

Seiji Isotani

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Research Interests

- Ontological Engineering and Ontologies
- CSCL and CSCW
- Human-Computer Interaction
- Intelligent Educational/Tutoring Systems
- Semantic Web and Social Web
- Technology-enhanced Learning (particularly for Math and Computer Science)

Education

- Ph.D. Degree in Information Engineering** 2006-2009
Osaka University, Osaka, Japan
Advisor: Professor Rūichiro Mizoguchi
- Master Degree in Computer Science** 2003-2005
University of Sao Paulo, Sao Paulo, Brazil
Thesis title: Developing tools in iGeom: Using the Dynamic Geometry in the Classroom and Distance Learning (*Awarded thesis in nationwide competition*)
Advisor: Professor Leonidas de Oliveira Brandao
- B.S. Degree in Computer Science** 1998-2002
University of Sao Paulo, Sao Paulo, Brazil

Professional Experience

Researcher (2009-present)

Human-Computer Interaction Institute, Carnegie Mellon University
Currently working on design and development of intelligent tutoring systems for middle school children learning mathematics.

Research Assistant (2006-present)

Department of Knowledge Systems, ISIR-Osaka University
Application of ontological engineering techniques into intelligent educational systems for Math/CS Education with emphasis on collaborative learning support.

Teaching Assistant (2002-2005)

Computer Science Department (University of Sao Paulo – IME/USP)

- Notions of Statistics;
- Data Structures;
- Formal Languages and Automaton;
- Introduction to Programming;
- Notions of Mathematics Teaching using computers.
- Courses of Mathematics Teaching;
- Teaching geometry using distance education environments.

Electronic Computer Center (2000-2001) - University of Sao Paulo

Database Programmer, Perl programmer and Web developer

Skills

Language Skills

- **English** (Fluent)
- **Japanese** (Intermediate)
- **Portuguese** (Native Speaker)
- **Spanish** (Good for reading and listening)

Programming Skills

- Java, C, Perl, PHP, others.
- Web and Semantic Web Languages (HTML, OWL, SPARQL, XML, RDF, and others)

Others

- Experience with Windows and Linux
- Experience with MySQL, Apache and PHP

Awards and Distinctions

- IEEE Student Leadership Award, IEEE Education Society *2009*
- IBM Ph.D. Fellowship Award
- Upsilon Pi Epsilon/IEEE Computer Society Award for Academic Achievement *2008*
- ACM Student Research Competition – 2nd Place in the Graduate Category at SIGCSE (ACM Technical Symposium on Computer Science Education), Kentucky, USA *2007*
- Best Paper Award - Doctoral Colloquium of the Workshop on Groupware (CRIWG) *2007*
- Best Student Paper Award – International Conference on Computers in Education (ICCE), Beijing, China. *2006*
- Best Computer Science M.Sc. Thesis in Brazil – Nationwide competition. 1st Place in the Field of Computers in Education. Award received at the Brazilian Symposium on Informatics in Education organized by the Brazilian Computer Society, Brasilia, Brazil. *2006*
- Best Paper Award – Informatics in Education Workshop at the Congress of the Brazilian Computer Society, Rio Grande do Sul, Brazil. *2005*

Scholarships and Fellowships

- 2008 – IBM Ph.D. Scholarship
- 2006 - 2009 Nippon Foundation Scholarship
- 2005 – 2006 Nikkei Fellowship from Japan International Cooperation Agency (JICA)
- 2003 – 2005 Scholarship from the Brazilian National Council for Scientific and Technological Development (CNPq)
- 2001 – 2002 Scholarship from the Integrated System to Support Teaching (SIAE), University of Sao Paulo

Academic Activities

Professional Affiliations

- IEEE Computer Society and Education Society
- ACM – Association for Computing Machinery
- SBC – Brazilian Computer Society
- JSAI – Japanese Society for Artificial Intelligence

Editorial Board

- 2010 – Guest Editor of the IEEE Transactions of Learning Technologies
<http://www.computer.org/portal/web/tlt>
- 2009 – Associate Editor of the Brazilian Journal on Informatics in Education (RBIE), SBC

- 2007- 2010 Editor in Chief of the IEEE Multidisciplinary Engineering Education Magazine
<http://www.ieee.org/go/meem/>
- 2006 – INFOCOMP: Journal of Computer Science

Journal Reviewer

- (2009~) Journal of The Brazilian Computer Society, SBC & Springer
- (2009~) Brazilian Journal on Informatics in Education, SBC
- (2009~) Interactive Learning Environments, Taylor & Francis
- (2007~) Computers & Education, Elsevier
- (2006~) IEEE Latin American Transactions
- (2007~) IEEE Multidisciplinary Engineering Education Magazine
- (2006~) INFOCOMP: Journal of Computer Science

Organizing Committee

- Brazilian Symposium on Computers in Education (SBIE), 2009
- Workshop on Intelligent and Innovative Support for Collaborative Learning Activities in conjunction with the International Conference on CSCL (2009)
- Brazilian Workshop on Semantic Web and Education in conjunction with the Brazilian Symposium on Informatics in Education (2007; 2008)

Conference Reviewer

- Brazilian Symposium on Computers in Education, 2009
- ICCE, Int. Conference on Computers in Education, 2009
- ACM SIGCSE – Technical Symposium on Computer Science Education, 2008
- IEEE FIE – Frontiers in Education Conference, 2008
- Brazilian Symposium on Multimedia and Web (WebMedia), 2008
- Workshop on ongoing thesis and dissertations, Brazilian Symposium on Multimedia and Web, 2007

Invited Talk

- “Towards a Theory-Aware Authoring Tool for Collaborative Learning: 10-year history of the research and its achievements”, at *Chukyo University*, Japan. March 27, 2008.
- “Ontological Engineering”, at *University of Sao Paulo*, Sao Paulo, Brazil. Nov. 3, 2008.
- “Ontology Engineering in the Context of Education”, at the *Second Brazilian Workshop on Semantic Web and Education*, Fortaleza, Brazil, Nov. 13, 2008.

Publications

Journal Publications

- Isotani, S., Inaba, A., Ikeda, M. and Mizoguchi, R. (2010) The Foundations of a Theory-Aware Authoring System for CSCL Design. *Computers & Education, Elsevier*, 54(4), 809-834.
<http://dx.doi.org/10.1016/j.compedu.2009.09.010>
 - Isotani, S., Inaba, A., Ikeda, M. and Mizoguchi, R. (2008) An Ontology Engineering Approach to the Realization of Theory-Driven Group Formation. *International Journal of Computer-Supported Collaborative Learning*, Springer, 4(4), 445-478. <http://dx.doi.org/10.1007/s11412-009-9072-x>
 - Isotani, S., Mizoguchi, R., Bittencourt, I. I., Costa, E. (2009) State of the Art in Semantic Web and Web 2.0: Potentialities and Tendencies of the New Generation of Educational Environments on Internet. *Brazilian Journal on Informatics in Education*, 17(1), 30-42. (In Portuguese)
 - Isotani, S. and Brandao, L. O. (2008) An Algorithm for Automatic Checking of Exercises in a Dynamic Geometry System: iGeom. *Computers & Education, Elsevier*, 51(3), 1283-1303.
<http://dx.doi.org/10.1016/j.compedu.2007.12.004>
 - Bittencourt, I. I., Isotani, S., Costa, E., and Mizoguchi, R. (2008) Research Directions on Semantic Web and Education. *Scientia - interdisciplinary studies in Computer Science*, 19(1), 59-66.
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- Isotani, S. and Mizoguchi, R. (2008) An Ontology-based Framework and Its Application to Effective Collaboration, *CLEI electronic Journal*, 11(1), 1-9.
 - Isotani, S. and Mizoguchi, R. (2007) Design and Analysis of Collaborative Learning Sessions Using Learning Theories and Ontologies. *Brazilian Journal on Informatics in Education*, 15(2), 45-56 (in Portuguese).
 - Brandão, L. O., Isotani, S. and Moura, J. G. (2006) Immersing Dynamic Geometry in Distance Education Systems: iGeom and SAW. *Brazilian Journal on Informatics in Education*, 14(1), 41-49 (in Portuguese).

Book Organization

- Bourdeau, J., Mizoguchi, R., Isotani, S., Wasson, B., Chen, W., Jovanovic, J. (Org.) Proceedings of the Workshop on Intelligent and Innovative Support for Collaborative Learning Activities, 2009.
- Bittencourt, I. I., Isotani, S., Costa, E. B., Lima, F., Fernade, E., Crespo, S. (Org.). Proceedings of the Second Brazilian Workshop on Semantic Web and Education. Fortaleza: Brazilian Computer Society, 2008. v. 1.
- Bittencourt, I. I., Costa, E. B., Lima, F., Fernade, E., Isotani, S., Krause, D. (Org.). Proceedings of the First Brazilian Workshop on Semantic Web and Education. São Paulo: Brazilian Computer Society, 2007. v. 1.

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Book Chapters

- Brandão, L. O. and Isotani, S. and Moura J. G. (2004) Dynamic Geometry With iGeom: Geometric Algorithms, authoring and Automatic Evaluation of Exercises. Mini-Courses of Brazilian Symposium of Informatics in Education (SBIE), chapter 5 (in Portuguese).
- Isotani, S. and Sahara, R. H. and Brandão, L. O. (2003) iMática+iGeom: Interactive Environment to Support the Teaching of Mathematics and Geometry via Internet. Selected Papers of the SIICUSP. The Institute of Mathematics and Statistics, 103-120. (in Portuguese)

Conference and Workshop Publications (Peer-Reviewed)

- Isotani, S., Mizoguchi, R., Isotani, S., Albuquerque, A. R. P. L., Capeli, O. M., & Isotani, N. (2010) An Authoring Tool to Support the Design and Use of Theory-Based Collaborative Learning Activities. *International Conference on Intelligent Tutoring Systems*, Pittsburgh, USA, Springer-Verlag, Lecture Notes in Computer Science. (Accepted)
- Isotani, S., McLaren, B., & Altman, M. (2010) Towards Intelligent Tutoring with Erroneous Examples: A Taxonomy of Decimal Misconceptions. *International Conference on Intelligent Tutoring Systems*, Pittsburgh, USA, Springer-Verlag, Lecture Notes in Computer Science. (Accepted)
- Villasclaras-Fernández, D. E., Isotani, S., Hayashi, Y., Mizoguchi, R. (2009) Looking into collaborative learning: design from macro- and micro-script perspectives. *International Conference on Artificial Intelligence in Education (AIED)*, Brighton. UK, Frontiers in Artificial Intelligence and Applications 200, IOS Press, 231-238.
- Hayashi, Y., Isotani, S., Bourdeau, J., Mizoguchi, R. (2009) Toward a Learning/Instruction Process Model for Facilitating Instructional Design Cycle. *The IFIP World Conference on Computers in Education*. Bento Gonçalves, Brasil, IFIP Conference Proceedings 302, Springer, 138-147.
- Isotani, S., Jorge, C. H., Junior, N. M. Q., Silva, F. S., & Isotani, S. (2009). Uma Ferramenta de Apoio à Aprendizagem de Sistemas Operacionais. *Workshop sobre Educação em Computação (WEI)*, Anais do Congresso da Sociedade Brasileira de Computação, Bento Gonçalves, Brasil, 465-474.
- Isotani, S. and Mizoguchi R. (2008) Adventure in the Boundary between Domain-Independent Ontologies and Domain-Specific Content for CSCL. *International Conference on Knowledge-based and Intelligent Information & Engineering Systems (KES)*, Zagreb, Croatia, Springer-Verlag, LNAI 5179, 523-532.

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- Isotani, S. and Mizoguchi, R. (2008) Theory-Driven Group Formation through Ontologies. *International Conference on Intelligent Tutoring Systems (ITS)*, Montreal, Canada, Springer-Verlag, Lecture Notes in Computer Science 5091, 646-655.
 - Isotani, S. and Mizoguchi R. (2008) Tying Ontologies to Domain Content for CSCL. *International Conference on Intelligent Tutoring Systems (ITS)*, Montreal, Canada, Springer-Verlag, Lecture Notes in Computer Science 5091, 752-754.
 - Isotani, S. and Mizoguchi R. (2008) CHOCOLATO: A Concrete and Helpful Ontology-Aware Collaborative Learning Authoring Tool. *International Conference on Intelligent Tutoring Systems (ITS)*, Montreal, Canada, Proceeding of the Demonstration Program, 25-28.
 - Bittencourt, I. I., Costa, E., Isotani, S. and Mizoguchi, R. Bittencourt, I. M. (2008) Towards a Reference Model to Semantic Web-based Educational Systems. *Brazilian Workshop on Semantic Web and Education*, Fortaleza, Brazil, 1-10.
 - Isotani, S. , Mizoguchi, R. , Bittencourt, I. I., Costa, E. B. . Web 3.0 – Towards Semantic Web and Web 2.0 in Educational Environments (2008). *Brazilian Symposium on Informatics and Education (SBIE)*, Fortaleza, Brazil, 785-795.
 - Isotani, S., Isotani, N., Isotani, S. (2008) Ontologies and Semantic Web to Support Collaborative Learning in Classroom. *Brazilian Symposium on Informatics and Education (SBIE)*, Fortaleza, Brazil, 521-531.
 - Bittencourt, I. I., Isotani, S., Costa, E., and Mizoguchi, R. (2007) Research Directions on Semantic Web and Education. *Brazilian Workshop on Semantic Web and Education*, Sao Paulo, Brazil, 71-82.
 - Isotani, S. and Mizoguchi, R. (2007) Towards a Complete Ontology-Aware Authoring Tool for Collaborative Learning. *International Conference on Computers in Education (ICCE)*, Hiroshima, Japan, IOS Press, v.162, 647-648.
 - Isotani, S. and Mizoguchi, R. (2007) Deployment of Ontologies for an Effective Design of Collaborative Learning Scenarios. *International Workshop on Groupware (CRIWG)*, Bariloche, Argentina, Springer-Verlag, Lecture Notes in Computer Science 4715, 223-238.
 - Isotani, S. and Mizoguchi, R. (2007) Using Ontologies for an Effective Design of Collaborative Learning Activities. *International Conference on Artificial Intelligence in Education (AIED)*, Marina del Rey, CA, USA, 578-580.
 - Isotani, S. and Mizoguchi, R. (2007) The Unfolding of Learning Theories: Its Application to Effective Design of Collaborative Learning. *International Workshop on Ontologies and Semantic Web for E-Learning (SWEL)*, Marina del Rey, CA, USA, 44-53.
 - Isotani, S. and Mizoguchi, R. (2007) The Foundations of an Ontology-aware Authoring System. *ACM Technical Symposium on Computer Science Education (SIGCSE)*, Kentucky, USA, 600.
 - Isotani, S. and Mizoguchi, R. (2006) An Integrated Framework for Fine-Grained Analysis and Design of Group Learning Activities. *International Conference on Computers in Education (ICCE)*, Beijing, China, IOS Press, v.151, 193-200. **(Best Student Paper Award)**
 - Isotani, S. and Mizoguchi, R. (2006) The Relations between Interaction Processes and the Learner's Development in Collaborative Sessions. *Congress of the Brazilian Computer Society (SBC-WIE)*, Campo Grande, Brazil, 15-23 (in Portuguese).
 - Isotani, S. and Brandão, L. O. (2006) How to use Dynamic Geometry? The Roles of Teachers and Students Facing New Technologies. *Congress of the Brazilian Computer Society (SBC-WIE)*, Campo Grande, Brazil, 120-128 (in Portuguese).
 - Isotani, S. Gomes J. M. and Brandão, L. O. (2005) Using Dynamic Geometry in Distance Education Environments: iGeom and SAW. *Congress of the Brazilian Computer Society*, (SBC-WIE), Sao Leopoldo, Brazil, 2486-2494 (in Portuguese). **(Best Paper Award)**
 - Isotani, S. and Brandão, L. O. (2005) Analyzing Constructions in the iGeom: An Approach for

Automatic Evaluation of Exercises. *Global Congress on Engineering and Technology Education* (GCETE), Bertioga, Brazil, 1038-1042.

- Brandão, L. O. and Isotani, S. and Moura, J. G. (2004) A Plug-in Based Adaptive System: SAAW. *International Conference on Intelligent Tutoring Systems (ITS)*, Maceió, Brazil, Lecture Notes in Computer Science 3220, 791-793.
- Isotani S. and Brandão L. O. (2004) Automatic Evaluation Tool in iGeom. *Brazilian Symposium on Informatics and Education (SBIE)*, Manaus, Brazil, 328-337. (in Portuguese)
- Isotani, S. and Brandão, L. O. (2004) Authoring and Automatic Evaluation of Exercises in iGeom. *Webmedia & La-Web Joint Conference*, Ribeirão Preto, Brazil, 276-279. (in Portuguese)
- Brandão, L. O. and Isotani, S. (2003) A Tool for Dynamic Geometry Teaching on Internet: iGeom. *Congress of the Brazilian Computer Society*, (SBC-WIE), Campinas, Brazil, 1476-1487 (in Portuguese).
- Isotani, S. and Brandão, L. O. (2001) iMática: Interactive Environment to Support the Teaching of Mathematics via Internet. *Congress of the Brazilian Computer Society*, (SBC-WIE), Fortaleza, Brazil, 533-543, (in Portuguese).

References

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