

# Lewis B. Baumstark, Jr.

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## RESEARCH INTERESTS

Physical Computing, Reverse Engineering, Computer Science Education

## EDUCATION

PhD, Electrical & Computer Engineering, Georgia Institute of Technology, Atlanta, GA, Dec. 2004

- Dissertation title: "Extracting Data-Level Parallelism from Sequential Programs for SIMD Execution"
- Nominated by department for Sigma Xi Best PhD Thesis Award
- Advisor: Linda Wills
- Georgia Tech Presidential Fellow (2000-2004)

MS, Electrical & Computer Engineering, Georgia Institute of Technology, Atlanta, GA, Dec. 2001

BS, Electrical & Computer Engineering, Tennessee Technological University, Cookeville, TN, Dec. 1998

## PUBLICATIONS

### Journal

**L. Baumstark** and L. Wills, "Retargeting Sequential Image-Processing Programs for Data-Parallel Execution," IEEE Trans. on Software Engineering (invited paper for special issue on Reverse Engineering), Vol. 31, No. 2, pp. 116-136, Feb. 2005.

R. Janka, L. Wills, and **L. Baumstark**, "Virtual Benchmarking and Model Continuity in Prototyping Embedded Multiprocessor Signal Processing Systems," IEEE Trans. on Software Engineering, Vol. 28, No. 9, pp. 832-846, Sept. 2002.

### Conference

**L. Baumstark** and E. Rudolph, "Automated Online Grading for Virtual Machine-based Systems Administration Courses", in Proc. of 44th ACM Technical Symposium on Computer Science Education (SIGCSE'13), Denver, CO, March 2013, pp. 477-482. DOI: <http://dx.doi.org/10.1145/2445196.2445340>

**L. Baumstark** and L. Wills, "Multidimensional Dataflow-based Parallelization for Multimedia Instruction Set Extensions," Proc. of 2006 Int'l Conference on Parallel Processing Workshops, pp. 319-326, Columbus, OH, Aug. 14-16, 2006.

**L. Baumstark** and L. Wills, "Dynamic Estimation of Data-Level Parallelism in Nested Loop Structures: A Preliminary Report," Proc. of 1st Int'l Workshop on Program Comprehension through Dynamic Analysis (PCODA'05), Pittsburgh, PA, pp. 28-31, Nov. 10, 2005. Available as Technical Report 2005-12, Dept. of Mathematics & Computer Science, Universiteit Antwerpen, Antwerpen, Belgium.

**L. Baumstark**, M. Guler, and L. Wills, "Extracting an Explicitly Data-Parallel Representation of Image-Processing Programs," In Proc. of the Working Conf. on Reverse Engineering 2003 (WCRE '03), Victoria, BC, pp. 24-34, Nov. 2003.

**L. Baumstark**, and L. Wills, "Exposing Data-Level Parallelism in Sequential Image Processing Algorithms," In Proc. of the Ninth Working Conf. on Reverse Engineering (WCRE '02), Richmond, VA, pp. 245-254, Nov. 2002.

L. Wills, T. Taha, **L. Baumstark**, and S. Wills, "Estimating Potential Parallelism for Platform Retargeting," In Proc. of the Ninth Working Conf. on Reverse Engineering (WCRE '02), Richmond, VA, pp. 55-64, Nov. 2002.

## Poster Presentations

**L. Baumstark**, "Reverse Engineering the Law: Measuring the Complexity of the US Code", poster presentation at ACM Southeast Conference 2011 (ACMSE'11)

**L. Baumstark**, "A Combat Robotics Course: Programming Meets Computer-Aided Design and Fabrication", in Proc. of 44th ACM Technical Symposium on Computer Science Education (SIGCSE'13), Denver, CO, March 2013, pp. 729-729. DOI: <http://dx.doi.org/10.1145/2445196.2445406>

## PROFESSIONAL MEMBERSHIPS

- Association for Computing Machinery (ACM)
- ACM Special Interest Group in Computer Science Education (SIGCSE)

## PROFESSIONAL SERVICE

- General Co-Chair of 4th International Symposium on Embedded Computing, Niagra, Canada, May 21, 2007.
- Session chair: "Embedded Hardware," 3rd Int'l Workshop on Embedded Computing (IWEC-06), Columbus, OH, Aug. 14, 2006.
- Session facilitator: "Dynamic analysis challenges and metrics", Workshop on Program Comprehension through Dynamic Analysis (PCODA'05), Pittsburgh, PA, Nov. 10, 2005.
- Program Committee, Workshop on Program Comprehension through Dynamic Analysis (PCODA'06)
- Reviewer: IEEE Transactions on Very Large-Scale Integration Systems, Special Section on Configurable Computing. 2008.

## INSTITUTIONAL SERVICE

### University-Level

- UWG Ad-hoc Committee for Revising Tenure & Promotion Guidelines, Spring 2011
- UWG Faculty Senate, 2008-2011
- UWG Faculty Senate Ad-hoc Rules Subcommittee, 2008-2009
- UWG Learning Resources Committee, 2008-2011. Chair 2009-2011.
- UWG Sponsored Operations Committee, 2009.
- UWG Retention-Progression-Graduation (RPG) Guide, Summer 2008-2010
- Faculty sponsor, ACM student chapter, 2005 – present
- Faculty sponsor, Upsilon Pi Epsilon, 2012 – present
- UWG Ad-hoc Committee on Tenure & Promotion Guidelines, Spring 2011

### College-Level

- IMPACT Robotics workshop for Junior High students, July 2011.
- COSM Tenure and Promotion Committee, 2011-2012.
- COSM Ad-hoc Curriculum Committee, 2011

## Department-Level

- Industry Advisory Committee, Spring 2007
- Faculty Search Committee, 2006 - present. Chair Fall 2008 – present.
- Bachelor of Arts Ad-hoc Committee, 2006.
- Faculty advisor, ACM Programming Contest team, 2005
- Graduate Curriculum Committee, Spring 2005, Fall 2009-Spring 2010.
- Undergraduate Curriculum Committee, Spring 2005-present, Chair 2005-2008.
- Assessment Subcommittee, 2009.
- Advisor: Combat Robotics Team, Fall 2010-present
- Systems Sequence Revision Subcommittee Chair, 2015

## STUDENT PROJECTS ADVISED

### Undergraduate

- Hector Martin-Cantero, “File Format Reverse Engineering” (2007)
- Jim Bullington, “File Format Reverse Engineering” (2007)
- Lee Allen and Eric Hebert, “BombSpark (videogame)” (2008)
- Justin Chester, “Independent Game Development” (2009)
- Lee Allen, “Architecture Prototyping” (2009)
- LaCarl Dansby, Derrick Banks, and Alejunard Bourne, “Game Design” (2010)
- Brandon Shrewsbury, “Kinecting the Disabled” (2011)
  - Presented at *13<sup>th</sup> International ACM SIGACCESS Conference on Computers and Accessibility*), received **First Place in Undergraduate Category**
  - Received **Honorable Mention** in Microsoft’s Imagine Cup
- Kenny Marshall and Ed Bala, “3D Printing” (2012)
- Anthony Kyle Bond, “Raspberry Pi Cluster” (2013)
- Alex Teichner, “Augmented Reality” (2013)
  - Poster presentation at ACM SE’14
- Drew Justus, “Automation Systems” (2013)
- Brian West, “Robot Coordination” (2013), “Swarm Algorithms” (2014)
- Lewis Christmas, “A \$50 Fully-Programmable Hobby Robot” (2013)
- Ayaan Kazerouni, “Computing Accessibility: a Fall-detecting Mobility Walker” (2014)
  - Received **Second Place** in 2015 COSM Research Day competition
- Carlos Harry, “Computing Accessibility” (2014)
- Terry Holt, “Minisumo Robotics” (2014)

### Graduate

- Josh Westmoreland, “Debugging in Dynamic Languages” (2009), “Legal Code Visualization” (2009)
- Dan Grotefend, MS Thesis, *Obligation and Reciprocity Assessment in Social Simulations of Autonomous Agents: the Stigmergic Underpinnings of Human Interaction and Social Cooperation?* (2009)
- Jason Levinson, “Legal Code Web Service” (2010)