

# Thomas Sylvester Armstrong

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## Education

- 2008 PHD in Computer Science, *University of Maryland Graduate School, Baltimore*  
*Dissertation: "From Sensors to Structures: Unsupervised Language Learning"*
- 2002 BSc in Computer Science, *University of Massachusetts Amherst*  
BSc in Linguistics; Mathematics, *University of Massachusetts Amherst*

## Current Appointment

- 2008- Assistant Professor of Computer Science, *Wheaton College*

## Previous Appointments

- 2002-2008 Research Assistant, *Cognition, Robotics, and Learning Lab, University of Maryland, Baltimore County*
- 2004, 2008 Instructor, *University of Maryland, Baltimore County*
- 2004 Engineering Intern, *Google Inc.*
- 2001-2002 Research Assistant, *Experimental Knowledge Systems Lab, Department of Computer Science, UMass*
- 2000-2001 Laboratory Assistant, *Language Acquisition Lab, Department of Linguistics, UMass*  
Web Application Developer, *Center for Computer-Based Instructional Technology, UMass*

# Teaching

## Wheaton College

F09; S10	COMPI15: <i>Robots, Games, and Problem Solving (CS1)</i>
F09	COMPI98/298: <i>Intelligent Systems</i>
F09; S10	INT 098: <i>Language &amp; Logic: Computational Semantics; Representation &amp; Memory</i>
So9; S10	COMPI11: <i>Foundations of Computing Theory</i>
So9	COMP398: <i>Parallel Computing</i>
So9	COMP399: <i>Independent Study: Multi-Agent Systems and Game Theory</i>
F09	COMP399: <i>Independent Study: Social Network Analysis</i>
F08	COMPI06: <i>Basics of Computing</i>
F08	COMP325: <i>Database Systems</i>

## University of Maryland, Baltimore County

So8	CMSC461: <i>Introduction to Database Management Systems</i>
So4	CMSC203: <i>Introduction to Discrete Structures</i>

# Grants, Honors & Awards

## Grants

2009	Time Series Data Mining, <i>Mars Student/Faculty Research Fellowship</i> . \$5,000
2009–2010	Wheaton Robotics Laboratory Equipment, <i>Competitive Internal Grant</i> . \$15,000
2009	Elastic Compute Cloud (EC2) Credits, <i>Amazon.com, Inc.</i> \$800
2008–2009	Wheaton Robotics Laboratory Equipment, <i>Competitive Internal Grant</i> . \$1,500
2008–2009	Text-to-Sketch, <i>Wheaton Research Partnership</i>
2007	“From Sensors to Syntax and Semantics: Learning Situated Language.” NSF: Information and Intelligent Systems Program. Other Personnel. (Not funded)
2005	Travel Grant to the 20 <sup>th</sup> National Conference on Artificial Intelligence, <i>American Association for Artificial Intelligence</i>
2004	Travel Grant to the 7 <sup>th</sup> International Colloquium on Grammatical Inference, <i>Knowledge Discovery Network of Excellence</i>
2001–2002	“Maps for Verbs: Learning Verb Meanings through Dynamics.” <i>Microsoft Corporation</i> . \$5,000

## Honors & Awards

- 2005 Graduate Student Leader of the Year, *University of Maryland, Baltimore County*
- 2002 Senior Leadership Award, *University of Massachusetts Amherst*
- 2002 Gerald F. Scanlon Student Employee of the Year, *University of Massachusetts Amherst*

## Publications & Talks

### Articles in Preparation

- 2010 **From Lexical Semantics to Syntax: On the Role of Grounded Meaning in Learning Context-Free Grammars**, with T. Oates, V. Bhat, and D. Desai.

### Book Reviews

- 2007 **J. Gerard Wolff, Unifying Computing and Cognition.** *Artificial Intelligence* 171(18): 1122-1123.

### Refereed Conferences

- 2010 **Connecting Across Campus**, with M. LeBlanc and M. Gousie. *Proceedings of the 41<sup>st</sup> ACM Technical Symposium on Computer Science Education.*
- 2008 **Learning in the Lexical-Grammatical Interface**, with T. Oates. *Proceedings of the 21<sup>st</sup> International Florida Artificial Intelligence Research Society Conference.*
- Which Came First, the Grammar or the Lexicon?**, with T. Oates. *Proceedings of the 9<sup>th</sup> International Colloquium on Grammatical Inference.*
- Lexical and Grammatical Learning**, with T. Oates. *Proceedings of the 23<sup>rd</sup> AAAI Conference on Artificial Intelligence (doctoral student abstract).*
- 2007 **RIPTIDE: Segmenting Data Using Multiple Resolutions**, with T. Oates. *Proceedings of the 6<sup>th</sup> IEEE International Conference on Development and Learning.*
- UNDERTOW: Multi-Level Segmentation of Real-Valued Time Series**, with T. Oates. *Proceedings of the 22nd AAAI Conference on Artificial Intelligence (doctoral student abstract).*
- 2006 **Discovering Patterns In Real-valued Time Series**, with J. Catalano and T. Oates. *Proceedings of the 10<sup>th</sup> European Conference on Principles and Practice of Knowledge Discovery in Databases.*

**Inferring Grammars for Mildly Context-Sensitive Languages in Polynomial-Time**, with T. Oates, L. Becerra-Bonache, and M. Atamas. *Proceeding of the 8<sup>th</sup> International Colloquium on Grammatical Inference*.

2005 **Transfer in Learning by Doing**, with B. Krueger, T. Oates, P. Cohen, and C. Beal. *Proceedings of the 19<sup>th</sup> International Joint Conference on Artificial Intelligence (poster track)*.

2004 **On the Relationship Between Lexical Semantics and Syntax for the Inference of Context-Free Grammars**, with T. Oates, J. Harris, and M. Nejman. *Proceedings of the 19<sup>th</sup> National Conference on Artificial Intelligence*.

## Referred Workshops

2007 **Models of Strategic Deficiency and Poker**, with G. Chaddock, M. Pickett, and T. Oates. *Working Notes of the Workshop on Plan, Activity, and Intent Recognition at the 22<sup>nd</sup> Conference on Artificial Intelligence*.

2005 **A Polynomial Time Algorithm for Inferring Grammars for Mildly Context-Sensitive Languages**, with T. Oates, L. Becerra-Bonache, and M. Atamas. *Working Notes of the Workshop on Grammatical Inference Applications: Successes and Future Challenges at the 19<sup>th</sup> International Joint Conference on Artificial Intelligence*.

2004 **Meaning to Learn: Bootstrapping Semantics to Infer Syntax**, with T. Oates. *Working Notes of the Language Learning Spring Symposium of the American Association for Artificial Intelligence*.

2003 **Leveraging Lexical Semantics to Infer Context-Free Grammars**, with T. Oates, J. Harris, and M. Nejman. *Working Notes of the Workshop on Context-Free Grammar Learning at the 14<sup>th</sup> European Conference on Machine Learning and the 7<sup>th</sup> European Conference on Principles and Practice of Knowledge Discovery in Databases*.

## Invited Talks

2009 **Unsupervised Motif Discovery in Real-Valued Time Series Databases** *Mathematics & Computer Science Departmental Seminar Series*.

**Studio-Based Learning for “Robots, Games, and Problem Solving (CS1).”** *Studio-Based Learning in Computing Education*.

## Student Mentoring

### PhD Dissertation Committee Membership

Sourav Mukherjee, UMBC '10.

*Stochastic Graph Grammars - Learning Algorithms and Applications*

### Undergraduate Research

Eric Drewniak, Wheaton '11.

*Time Series Data Mining*

Michael Patoka, UMBC '08.

*Bootstrapping Syntax and Semantics*

Michael Atamas, UMBC '08.

*Mildly Context-Sensitive Grammar Learning*

Justin Harris & Mark Nejman, UMBC '03.

*Context-Free Grammar Learning*

## Service

### Wheaton College

- 2009- Faculty Workload and Economic Status Committee Member (3-year term)
- 2009 Website Renovation Working Group
- 2008- Safe Zone Training, in support of the LGBT community.

### University of Maryland, Baltimore County

- 2006-2007 Director of Graduate Enrollment Search Committee Member  
Promotion and Tenure Committee Member,  
*Computer Science & Electrical Engineering Department*
- 2004-2005 President, *Graduate Student Association* (\$300,000 budget)  
President's University Steering Committee Member  
Provost's Planning and Leadership Team Member
- 2003-2004 Vice President, *Graduate Student Association*  
Promotion and Tenure Committee Member,  
*Computer Science & Electrical Engineering Department*

## Reviewing

- 2010 Reviewer, *Leverhulme Trust*  
Reviewer, *Consortium for Computing Sciences in Colleges — Northeastern Region*
- 2009 Reviewer, *Neural Computation (The MIT Press)*  
Program Committee, *International Conference on Machine Learning*  
Reviewer, *Consortium for Computing Sciences in Colleges — Northeastern Region*
- 2008 Program Committee, *Artificial Intelligence and the Web Track at AAAI*  
Reviewer, *International Conference on Development and Learning*  
External Reviewer, *International Colloquium on Grammatical Inference*
- 2007 External Reviewer, *Information Sciences Journal*  
External Reviewer, *International Conference on Development and Learning*  
External Reviewer, *Conference on Computational Natural Language Learning*
- 2006 Reviewer, *Journal of Applied Artificial Intelligence – Special Issue*  
External Reviewer, *International Colloquium on Grammatical Inference*
- 2005 External Reviewer, *National Conference on Artificial Intelligence*  
External Reviewer, *International Joint Conference on Artificial Intelligence*  
External Reviewer, *International Conference on Machine Learning*

## Professional Affiliations

- 2009- Special Interest Group on Computer Science Education
- 2004- International Grammatical Induction Community
- 2002- Special Interest Group on Computational Semantics  
Association for the Advancement of Artificial Intelligence

## Professional Development

- 2009 40<sup>th</sup> ACM Technical Symposium on Computer Science Education – Chattanooga, TN  
USA – March 4-7, 2009
- 2009 NITLE Workshop: Teaching Science in the Digital Age – Stonehill College – January 16,  
2009