

# Dr. Tamara Babaian

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Professor

Department of Computer Information Systems  
404 Smith Technology Center  
Bentley University  
175 Forest Street  
Waltham, MA 02452

Phone: (781) 891-3161

E-mail: [tbabaian@bentley.edu](mailto:tbabaian@bentley.edu)

WWW: [cis.bentley.edu/tbabaian](http://cis.bentley.edu/tbabaian)

[cis.bentley.edu/RealViz](http://cis.bentley.edu/RealViz)

[cis.bentley.edu/ERP](http://cis.bentley.edu/ERP)

## EDUCATION

**Ph.D. in Computer Science, Tufts University, 2000**

**M.S. in Computer Science, Tufts University, 1996**

**Honors Diploma of Higher Education (M.S. + B.S. equivalent) in Applied Mathematics, Yerevan State University of Armenia, 1994**

## ACADEMIC EXPERIENCE

**Bentley University**, Computer Information Systems Department

*Professor*

**July, 2019 - present**

*Associate Professor*

**July, 2008 - July, 2019**

*Assistant Professor*

**September, 2001 - July 2008**

**Harvard University**, Division of Engineering and Applied Sciences

*Postdoctoral Research Fellow*

**August, 2000 - August, 2001**

**Tufts University**, EECS Department

*Lecturer*

**January, 2000 - May, 2000**

## GRANTS

Faculty Affairs Committee Grant, Bentley University, *Data collection and labeling for automated symptom recognition from text*

PI, (Xu, J., Co-PI), \$2,400

(Sep 2022 - Jul 2023)

Health TLN, Bentley University, *Symptom Recognition from Colloquial Text: A Neural Network Approach*

Co-PI, (Xu, J., PI), \$2,500

(Nov 2022 - July 2023)

Bentley University Research Council Grant, *Developing Models and Mechanisms For Collecting Histories On a Timeline*

PI, \$6,432

(Nov 2019 - Nov 2020)

Bentley University Data Innovation Network Grant, *RealViz - Visual Methods for Real-life Systems*,

PI, \$13,500

(Aug 2016-June 2017)

PI, \$9,500

(Aug 2017-June 2018)

Bentley University Task Leadership Network Grant, *Visual Methods for Real-life Systems*,

PI, \$12,500

(Dec 2015-July2016)

NSF grant #0819333, *Design and Evaluation Methodologies for Enhancing ERP System Usability* (with W. Lucas, H. Topi, J. Xu) \$400,000. (2008-2012)

Bentley College Research Grant, *Enterprise Systems Usability* (with W. Lucas, H. Topi) \$20,000. (2003-2006)

## PUBLICATIONS

### Refereed Journal Articles

- [1] Babaian, T. and Xu, J. Entity recognition from colloquial text. *Decision Support Systems*, vol. 179, 114172, 2024.
- [2] Xu, J. and Babaian, T. Artificial intelligence in business curriculum: The pedagogy and learning outcomes. *The International Journal of Management Education*, vol. 19(3), 2021.
- [3] Babaian, T., Xu, J., Lucas, W. ERP Prototype with built-in task and process support. *European Journal of Information Systems (EJIS), Special Issue on Exemplars and criteria for applicable design science research*, 27(2):189–206, 2018.
- [4] Lucas, W. and Babaian, T., Collaborative Critique: An Inspection Method for Expert Evaluation of User Interfaces. *International Journal of Human-Computer Interaction*, vol. 31(11):843–859, 2015.
- [5] Babaian, T., and Lucas, W. Modeling Data for Enterprise Systems with Memories. *Journal of Database Management*, 24(2):1–12, 2013.
- [6] Babaian, T., and Schmolze, J. Practical reasoning about knowledge states for open world planning with sensing. *Journal of Applied and Non-Classical Logics*, 19(1):7–41, 2009.
- [7] Topi, H., Lucas, W., and Babaian, T. Using informal notes for sharing corporate technology know-how. *European Journal of Information Systems (EJIS)*, 15(5):486–499, 2006.
- [8] Babaian, T., Lucas, W., and Topi, H. Improving ERP usability through user-system collaboration. *International Journal of Enterprise Information Systems*, 2(3):10–23, 2006.
- [9] Babaian, T., and Schmolze, J. G. Efficient open world reasoning for planning. *Logical Methods in Computer Science*, 2(3):1–39, 2006.
- [10] Babaian, T., and Lucas, W. Black-box testing in the introductory programming course. *Journal of Informatics Education Research*, 8(3):107–128, 2006.

### Refereed Proceedings Papers

- [1] Babaian, T., Xu, J. NLP in Healthcare: Developing Interactive Integrated Collaborative Assistants. In *HCI International 2023, Proceedings, Part II, Late Breaking Posters. HCII 2023*. Communications in Computer and Information Science, vol. 1958, pp 11–16. Springer, Cham, 2023
- [2] Babaian, T. Exploring Design Principles for Speech-to-Visualization Data Entry Interfaces. In: Stephanidis, C., Antona, M., Ntoa, S., Salvendy, G. (eds) *HCI International*

- 2023 Proceedings Part III*. Communications in Computer and Information Science, vol 1834, pp 18–23. Springer, Cham, 2023
- [3] Babaian T. A Speech-Based Data Collection Interface for Contact Tracing. *HCI International 2021 - Late Breaking Posters. HCII 2021*. Communications in Computer and Information Science, vol 1499. Springer, Cham, 2021
  - [4] R. Wang, T. Babaian A Detailed Examination of User Interactions with Two Different Data Interfaces, *International Conference on Human-Computer Interaction: Human Interface and the Management of Information. Designing Information*, LNCS vol. 12184, pp. 183-197, Springer, 2020.
  - [5] T. Babaian, M. Boeri, and G. Ligure Supporting Life History Research with Interactive Visualizations, *Human-Computer Interaction: Perspectives on Design (Part I)*, LNCS vol. 11566, Springer, 2019.
  - [6] Babaian, T., Lucas, W., Chircu A., Mapping Data Associations in Enterprise Systems, *Extending the Boundaries of Design Science Theory and Practice*, LNCS vol. 11491, pp. 254-268, Springer International Publishing, 2019. **Nominated for Herbert Simon Best Paper Award at DESRIST 2019**
  - [7] Babaian, T., Lucas, W., Chircu A., and Power, N. Interactive Visualizations for Workplace Tasks, *Enterprise Information Systems 18th International Conference, Rome, Italy, Revised Selected Papers*, LNBIP, vol. 291, pp. 389–413, Springer, 2017.
  - [8] Babaian, T., Zhang, R., Lucas, W. DTMi — A New Interface for Informed Navigation, *In Human-Computer Interaction. Interaction Contexts. HCI International 2017, Vancouver, BC, Canada, July 9-14, 2017, Proceedings, Part II.*, pp. 413–423, LNCS. Springer, 2017.
  - [9] Babaian, T., Lucas, W., Chircu A. and Power N. Extending an Association Map to Handle Large Data Sets, *Human Interface and the Management of Information: Information, Knowledge and Interaction Design. HCI International 2017, Vancouver, BC, Canada, July 9-14, 2017, Proceedings, Part I.*, pp. 3—21, LNCS, Springer, 2017.
  - [10] Babaian, T., Lucas, W., Chircu, A., and Power N. Evaluating Interactive Visualizations for Supporting Navigation and Exploration in Enterprise Systems. **Best paper award nomination**, In *ICEIS 2016 - Proceedings of the 18th International Conference on Enterprise Information Systems, Volume 2, Rome, Italy, April 25-28, 2016*, pp. 368–377, SciTePress, April 2016.
  - [11] Babaian, T., Lucas, W., and Li, M. Modernizing Exploration and Navigation in Enterprise Systems with Interactive Visualizations. *Human Interface and the Management of Information. Information and Knowledge Design, HCI International 2015*, LNCS vol. 9172 , pp. 23-33, Springer, 2015
  - [12] Babaian, T., Xu, J. and Lucas, W. Applying Design Principles for Enhancing Enterprise System Usability In *Proceedings of the 9th International Joint Conference on Software Technologies (ICSOFT'14)*, pp. 162-169, August, 2014.
  - [13] Babaian, T. and Lucas, W. Composing interface demonstrations automatically from usage logs. In *Enterprise Information Systems - 14th International Conference, ICEIS 2012, Revised Selected Papers*, LNBIP. Springer-Verlag, 2013.

- [14] Lucas, W., Xu, J., and Babaian, T. Visualizing ERP Usage Logs in Real Time. In *Proceedings of the 14th International Conference on Enterprise Information Systems (ICEIS'13)*, pp. 83-90, July 2013.
- [15] Babaian, T. and Lucas, W., and Oja, M.-K. Evaluating the Collaborative Critique method. In *Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems, CHI '12*, pp. 2137–2146, ACM, NY, USA, 2012.
- [16] Babaian, T. and Lucas, W. Leveraging usage history to support enterprise system users. In *Proceedings of the 14th International Conference on Enterprise Information Systems (ICEIS'12)*, **Best paper award nomination**, vol. 3, pp. 35–44. SciTePress, 2012.
- [17] Lucas, W. and Babaian, T. Implementing design principles for collaborative ERP systems. In *Proceedings of the 7th international conference on Design Science Research in Information Systems: Advances in Theory and Practice (DESRIST'12)*, LNCS, pp. 88–107. Springer-Verlag, 2012.
- [18] Babaian, T., Lucas, W., Xu, J., and Topi, H. Usability through system-user collaboration. In *Global Perspectives on Design Science Research, 5th International Conference, DESRIST 2010 St. Gallen, Switzerland, June 2010. Proceedings*, LNCS, pp. 394–409. Springer, 2010.
- [19] J. Coopriider, H. Topi, J. Xu, M. Dias, T. Babaian, and W. Lucas. A collaboration model for erp user-system interaction. In *Proceedings of HICCS'2010*, pp. 1–9, Los Alamitos, CA, USA, 2010. IEEE Computer Society.
- [20] Lucas, W.; Babaian, T.; and Topi, H. Applying collaboration theory for improving ERP system-user interaction. *Advanced Topics in Enterprise Information Systems, edited collection*, (Vol. 2) pp.1–21, Idea Group Inc, Hershey, PA, 2008
- [21] Babaian, T. and Lucas, W. A Reasoned Approach to Error Handling In *Proceedings of the International Conference on Enterprise Information Systems (ICEIS-2008)*, pp. 420-423, 2008.
- [22] Babaian, T.; Lucas, W.; and Topi, H. A data-driven design for deriving usability metrics. In *Proceedings of the International Conference on Software and Data Technologies (ICSOFT-2007)*, pp. 154–159, 2007.
- [23] Babaian, T.; Lucas, W.; and Topi, H. Visualizing the process: A graph-based approach to enhancing system-user knowledge sharing. In *Proceedings of the International Conference on Enterprise Information Systems (ICEIS-2007)*, pp. 123–128, 2007.
- [24] Carlin, A., Schmolze, J. G., and Babaian, T. Graphplan based conformant planning with limited quantification. *Research on Computing Science*, 16, Advances in Artificial Intelligence Theory: 65–75, 2005.
- [25] Babaian, T. Reasoning about user preferences. In Khosrow-Pour, M., editor, *Encyclopedia of Information Science and Technology*, pp.2403–2408. Information Science Reference, 2005.
- [26] Babaian, T. Knowledge-based personalization. In Ditsa, G., editor, *Information Management: Support Systems and Multimedia Technology*, pp.26–34. Idea Group Inc., 2003.

- [27] Topi, H., Lucas, W., and Babaian, T. Identifying usability issues with an ERP implementation. In *Proceedings of the International Conference on Enterprise Information Systems (ICEIS-2005)*, pp. 128–133, 2005.
- [28] Topi, H., Babaian, T., and Lucas, W. Informal notes on technology use as a mechanism for knowledge representation and transfer. In *Proceedings of The Sixth European Conference on Organizational Knowledge, Learning, and Capabilities (OKLC-2005)*, 2005.
- [29] Babaian, T., and Lucas, W. Developing testing skills in an introductory programming class. In *Proceedings of the International Conference on Informatics Education Research*, pp. 90–96, 2005.
- [30] Babaian, T., Lucas, W., and Topi, H. Collaborating to improve ERP usability. In *Proceedings of the International Conference on Enterprise Information Systems (ICEIS-2004)*, pp. 164–168, 2004.
- [31] Babaian, T. Knowledge-based personalization. In Ditsa, G., editor, *Information Management: Support Systems and Multimedia Technology*, pp.26–34. Idea Group Inc., 2003.
- [32] Babaian, T., Grosz, B. J., and Shieber, S. M. A Writer’s Collaborative Assistant. In *Proceedings of Intelligent User Interfaces Conference (IUI-02)*, pp. 7–14. ACM Press, January 2002.
- [33] Babaian, T., and Schmolze, J. PSIPLAN: open world planning with psi-forms. In *International Conference on Artificial Intelligence Planning and Scheduling (AIPS’2000)*, pp. 292–300. AAAI Press, April 2000.

#### Refereed Workshop Papers and Conference Presentations

- [34] Babaian T., Xu, J. NLP in Healthcare: Developing Interactive Integrated Collaborative Assistants *HCI-2023 Workshop on Design, Applications, and User Experience of Intelligent Systems in the Workplace*, 2023
- [35] Xu, J. and Babaian T. Investigating Generalizability of BERT Models for Symptom Recognition. *32nd Workshop on Information Technologies and Systems (WITS), Copenhagen, Denmark, December 2022*
- [36] Xu, J. and Babaian T. Investigating Symptom Recognition in Colloquial Patient Narratives. *DESRIST 2022, St Petersburg, Florida, USA, June 2022*
- [37] W. Lucas and T. Babaian. Reasoning for intelligent system-user interactions with Enterprise Resource Planning systems. In *Proceedings of IJCAI 2009 Workshop on Intelligence and Interaction*, pp. 30–36, July 2009.
- [38] Babaian, T. Hypothetical planning. In *Proceedings of IJCAI 2005 Workshop on Planning and Learning in A Priori Unknown or Dynamic Domains*, pp. 90–96, August 2005.
- [39] Babaian, T. Learning user preferences by satisfying knowledge goals. In *Personalized Agents. Papers from 2002 AAAI Fall Symposium*, pp. 1–5, North Falmouth MA, November 2002. AAAI Press.
- [40] Babaian, T. Learning user preferences by satisfying knowledge goals. In *Personalized Agents. Papers from 2002 AAAI Fall Symposium*, pp. 1–5, North Falmouth MA, November 2002. AAAI Press.

- [41] Babaian, T., and Schmolze, J. G. PSIPOP: Planning with sensing over partially closed worlds. In *Search Techniques for Problem Solving under Uncertainty and Incomplete Information. Papers from 1999 AAAI Spring Symposium.*, pp. 1–7, Stanford, CA, March 1999. AAAI Press.
- [42] Babaian, T., and Schmolze, J. G. Planning with incomplete knowledge and with quantified information. In *Proceeding of the Workshop on Integrating Planning, Scheduling and Execution in Dynamic and Uncertain Environments, held in conjunction with Fourth International Conference on Artificial Intelligence Planning Systems (AIPS-98)*, Pittsburgh, PA, July 1998.

### Refereed Extended Abstracts

- [43] Babaian, T. A Call for Collaborative CS+ IS HCI Studies. In *CHI 2018 Workshop on Bridging HCI Position Papers*, <http://www.bridginghci.org/papers/>
- [44] Babaian, T., Lucas, W. and Xu, J. Task and Process Support in ERP Systems. *Advancing the Impact of Design Science: Moving from Theory to Practice DESRIST 2014*, LNCS vol. 8463, pp. 443-448, Springer-Verlag, 2014.
- [45] Babaian, T., Lucas, W., and Topi, H. Using a process graph to improve system-user knowledge sharing. In *CHIMIT '07: Proceedings of the 2007 symposium on Computer human interaction for the management of information technology*, article No. 9. ACM Press, 2007.
- [46] Babaian, T., Lucas, W., and Topi, H. Making memories: applying user input logs to interface design and evaluation. In *CHI '06 extended abstracts on Human factors in computing systems*, pp.496–501. ACM Press, 2006.
- [47] Babaian, T., Grosz, B. J., and Shieber, S. M. Writer's Aid: using a planner in a collaborative interface. In *Proceedings of International Joint Conference on Artificial Intelligence (IJCAI'2003), Intelligent Systems Demonstrations*, pages 1629–1630. Morgan Kaufmann Publishers, August 2003.

### Invited Talks, Panels and Tutorials

Advancing the State of Workplace Software. 2017 Bentley Research Colloquium, November 2017.

Privacy and Digital Identity Management in Ubiquitous Computing. 2013 Bentley Research Colloquium, November 2013.

Tutorial: Collaborative Critique usability evaluation method. UXPA'13, Summer 2013

Collaborative Critique usability evaluation method. AutoDesk Seminar, Summer 2012.

Building Collaborative Systems. IPM/CIS Seminar, Bentley College, January, 2007.

Putting Automated Reasoning to Work in a Collaborative System. Math Department Seminar, Bentley College, November, 2006.

Enterprise Systems Usability. Panel discussion at the 35th Annual Meeting of the Decision Sciences Institute, Boston, MA, November, 2004.

Identifying ERP Usability Issues. Enterprise Resource Planning Workshop, Bentley College, October, 2004.

Writer's Aid: Planning in a Collaborative Interface. Mitsubishi Electric Research Lab, Cambridge, MA, February, 2002.

Planning in Open Worlds with Psi-forms. Computer Science Department Colloquium, University of New Hampshire, November, 1999.

Poster presentation: PSIPLAN: Planning with psi-forms over partially closed worlds. European Conference on Planning, Durham, Great Britain, September 1999.

## COURSES

### Taught

CS370/CS399 *Introduction to Machine Learning*

CS795 *Independent study: Improving Data Service Provision Using Web Service Catalog*

CS602/CS799 *Data-Driven Development with Python*

CS603 *Object-Oriented Application Development*

CS605 *Data Management and Systems Modeling*

ID401 *Valente Seminar: Music and Culture*

CS795 *Independent study: Interactive Visualization Design and Implementation Methods*

CS795 *Independent study: Designing Collaborative Systems*

CS280 *Object-Oriented Application Development*

CS350 *Database Management*

CS652 *Database Management*

CS180 *Programming Fundamentals*

CS361 *Data Management with SQL (half-semester course)*

CS362 *Computer Aided Systems Engineering (half-semester course)*

CS450 *Object-Oriented Technology*

CS230 *Algorithm and Data Abstractions (with Java)*

CS230 *Algorithm and Data Abstractions (with pseudocode)*

### Developed

FT370 *Natural Language Processing for Investment Applications* - forthcoming in Fall 2023, co-taught

CS370/CS399 *Introduction to Machine Learning* - 2022

CS602/CS799 *Data-Driven Development with Python* - 2018

CS180 *Programming Fundamentals*

CS230 *Algorithm and Data Abstractions (with Java)*

INT402 *Armenia and an Introduction to the Southern Caucasus*  
(in collaboration with Philip Uhlmann)

EXTERNAL  
SERVICE

Associate Editor, 14th International Conference on Design Science Research in Information Systems and Technology, 2019.

PC Member for International Conference on Enterprise Information Systems (ICEIS) 2014–present.

PC Member for the International Conference Design Science Research in Information Systems and Technology (DESRIST), 2017.

Mini-track Co-Chair, (AMCIS 2013).

Posters Chair for the forth ACM SIGCHI Symposium on Computer Human Interaction for Management of Information Technology (CHIMIT-11).

PC Chair for the forth ACM SIGCHI Symposium on Computer Human Interaction for Management of Information Technology (CHIMIT-10).

PC Member for the third ACM SIGCHI Symposium on Computer Human Interaction for Management of Information Technology (CHIMIT-09).

Reviewer for

- International Journal of Human-Computer Studies
- AIS Journal of the Association for Information Systems
- AIS TCHI Transactions on Human-Computer Interaction
- ACM SIGCHI Conference on Human Factors in Computing Systems (CHI)
- International Conference on Information Systems
- IEEE International Conference on Information Technology: Coding and Computing (ITCC)
- Information Sciences (Elsevier)
- Enterprise Information Systems (Taylor & Francis)
- Americas Conference on Information Systems (AMCIS)

Reviewer for Ph. D. Thesis of Mark Quast (University of Grenoble, France, 2012).

Member of the Master's Thesis Committee for Alan Carlin (Tufts University, 2005).



PROFESSIONAL  
SERVICE AT  
BENTLEY

**Institutional and Departmental Committee Service**

- Bentley University P&T Committee Member, (2021-2023)
- CIS Department Search Committee Member, (Spring 2022)
- CIS Department Search Committee Co-Chair, (Spring 2021)
- Member of Faculty Affairs Committee (Fall 2020 - 2021)
- Member of the CIS Department Scheduling Committee (Spring 2006 - present)
- Member of the CIS Department Research Committee (Spring 2006 - present)
- CIS Department Senator (Fall 2018 - 2020)
- Member of the Bentley Nominations Committee (Fall 2018 - 2020)
- Member of the Teaching and Scholarly Activities Committee (Fall 2016 - Fall 2018)
- Co-Chair Faculty Affairs Committee (May 2013 - May 2015 )
- Member of Faculty Affairs Committee (July 2012 - July 2016)
- Member of the Teaching and Scholarly Activities Committee (Spring 2007 - Spring 2009)
- Member of the Board of Trustees Information Services Committee (Spring 2006 - Spring 2007)
- Member of the CIS Department Outreach (Marketing) Committee (Spring 2006 - Fall 2014)
- Member of Student Affairs Committee (Fall 2003 - Spring 2006)
- Member of Faculty Advisory Board (Spring 2003 - Fall 2003)
- Member of the CIS Department Curriculum Committee (Spring 2002 - Fall 2004)

PROFESSIONAL  
EXPERIENCE

**CONTEX Prepress Systems**

*Software Engineer*

**Summer 1996**

Worked on performance evaluation and optimization of algorithms for transformation of bitmap images into vectorized representations (Bezier polynomials) for graphic displays and printing.

**ARAGAST BEN Software Corporation, Yerevan, Armenia**

*Software Engineer*

**June 1991 - August 1993**

Designed, implemented and maintained Windows applications for WinFont system, supporting Russian and Armenian keyboard and fonts. Analyzed, designed and implemented a small database management application for a local bank.

PROFESSIONAL  
AFFILIATIONS

- Association for Computing Machinery (ACM)
- American Association for Artificial Intelligence (AAAI)
- ACM Special Interest Group in Computer Human Interaction (SIGCHI)