine systems development: Cognitive engineering in the aviation domain" edited by Nadine B. Sarter and Rene Amalberti. *Contemporary Psychology: APA Review of Books*, 47(4), 362-364. (invited)
- R13 Ritter, F. E. (2001). Review of the Third International Cognitive Modelling Conference. *Cognitive Systems Research*, 1(4), 251-252.
- R11 Ritter, F. E. (2000). Review of the Third International Cognitive Modelling Conference. *AI and Simulation of Behaviour Quarterly*. 104. p. 8
- R10 Ritter, F. E., & Young, R. M. (1999). Report on the AISB'99 Workshop on "Issues in Teaching Cognitive Science to Undergraduates". *AI and Simulation of Behaviour Quarterly*, 102, 7-8.
- R9 Young, R. M., & Ritter, F. E. (1999). Report on the Second European Conference on Cognitive Modelling. *AI and Simulation of Behaviour Quarterly*, 101, 10-11.
- R8 Ritter, F. (1997). WWW presentation of overheads & exercises. *CTI Psychology Software News*. 7(2). 46.
- R7 Ritter, F. E., Jones, G., & Young, R. M. (1996). Report on Tutorial 1: Introduction to the Soar cognitive architecture. *AI and Simulation of Behaviour Quarterly*, 95, 18.
- R5 Arnold, M., Kuk, G., & Ritter, F. E. (1995). MacSHAPA review. *CTI Psychology Software News*, 6(1). 18-20.
- R4 Ritter, F. E. (1995). Review of "Soar: An architecture in perspective". *Philosophical Psychology*, 8(3), 301-305.
- R3 Ritter, F. E., & Young, R. M. (1994). Practical introduction to the Soar cognitive architecture: Tutorial report. *AI and Simulation of Behaviour Quarterly*, 88, 62.
- R2 Reder, L. M., & Ritter, F. E. (1988). Feeling of knowing and strategy selection for solving arithmetic problems. *Bulletin of the Psychonomic Society*, 26(6), 495-496.
- R1 Ritter, F. E. (1987). Symbolics product review. *Technology and Learning*, 1(2). Invited product review [mispublished as a letter to the editor!].

Technical reports and videos (selected)

- TR41 Ritter, F. E., Kim, J. W., Morgan, J. H. (2009). Running behavioral experiments with human participants: A practical guide. (Tech. Report No. 2009-1). Applied Cognitive Science Lab, College of Information Sciences and Technology, Penn State. acs.ist.psu.edu/reports/ritterKM09.pdf.

- TR34 Evertsz, R., Ritter, F. E., Anthony, S. (2007). ND2.5.1: GUI Specification Working Paper. Improved Human Behaviour Representation Project No: RT/COM/3/006. Date issued: 2007-01-21.
- TR33 Ritter, F. E., Bennett, J., & Klein, L. C. (2006). Serial subtraction performance in the cycling study (Tech. Report No. ACS 2006-1). Applied Cognitive Science Lab, School of Information Sciences and Technology, Penn State. acs.ist.psu.edu/reports/ritterBK06.pdf
- TR32 Evertsz, R., & Ritter, F. (2006). D17: Situation Awareness Conceptual Model Version 1.0. Improved Human Behaviour Representation Project No: RT/COM/3/006. Date issued: 2006-05-18.
- TR31 Ritter, F. E., Reifers, A. L., & Schoelles, M. J. (2005). Defining testable theories of pre-task appraisal stress (Tech. Report No. ACS 2005-2). Applied Cognitive Science Lab, School of Information Sciences and Technology, Penn State. acs.ist.psu.edu/reports/ritterRKS05.pdf
- TR30 Evertsz, R., Ritter, F. E., & Russell, S. (2005). HPMS–Rules of Engagement Simulation Project Final Report 1.0 (Contract No. FA8650-04-C-6440). Agent Oriented Software, Inc.
- TR29 Ritter, F. E., Ceballos, R., Reifers, A. L., Klein, L. C. (2005). Measuring the effect of dental work as a stressor on cognition (Tech. Report No. ACS 2005-1). Applied Cognitive Science Lab, School of Information Sciences and Technology, Penn State. acs.ist.psu.edu/reports/ritterCRK05.pdf
- TR24 Norling, E., & Ritter, F. E. (2004). COJACK Software Spec. Agent Oriented Software Limited.
- TR22 Norling, E., & Ritter, F. E. (2004). Situational awareness in COJACK. (No. RT/COM/3/006-D5). Agent Oriented Software Limited.
- TR21 Ritter, F., & Norling, E. (2003, revised May 2004). The causal relationship between behavior moderators and entity behaviour (No. RT/COM/3/006-D3). Agent Oriented Software Limited.
- TR19 Sherry, R. R., & Ritter, F. E. (2002). Dynamic task allocation: Issues for implementing adaptive intelligent automation (Tech. Report No. No. 2002-2). Applied Cognitive Science Lab, School of Information Sciences and Technology, Penn State. acs.ist.psu.edu/acs-lab/reports/sherryR02.pdf.
- TR12 Baxter, G. D., & Ritter, F. E. (1996). Designing abstract visual perceptual and motor action capabilities for use by cognitive models (Tech. Report No. 36). ESRC CREDIT, Psychology, U. of Nottingham.
- TR10 Lehman, J., Newell, P., Altmann, E., Ritter, F., McGinnis, T. (1994). The Soar introduction video (11 min.). The Soar Group, School of Computer Science, Carnegie-Mellon University.
- TR9 Ritter, F. E. (ed.) (1993). *Proceedings of the EuroSoar 7 Workshop*, U. of Nottingham, November 1993.
- TR8 Ritter, F. E. (1992). *Unified Theories of Cognition: One and one-quarter years later* (Tech. Rep.) CMU-CS-92-007.2. School of Computer Science, Carnegie-Mellon University.
- TR7 Ritter, F. E. (1992). TBPA: A methodology and software environment for testing process models' sequential predictions with protocols. Doctoral dissertation, Carnegie-Mellon University. Also available as School of Computer Science Tech report CMU-CS-93-101.
- TR5 Ritter, F. E. (1991). How the Soar interface uses Garnet. Video (2 min.) shown at the Garnet user interface development environment special interest subgroup meeting at the 1991 Human Factors in Computing Systems Conference (CHI'91).
- TR4 Ritter, F. E. (April, 1991). The Developmental Soar Interface. Video (27 min.) presented to the CMU Soar Research Group. Available online. Shown partially at BRIMS 2011 as a video response to a talk given as a video.
- TR3 Ritter, F. (1987). OREO: Orienting electrical circuits for qualitative reasoning, (Tech. Rep.) #6560. BBN Laboratories.

Manuals, published software, and online resources (selected)

- M19 Ritter, F. E., & Yeh, K-C. (2010). CaffeineZone, an application for iPhone-like devices, available through the iTunes store.
- M18 Cohen, M. A. & Ritter, F. E. (2004). Herbal Tutorial. (Tech. Report No. 2004-2). Applied Cognitive Science Lab, School of Information Sciences and Technology, Penn State. acs.ist.psu.edu/reports/cohenR04.pdf.
- M17 Councilill, I. G., Morgan, G. P., & Ritter, F. E. (2004). dTank: A competitive environment for distributed agents (Tech. Report No. 2004-1). Applied Cognitive Science Lab, School of Information Sciences and Technology, Penn State. acs.ist.psu.edu/acs-lab/reports/councilillMR04.pdf.
- M16 Ritter, F. E. & Shiskowski, N. (2002). *The ACT-R FAQ*, acs.ist.psu.edu/act-r-faq. Updated since 2006 with Jong Kim.
- M15 Ritter, F. E., Wood, A., et al. (2001). The Dismal Spreadsheet. Part of the GNU Emacs Distribution at www.gnu.org/software/dismal/ Also available from numerous archives.
- M13 Ritter, F. E. & Young, R. M. (1994, last revision March 2003 with Tony Kalus). Psychological Soar Tutorial. Computer programs and overheads. Available at acs.ist.psu.edu/nottingham/pst-ftp.html.
- M12 Baxter, G. D., & Ritter, F. E. (1995). *The Soar FAQ*, acs.ist.psu.edu/soar-faq. Updated semi-annually, from 1999 to 2002 with Alex Wood. Updated currently with Jong Kim. Awarded a "Key Resource Award" viewable at www.links2go.com/award/Soar.
- M10 Ritter, F. E. (1992). Multiple forms-mode. Available from The Ohio State University elisp archives on archive.cis.ohio-state.edu as file pub/gnu/emacs/elisp-archive/modes/multi-forms-mode.1.4.tar.Z (last checked 1998).
- M5 Bates, D., Kademan, E., & Ritter, F. E. (Fall 1990, last revised with my help Fall 1991). S-mode for GNU Emacs. Available from the Statlib software archive (S is a statistics package, Statlib is statlib@lib.stat.cmu.edu). Now part of the ESS (Emacs speaks statistics) package.
- M2 Ritter, F., & Panagos, J. (1987). TRIO User's Handbook (Tech. Rep.) 6206. BBN Laboratories.
- M1 Ritter, F., & Panagos, J. (1986). The Yale Loop package: A clause based loop written in Common Lisp. Available from CL-Utilities-request@cs.cmu.edu, or via anonymous FTP from ftp.cs.cmu.edu as file afs/cs/user/mkant/Public/Lisp/code/iter/loop/yloop/yloop.cl and 12 mirror sites (last checked August 1998).

Service talks (selected)

- Ritter, F. E. (2010). Some ethics of publications. Presentation part of the SARI: Scholarship And Research Integrity training provided to Computer Science and Engineering graduate students, April 2011.
- Ritter, F. E. (2010). Lessons from reading 400 CVs, presentation to IST 590: IST Professional seminar, April 2010.
- Ritter, F. E. (2010). A brief overview of some of the issues when running studies with people. Presentation part of the SARI: Scholarship And Research Integrity training provided to Computer Science and Engineering graduate students, March 2010, October 2010.
- Ritter, F. E. (2007). Academic CVs, research project relationships, and interdisciplinary research. Office of Sponsored Programs Staff development series.
- Ritter, F. E., & Kase, S. (2006). Gaming environments: How they get you to play and keep you playing. Talk presented to the Gaming for girls: Digital storytelling and so much more summer camp for middle school girls in Centre County. Also, in 2007, to Action Potential Science Experience, Create Your Own Virtual Adventure. (a summer camp for middle school students at Penn State)

- Ritter, F. E. (2005). Cognitive models. Talk presented to Chi Psi, psychology honorary society.
- Ritter, F. E. (2005). Human error or system error?, talk presented to students at the Governor's School on Information Technology, July, 2000; July 2001; July 2003; July 2004; July 2005.
- Ritter, F. E. (2003). A new relationship between copyright, trade secrets, and freedom of speech on the Internet: The case of CyberPatrol. Presented to the Huntingdon, PA Rotary Club, 22 April.
- Ritter, F. E. (October 2002). Artificial Intelligence: The wave of the future. Four lectures at the Institute for Learning in Retirement, Bradley University.
- Ritter, F. E., McNeese, M. D., van Rooy, D. (2001). Conducting a usability analysis. <Web2001> a conference for penn state web professionals. [sic]
- What does a scientist do?, talks presented to six classes at Washington Grade School, Peoria, IL, March, 1994.

Published workshop papers and posters (selected)

- W65 Zhao, C., Kaulakis, R. M., Hiam, J. W., Morgan, J. H., Kataria, S., Sanford, J. P., & Ritter, F. E. (2011). Modeling Heterogenous socio-cognitive networks. Poster presented at the 2011 DTRA Annual Program Review.
- W64 Morita, J., Miwa, K., Kojima, K., & Ritter, F. E. (2011). Modeling decision making on the use of automation. In *Proceedings of the 33rd Annual Conference of the Cognitive Science Society*, 1971-1976. Cognitive Science Society: Austin, TX.
- W63 Ritter, F. E., & Yeh, K.-C. M. (2011). Modeling pharmacokinetics and pharmacodynamics on a mobile device to help caffeine users. In *Augmented Cognition International Conference 2011, FAC 2011, HCII 2011, LNAI 6780* (Operational neuroscience session), 528-535. Springer-Verlag: Berlin Heidelberg.
- W62 Park, S-H., Suh, I. H., Chien, J-H., Paik, J-H., Ritter, F. E., Oleynikov, D., Siu, K-C. (2011). Modeling surgical skill learning with cognitive simulation. In J.D. Westwood et al. (Eds.) *Medicine Meets Virtual Reality 18*. IOS Press. 428-432.
- W61 Georgeon, O. L., Morgan, J. H., & Ritter, F. E. (2010). An algorithm for self-motivated hierarchical sequence learning. In D. D. Salvucci & G. Gunzelmann (Eds.), *Proceedings of ICCM - 2010- Tenth International Conference on Cognitive Modeling* (pp. 73-78).
- W60 Paik, J., Kim, J. W., Ritter, F. E., Morgan, J. H., Haynes, S. R., & Cohen, M. A. (2010). Building large learning models with Herbal. In D. D. Salvucci & G. Gunzelmann (Eds.), *Proceedings of ICCM - 2010- Tenth International Conference on Cognitive Modeling* (pp. 187-191).
- W58 Kase, S. E., Ritter, F. E., Schoelles, M. (2009). Caffeine's effect on appraisal and mental arithmetic performance: A cognitive modeling approach tells us more. In *Proceedings of ICCM - 2009- Ninth International Conference on Cognitive Modeling*. 174-179. Manchester, England.
- W57 Paik, J., Kim, J. W., & Ritter, F. E. (2009). A preliminary ACT-R compiler in Herbal. In *Proceedings of ICCM - 2009- Ninth International Conference on Cognitive Modeling*. 466-467. Manchester, England.
- W55 Ritter, F. E. (2009). Tutorial: A summary of Human-System Integration in the System Development Process. In *Proceedings of ICCM - 2009- Ninth International Conference on Cognitive Modeling*. 6-7. Manchester, England.
- W54 Christou, G., Ritter, F. E. & Jacob, R. J. K. (2009). Knowledge-based usability evaluation for reality-based interaction. Georgios Christou, Effie Lai-Chong Law, William Green, & Kasper Hornbaek (eds.) *Challenges in the evaluation of usability and user experience in reality-based interaction* (workshop proceedings). 36-39. IRIT Press, Toulouse, France. At *CHI 2009 Conference on Human Factors in Computing Systems*, Boston, MA, 2009.
- W53 Ritter, F. E. (2008). High-level behavior representation languages and moderators of behavior. *The USMA Network Science Workshop*, 15-17 October, 2008, West Point, NY.

- W49 Kim, J., & Ritter, F. E. (2007). Automatically recording keystrokes in public clusters with RUI: Issues and sample answers. In *Proceedings of the 29th Annual Conference of the Cognitive Science Society*. 1787. Austin, TX: Cognitive Science Society.
- W48 Girouard, A., Smith, N. W., & Ritter, F. E. (2006). Lessons from decompiling an embodied cognitive model. *Cognitio 2006 Workshop*.
<http://cognitio.uqam.ca/2006/index.php?section=posters&lng=en>
- W46 Kim, J., Ritter, F. E., Koubek, R. J. (2006). ESEGMAN: A substrate for ACT-R architecture and an Emacs Lisp application. In *Proceedings of ICCM - 2006- Seventh International Conference on Cognitive Modeling*. 375. Trieste, Italy: Edizioni Goliardiche.
- W44 Reifers, A., Schenck, I., Ritter, F. E., & Inguscio, L. (2005). Using ACT-R to progress theories of pre-attentive visual search. In *Proceedings of the 12th ACT-R Workshop*. Universita degli Studi di Trieste, Italy.
- W43 Ritter, F. E., Reifers, A., Klein, L. C., Whetzel, C., Schoelles, M., Quigley, K. (2005). The effects of pre-task appraisal and caffeine on cognition: Data and models. In *Proceedings of the 12th ACT-R Workshop*. Universita degli Studi di Trieste, Italy.
 ABCS Research Group, Max Planck, Berlin (November, 2005).
- W42 Reifers, A., Ritter, F., Klein, L., Whetzel, C. (2005). Modeling the effects of caffeine on visual signal detection (VSD) in a cognitive architecture. Poster presented at "Attention: From Theory to Practice" (A festschrift for Chris Wickens).
- W38 Inguscio, L., Marucci, F. S., Ritter, F. E. (2004). Il sistema di produzione ACT-R/PM: Un modello simulativo dei processi percettivo-motori. [The ACT-R production system: A model for simulating perceptual-motor processing.] *Congresso Nazionale della Sezione di Psicologia Sperimentale*. www.unipa.it/fracax/documenti/in_o_06_inguscio.pdf [abstract, in Italian]
- W37 Haynes, S. R., Councill, I. G., & Ritter, F. E. (2004). Responsibility-driven explanation engineering for cognitive models. In R. Jones (Ed.), *AAAI Workshop on intelligent agent architectures: Combining the strengths of software engineering and cognitive systems*. 46-52. Menlo Park, CA: AAAI Press.
- W35 Sun, S., Councill, I., Fan, X., Ritter, F. E., & Yen, J. (2004). Comparing teamwork modeling in an empirical approach. In *Proceedings of the Sixth International Conference on Cognitive Modeling*. 388-389. Mahwah, NJ: Erlbaum.
- W32 Ritter, F. E. (2003). Comments on Grant and Roberts & Paschler, social processes in validation, as part of a Symposium on Model fitting and parameter estimation, notes included in the *Proceedings of the ACT-R Workshop*. 129-130.
- W23 Jones, G., & Ritter, F. E. (2000). Over-estimating cognition time: The benefits of using a task simulation. In *Simulating Human Agents, American Association for Artificial Intelligence Fall 2000 Symposium Series*. 67-74. Menlo Park, CA: AAAI Press.
- W21 Ritter, F. E. (2000). A role for cognitive architectures: Guiding user interface design, contribution to the Applications of Cognitive Architectures panel, slides included in the *Proceedings of the Seventh Annual ACT-R Workshop*, p. 85-91. Department of Psychology, Carnegie-Mellon University.
- W16 Ritter, F. E., & Young, R. M. (1999). Moving the Psychological Soar Tutorial to HTML: An example of using the Web to assist learning. In D. Peterson, R. J. Stevenson, & R. M. Young (Eds.), *Proceedings of the AISB '99 Workshop on Issues in Teaching Cognitive Science to Undergraduates*. 23-24. The Society of the study of Artificial Intelligence and Simulation of Behaviour.
- W14 Ritter, F. E., & Wallach, D. P. (1998). Models of two-person games in ACT-R and Soar. In *Proceedings of the Second European Conference on Cognitive Modelling*. 202-203. Thrumpton: Nottingham University Press.

- W8 Ritter, F. E. (1993). Three types of emotional effects that will occur in cognitive architectures. Workshop on architectures underlying motivation and emotion, The University of Birmingham 11-12 August. Also presented as a colloquium at the MRC-APU in Cambridge, October, 1993.
- W7 Ritter, F. E. (May, 1992). Theoretically guided semi-automatic routine protocol analysis. Talk presented at the CHI '92 Doctoral Consortium. Abstract included in the proceedings.
This talk was also presented as colloquium at the U. of York, the U. of Nottingham, and Queen Mary and Westfield College in April 1992.
- W2 Reder, L. M., & Ritter, F. E. (1988). Feeling of Knowing and Strategy Selection for Solving Arithmetic Problems. *Proceedings of the Thirty-First Annual Meeting of the Psychonomics Society*. Psychonomic Society.

Seminars and presentations (selected)

- S96 Ritter, F. E., the ACS Lab, and St. Amant, R. (2011). Architecture as software. Presented at the ACT-R Post-Graduate Summer School July 16-19, 2011
- S95 Ritter, F. E. (2011). Risk-driven design. HCI Consortium Workshop, June 2011, Monterey, CA.
- S94 Ritter, F. E. (2011). A smart tutoring system supporting acquisition and retention of skills: Moving Target Tutor (Investigating how to decrease skill decay). ONR Div. 30 Expertise Development External Review.
- S93 Ritter, F. E., Paik, J., & Kim, J. W. (2011). A learning model of a long, non-iterative spreadsheet task. Seminar. Naval Submarine Medical Research Laboratory, 10 March 2011.
- S92 Ritter, F. E., Paik, J., & Kim, J. W. (2010). A learning model of a long, non-iterative spreadsheet task. Seminar. Center for Advanced Surgical Technique, University of Nebraska Medical Center, 10 December 2010.
- S91 Ritter, F. E. (2010). A smart tutoring system supporting acquisition and retention of skills. Presentation at the ONR Human Performance, Training and Education Program Review Meeting, November 2010.
- S90 Ritter, F. E. (2010). Annual review report on “Pathway-based Integration of Relational Networks and Textual Information for Detecting Motivation and Intent of WMD-related Threats” to the Defense Threat Reduction Agency Network Science Initiative. August 2010.
- S89 Ritter, F. E., Kim, J. W., Paik, J. (2010). A learning model of a long, non-iterative spreadsheet task. Presented at the ACT-R Workshop at the International Conference on Cognitive modeling.
- S88 Weyhrauch, P., Niehaus, J., & Ritter, F. (2010). EasyCog: A high-level cognitive language, compiler, and development environment for affordable, scalable, and robust development and maintenance of cognitive models for multiple cognitive architectures, *SBIR Phase II Kickoff Briefing*, ONR.
- S82 Ritter, F. E. (2009). Modeling strategies and individual differences in learning a diagrammatic reasoning task. Cognitive Science Distinguished Lecture. Carleton University, 5 March 2009.
- S77 Ritter, F. E. (2008). Task analyses, automated user models, and risk-driven design. Guest lecture in PL475 Human-Computer Interaction. USMA, 16 October, 2008, West Point, NY.
- S76 Ritter, F. E., Haynes, S. R., & Cohen, M. A. (2008). Herbal: Improved modeling through using a High-level behavior representation language to support reuse and maintenance. Presented at the AFOSR Joint Cog Sci/Software Engineering Workshop, July 2008.
- S75 Ritter, F. E., Evertsz, R., Busetta, P., Pedrotti, M., Bittner, J. L., & Kase, S. (2008). Agent-based approaches to macrocognition I: Extending a BDI architecture to create a cognitive architecture: Design, creation, validation, and lessons (CoJACK, a less hairy reasoner). Presented at: ARL Workshop on Developing and Understanding Computational Models of Macrocognition.
- S72 Ritter, F. E., Evertsz, R., Busetta, P., Pedrotti, M., & Bittner, J. L. (2008). CoJACK: Achieving Principled Behaviour Variation in a Moderated Cognitive Architecture. Joint Systems and

- Analysis Group, Modeling and Simulation Technical Panel, Computer Generated Forces Workshop. The Technical Cooperation Program (TTCP).
- S71 Ritter, F. E. (2008). *Human-System Integration in the System Development Process*, presented at QinetiQ Malvern. March 19, 2008.
- S70 Ritter, F. E., & Bittner, J. (2008). *IHBR Science Demo: Tests of Moderators in CoJACK*, presented at IHBR review at Warminster, UK.
- S64 Cohen, M. A., Ritter F. E., Haynes, S. R. (2007). Using a high-level behavior representation language and graphical development environment to teach cognitive modeling and agent programming. Presented at the 2007 Annual Meeting of the Pennsylvania Association of Computer Information Science Educators, Lock Haven University.
- S59 Ritter, F. E. (2006). Some stress theories: Terms, tasks, models, theories, and overlays. ACT-R DARPA BICA 2006 Workshop, 10-11 Feb 2006. Charles River Analytics, March 2006. Bolt Beranek and Newman, March 2006.
- S58 Ritter, F. E. (2006). Some new components for an automatic user for testing human-computer interfaces. Computer Science Department Colloquium Series, Tufts University. Middlesex University, November 2006.
- S53 Ritter, F. E., Haynes, S. R., Cohen, M. A. (2005). Making Soar More Articulate and Modeling More Affordable through Explanation, Interaction, & Environment. ONR Affordable Human Behavior Modeling Workshop, 2 June 2005.
- S46 Ritter, F. E. (August, 2004). Projects modeling architectural changes. Human Research and Engineering Directorate, Army Research Lab, Aberdeen Proving Ground.
- S45 Ritter, F. E., Klein, L. C., Reifers, A., & Ceballos, R. (2004). The effects of pre-task appraisals and caffeine on cognition: Data and models. Presentation and abstract at ONR Neural Computation 2004 Annual Investigator Conference, U. of Nevada at Reno, August 20 to August 22. (invited from another program.)
- S43 Ritter, F. E., Freed, A., & Haskett, O. (2004). User information needs: The case of university department web sites. Seminar presented to the Department of Information Science, U. of Melbourne. Also to Allgemeine Psychologie und Arbeitspsychologie [General and Industrial Psychology group], TU-Chemnitz, 8 November 2005.
- S40 Ritter, F. E., Klein, L. C., Quigley, K. S., Councill, I. G., Avraamides, M. N., Reifers, A. L., Whetzel, C. A., Simpson, K., Stine, M. M., Ceballos, R. M., Morgan, G. P., & Ghandi, M. (2003). Using cognitive modeling to study behavior moderators: Pre-task appraisal, anxiety, and caffeine. ONR Cognitive and Computational Models of Cortex Workshop, November, 2003. (invited) also presented at RPI's series on "Issues in Cognitive Science", January 2004.
- S39 Ritter, F. E. (2003). Embodied models as simulated users, eyes, hands, and hearts. Computer Science Colloquium, North Carolina State University. May 27, 2003
- S36 Ritter, F. E. (2002). A simple, reusable, validated model of pre-task appraisal and anxiety. ONR Cognitive and Computational Models of Cortex Workshop, September, 2002. (invited)
- S34 Ritter, F. E. (2002). Capabilities in Applied Cognitive Science at Penn State. Talk presented at the Institute for Defense Analysis, Alexandria, VA.
- S33 Ritter, F. E., Mudgett, D. R., & Freed, A. R. (May 2002). Developing and finding Java and HTML resources for teaching discrete math. Penn State Teaching and Learning Colloquy 2002.
- S29 Ritter, F. E. (2001). Preliminary example applications of cognitive models to telephone design. Talk presented at the Naval Research Lab.

- S23 Ritter, F. E. (1998). Extending user interface management systems to support cognitive models as users. Colloquia presented at Department of Informatik [Computer Science], Technische Universität Chemnitz. (February 1999). Department of Computer and Information Science, The Ohio State University. School of Information Sciences and Technology, Pennsylvania State University. Department of EECS, U. of Illinois at Chicago. ESRC Centre for Research in Development, Instruction, and Training, U. of Nottingham. Applied Psychology Program, George Mason University. DSTO. (Australia), HCI Institute, Swinburne Inst. of Technology. IPO, Technical University of Eindhoven. Department of Computer Science and Engineering, Penn State.
- S22 Ritter, F. E. (1998). Discussant, Panel on procedural vs. declarative memory, *Fifth Annual ACT-R Workshop*, Carnegie-Mellon University.
- S20 Ritter, F. E. (October, 1997). Overview of methodologies for studying order effects. Plenary meeting, European Science Foundation's Programme on Learning in Humans and Machines. Mannheim, Germany.
- S16 Ritter, F. E. (1995). What cognitive architectures can provide HCI. Colloquium presented at Ergonomics Unit, University College/London.
- S15 Ritter, F. E. (1994). Using process models as summaries of HCI data, colloquium presented at the Department of Psychology, U. of York, LRDC (U. of Pittsburgh), and Armstrong Lab, Brooks AFB.
- S5 Ritter, F. E. (September, 1988). "ITS and Modeling the Seibel Task in Soar". Invited presentation at the Air Force Human Resources Lab, Cognitive Skills Assessment Branch, Brooks AFB.
- S3 Ritter, F. E. (1985). "Simulated Annealing as a Function Minimization Technique" and "Simulated Annealing as a Planning Technique". Presented as seminars in a series on "Genetic and Other Probabilistic Algorithms" at BBN, and as a guest lectures to CS 113: Artificial Intelligence (graduate level course) at Brandeis University, October-November 1985.

Interesting documents and unpublished papers

- Schoelles, M., & Ritter, F. E. (2003). Hands on tutorial for ACT-R (HOT4 ACT-R). Applied Cognitive Science Lab, Summer, 2003.
- Ritter, F. E. (2001). Guide to living in State College. Unpublished 18 p. document. Updated yearly www.frankritter.com/guide/guide2SC.1.html
- Ritter, F. E., Reber, R., Ritter, S., Reber, P., Ritter, C., Reder, L. M., Ritter, J. M., Bodenhausen, U., & Etal, E. (1996). The effect of price on gustatory perception of fermented malt beverages. *J. of Irreproducible Results*, 41(3), 18-20.
- Ritter, F. E. (1992). How to attend a conference. Presented as colloquia at CMU Psychology "The science meets the profession" colloquium series, and at the Postgraduate workshop at the AISB 1994, 1995, 1996 Spring meetings. Unpublished 4 p. document.

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