

Alok Baikadi, Ph.D

Research Interests

Educational Technologies, including Student Modeling, Serious Games, and Intelligent Tutoring Systems

Artificial Intelligence, including Probabilistic Graphical Models, Natural Language, and Machine Learning.

Computational Models of Narrative, Narrative Visualization and Interactive Narrative Experiences.

Theses

2013 **Ph.D Dissertation**, *Discovery-Based Goal Recognition in Interactive Narrative Environments*, Department of Computer Science, NC State University.

Advisor: Dr. James Lester

2007 **Senior Thesis**, *Partial Recognition and Reasoning about Actions*, Department of Computer Science, University of Illinois.

Advisor: Dr. Eyal Amir

Research Projects

Spring 2014 – **Revision Planning in SWORD.**

Fall 2015 A revision planning intervention that allows students to consider how to respond to the feedback received and lessons learned from their reviewing tasks.

Spring 2012 – **Java Tutor.**

Fall 2013 A system for selecting dialogue utterances based on features of the problem progress and task for an intelligent tutorial dialogue system for introductory Java concepts.

Fall 2009 - **Goal Recognition in Crystal Island.**

Fall 2013 Modeling student problem solving processes within an intelligent game-based learning environment for middle-grade science education

Fall 2009 - **Narrative Theatre.**

Fall 2011 An intelligent creativity-enhancement environment for 6th grade writing education. Students are guided through the process of planning and writing a fable, which is then visualized in a storyboard to aid in the creative revision process

Fall 2006 – **Action Representation.**

Summer 2007 An executable, hierarchical representation of actions, which are completely represented within Description Logic

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Education

- 2007–2014 **Ph.D Computer Science**, *North Carolina State University*, Raleigh, NC, 4.0/4.0.
- 2003–2007 **B.S. Computer Science**, *University of Illinois at Urbana-Champaign*, Urbana, IL, 3.83/4.0.

Refereed Journal Papers

- Alok Baikadi**, Carrie Demmans Epp, and Christian D. Schunn. Participating by activity or by week in MOOCs. *Information and Learning Science*. 119 (9/10), 572 – 585.
- Fuhui Zhang, Christian D. Schunn, and **Alok Baikadi**. (2017). Charting the routes to revision: An interplay of writing goals, peer comments, and self-reflections from peer reviews. *Instructional Science*, 45(5), 679–707.

Refereed Conference Papers

- Scott Hellman, Mark Rosenstein, Andrew Gorman, Lee Becker, **Alok Baikadi**, Jill Budden, and Peter W. Foltz. Scaling Up Writing in the Curriculum: Batch Mode Active Learning for Automated Essay Scoring. In *Proceedings of the Sixth ACM Conference on Learning @ Scale*, Chicago, IL, USA. 2019
- Wookhee Min, **Alok Baikadi**, Bradford Mott, Jonathan Rowe, Barry Liu, Eun Young Ha, and James Lester. A generalized multidimensional evaluation framework for player goal recognition. In *Proceedings of the Twelfth Artificial Intelligence and Interactive Digital Entertainment Conference*. Burlingame, CA, USA. pp. 197–203. 2016
- Alok Baikadi**, Christian Schunn, Carrie Demmans-Epp and Yanjin Long. Redefining “What” In Analyses of Who Does What in MOOCs. In *Proceedings of the Ninth International Conference on Educational Data Mining*, Raleigh, NC, USA. 2016
- Alok Baikadi**, Christian Schunn and Kevin Ashley. Understanding Revision Planning in Peer-Reviewed Writing. In *Proceedings of the Eight International Conference on Educational Data Mining*, Madrid, Spain. pp. 544 – 548. 2015

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Alok Baikadi, Jonathan Rowe, Bradford Mott and James Lester. Generalizability of Goal Recognition Models in Narrative-Centered Learning Environments. In *Proceedings of the Twenty First International Conference on User Modeling, Adaptation and Personalization*, Aalborg, Denmark. pp. 278 – 289. 2014

Eun Young Ha, **Alok Baikadi**, Carlyle J. Licata, Bradford W. Mott and James C. Lester. Exploring the Effectiveness of Lexical Ontologies for Modeling Temporal Relations with Markov Logic. In *Proceedings of the Eleventh Annual SIG-DIAL Meeting on Discourse and Dialogue*, Tokyo, Japan. pp. 75–79. 2010

Conference Presentations

Loretto, A., Godley, A. & **Baikadi, A.** (2015, December). A think-aloud study of adolescent writers' peer review and revision strategies. Paper presented at the 2015 Literacy Research Association Annual Conference, Carlsbad, CA.

Refereed Symposium and Workshop Papers

Alok Baikadi, Lee Becker, Jill Budden, Peter W. Foltz, Andrew Gorman, Scott Hellman, William Murray, and Mark Rosenstein. An apprenticeship model for human and AI collaborative essay grading. In *Joint Proceedings of the ACM IUI 2019 Workshops co-located with the 24th ACM Conference on Intelligent User Interfaces*, Los Angeles, CA, USA, 2019

Alok Baikadi, Christian D. Schunn, Kevin D. Ashley. Impact of Revision Planning on Peer-Reviewed Writing. In *Proceedings of the EDM 2016 Workshops and Tutorials co-located with the 9th International Conference on Educational Data Mining*, Raleigh, NC, USA. 2016

Alok Baikadi, Jonathan P. Rowe, Bradford W. Mott, and James C. Lester. Improving Goal Recognition in Interactive Narratives with Models of Narrative Discovery Events. In *Proceedings of the Sixth Workshop on Intelligent Narrative Technologies*, Boston, MA, pp. 2-8, 2013

Alok Baikadi, Jonathan P. Rowe, Bradford W. Mott, and James C. Lester. Toward Narrative Schema-Based Goal Recognition Models for Interactive Narrative Environments. In *Proceedings of the Fifth Workshop on Intelligent Narrative Technologies*, Stanford, CA, pp. 2-7, 2012.

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Alok Baikadi and Rogelio E. Cardona-Rivera. Towards finding the fundamental unit of narrative: A Proposal for the Narreme. In *Proceedings of the 2012 Workshop on Computational Models of Narrative*, Istanbul, Turkey, pp. 44-46, 2012.

Alok Baikadi, Julius Goth, Christopher M. Mitchel, Eun Young Ha, Bradford W. Mott, and James C. Lester. Towards a Computational Model of Narrative Visualization. In *Proceedings of the Fourth Workshop on Intelligent Narrative Technologies*, Stanford, California, pp. 2-9, 2011.

Eun Young Ha, **Alok Baikadi**, Carlyle Licata, and James C. Lester. NCSU: Modeling Temporal Relations with Markov Logic and Lexical Ontology. In *Proceedings of the Fifth International Workshop on Semantic Evaluation*, Uppsala, Sweden, pp. 341-344. 2010.

Julius Goth, **Alok Baikadi**, Eun Young Ha, Jonathan Rowe, Bradford Mott, and James Lester. Exploring Individual Differences in Student Writing with a Narrative Composition Support Environment. In *Proceedings of the First NAACL HLT Workshop on Computational Linguistics & Writing (CL&W)*, Los Angeles, California, pp. 56-64, 2010.

Issued Patents

US Patent 10860940, "System and method for automated sequencing database generation," December 8, 2020

Inventors: Murray; William (Lone Tree, CO), Baikadi; Alok (Boulder, CO)

US Patent 10783185, "System and method for automated hybrid sequencing database generation," September 22, 2020

Inventors: Murray; William (Lone Tree, CO), Baikadi; Alok (Boulder, CO)

US Patent 10754899, "System and method for sequencing database-based content recommendation," August 25, 2020

Inventors: Murray; William (Lone Tree, CO), Baikadi; Alok (Boulder, CO)

Teaching Experience

Summer **Summer Camp Teaching Assistant**, *Engineering Summer Programs*, Raleigh, NC.

Taught Android programming to High School Students.

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- Summer 2010 **Summer Camp Instructor**, *Engineering Summer Programs*, Raleigh, NC.
 Taught basic computer programming concepts using Alice and Python.
- Spring 2009, Summer 2009 **Instructor**, *CSC 411: Artificial Intelligence*, Department of Computer Science, NC State University.
- Fall 2008 **Teaching Assistant**, *CSC 505: Algorithms*, Department of Computer Science, NC State University.
- Summer 2008 **Teaching Assistant**, *CSC 411: Artificial Intelligence*, Department of Computer Science, NC State University.
- Spring 2008 **Teaching Assistant**, *CSC 791: Introduction to Machine Learning*, Department of Computer Science, NC State University.
- Fall 2007 **Teaching Assistant**, *CSC 520: Introduction to Artificial Intelligence*, Department of Computer Science, NC State University.

Work Experience

- 2017-present **Pearson**, *AI Products and Solutions*, Boulder, CO.
Principle Data Scientist | 2019 - Present
 Lead a team of researchers and developers in developing multi-disciplinary approaches to novel AI-enhanced educational experiences. Worked with internal and external stakeholders to develop requirements and communicate results. Designed a research agenda to evaluate the efficacy of the techniques. Developed technology that resulted in products, patents, and peer-reviewed publications.
- Senior Data Scientist* | 2017 - 2019
 Applied machine learning and natural language techniques to designing, developing and deploying novel educational experiences. Evaluated the efficacy of novel AI techniques in product experiences. Developed technology that resulted in products, patents, and peer-reviewed publications.
- Tools:** git,sklearn,nltk, python, flask, text & data analytics

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- 2014-2017 **University of Pittsburgh**, *Learning Research and Development Center*, Pittsburgh, PA.
Post-doctoral Research Associate | 2016 - 2017
 Analyzed student and discussion forum data from PITT Online courses and Coursera courses. Joint appointment with Center for Instructional Development and Distance Education
Post-doctoral Research Assistant | 2014 - 2016
 Designed peer-reviewed writing instruction and support experiences. Designed a research agenda to evaluate the effectiveness of the writing support experience in the classroom. Developed software to enable execution and monitoring of the experience. Research and development performed in collaboration with Dr. Christian Schunn and Dr. Kevin Ashley.
Tools: R/RStudio, SPSS, Java, Swing, Git
- 2007-2013 **NC State University**, *Department of Computer Science*, Raleigh, NC.
Research Assistant | 2009-2013
 Applied Machine Learning techniques to design novel classroom experiences. Designed research studies evaluate the effectiveness of AI in enabling classroom experiences. Developed software to enable execution and monitoring of AI-enabled experiences. Research performed under the direction of Dr. James Lester.
Teaching Assistant | 2007-2009
 Graded assignments and held office hours for graduate level Artificial Intelligence, Machine Learning, and Algorithms courses. Instructor of Record for undergraduate Artificial Intelligence course.
Tools: C#, Java, Lisp, WordNet, VerbNet, MLN, DBN, SVM, Unity Game Engine, Git, R,
- Summer 2007 **Summer Intern**, *Grammatech Corp.*, Ithaca, NY.
 Developed software for the Codesurfer/Codesonar product.
Tools: C/C++, Lisp, GDB, SVN
- Fall 2006 **Grader**, *Department of Computer Science, University of Illinois*, Urbana, IL.
 Grader for CS 440 - Introduction to Artificial Intelligence.
- Summer 2005 **Automation Intern**, *Intel Corp.*, Hillsboro, OR.
 Developed software for the Automation group.
Tools: Visual Studio, SQL, SVN

Select Professional Service

Journal Reviewing

ACM Transactions on Interactive Intelligent Systems

IEEE Transactions on Computational Intelligence and AI in Games

Workshop Reviewing

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Intelligent Tutoring Systems
International Joint Conference on Artificial Intelligence
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