

# Ryan Wisnesky

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## Current Employment

- **Conexus AI, Inc.**  
Co-founder & CTO, 2015-present (w/ David Spivak and Eric Daimler)

## Education

- **Postdoctoral Associate in Mathematics**  
**Massachusetts Institute of Technology, 2014-2015**  
Area: *Applied Category Theory*  
Advisor: *David Spivak*
- **Doctor Of Philosophy (Ph.D) in Computer Science**  
**Harvard University, 2014**  
Area: *Programming Languages*  
Dissertation: *Functional Query Languages with Categorical Types*  
Thesis committee: *Greg Morrisett, Lucian Popa, Margo Seltzer*
- **Master of Science (MS) in Computer Science**  
**Stanford University, 2006**  
Area: *Systems*  
Advisor: *John Mitchell*
- **Bachelor of Science (BS) in Mathematics & Computer Science**  
**Stanford University, 2006**

## Papers

- *Josh Meyers, Josh Shinavier, Ryan Wisnesky.* **Algebraic Property Graphs.** Submitted, 2022
- *Joshua Meyers, David I. Spivak, Ryan Wisnesky.* **Fast Left Kan Extensions Using the Chase.** Journal of Automated Reasoning, 2022
- *Eric Daimler, Ryan Wisnesky.* **Informal Data Integration Considered Harmful.** Human-Centered AI (AAAI-HAI 2019)
- *Kris Brown, David I. Spivak, Ryan Wisnesky.* **Categorical Data Integration for Computational Science.** Computational Materials Science (CMS 2019)
- *Patrick Schultz, David I. Spivak, Christina Vasilakopoulou, Ryan Wisnesky.* **Algebraic Databases.** Theory and Applications of Categories Volume 32 (TAC 2017)
- *Patrick Schultz, Ryan Wisnesky.* **Algebraic Data Integration.** Journal of Functional Programming, Special Issue on Programming Languages for Big Data (JFP-PlanBig 2017)

- *Patrick Schultz, David I. Spivak, Christina Vasilakopoulou,, Ryan Wisnesky.* **Algebraic Databases.** Theory and Applications of Categories Volume 32 (TAC 2017)
- *Spencer Breiner, Al Jones, David I. Spivak, Eswaran Subrahmanian, Ryan Wisnesky.* **Using Category Theory to facilitate multiple manufacturing service database integration.** American Society of Mechanical Engineers Journal of Computing and Information Science in Engineering Volume 17 Issue 2 (JCISE 2017)
- *Patrick Schultz, David I. Spivak, Ryan Wisnesky.* **Algebraic Model Management: A Survey.** The 23rd International Workshop on Algebraic Development Techniques (WADT 2016)
- *Eswaran Subrahmanian, Patrick Schultz, David I. Spivak, Ryan Wisnesky.* **Functorial Data Migration: From Theory to Practice.** NIST Technical Report ERB G2015-1701 (2015)
- *Gregory Malecha, Ryan Wisnesky.* **Using Dependent Types and Tactics to Enable Semantic Optimization of Language-Integrated Queries.** Proceedings of the 15th International Symposium on Database Programming Languages (DBPL 2015)
- *David I. Spivak, Ryan Wisnesky.* **Relational Foundations for Functorial Data Migration.** Proceedings of the 15th International Symposium on Database Programming Languages (DBPL 2015).
- *Bogdan Alexe, Douglas Burdick, Mauricio A. Hernandez, Georgia Koutrika, Rajasekar Krishnamurthy, Lucian Popa, Ioana R. Stanoi, Ryan Wisnesky.* **High-Level Rules for Integration and Analysis of Data: New Challenges.** Festschrift celebrating Peter Buneman (PBF 2013).
- *Georgia Koutrika, Ryan Wisnesky, Mauricio Hernandez, Rajasekar Krishnamurthy, Lucian Popa.* **HIL: A High-Level Scripting Language for Entity Integration.** Proceedings of the 16th International Conference on Extending Database Technology (EDBT 2013).
- *Ryan Wisnesky.* **Collection Processing with Constraints, Monads, and Folds.** Proceedings of the 2011 Workshop on Intermediate Representations (WIR 2011).
- *Ryan Wisnesky.* **Minimizing Monad Comprehensions.** Harvard University Computer Science Technical Report TR-02-11 (2011).
- *Ryan Wisnesky, Mauricio Hernandez, and Lucian Popa.* **Mapping Polymorphism.** Proceedings of the 13th International Conference on Database Theory (ICDT 2010).
- *Gregory Malecha, Greg Morrisett, Avraham Shinnar, and Ryan Wisnesky.* **Toward a Verified Relational Database Management System.** Proceedings of The 37th ACM SIGPLAN - SIGACT Symposium on Principles of Programming Languages (POPL 2010).
- *Gregory Malecha, Greg Morrisett, and Ryan Wisnesky.* **Trace-based Verification of Imperative Programs with I/O.** Journal of Symbolic Computation Special Issue on the Automated Specification and Verification of Web Systems (JSC-WWW 2010).
- *Adam Chlipala, Gregory Malecha, Greg Morrisett, Avraham Shinnar, and Ryan Wisnesky.* **Effective Interactive Proofs for Higher-order Imperative Programs.** Proceedings of the 14th ACM SIGPLAN International Conference on Functional Programming (ICFP 2009).

- *Ryan Wisnesky, Gregory Malecha, and Greg Morrisett. **Certified Web Services in Ynot.** Proceedings of the 5th International Workshop on Automated Specification and Verification of Web Systems (WWV 2009).*
- *Ryan Wisnesky. **Mapping Dependence.** Harvard University Computer Science Technical Report no. TR-09-09. (2009).*
- *Stefan Dessloch, Mauricio A. Hernandez, Ryan Wisnesky, Ahmed Radwan, and Jindan Zhou. **Orchid: Integrating Schema Mapping and ETL.** Proceedings of the 24th IEEE International Conference on Data Engineering (ICDE 2008).*
- *Huong Morris, Hui Liao, Sriram Padmanabhan, Sriram Srinivasan, Phay Lau, Jing Shan, and Ryan Wisnesky. **Bringing Business Objects into Extract-Transform-Load (ETL) Technology.** Proceedings of the 4th IEEE International Conference on e-Business Engineering (ICEBE 2008).*
- *Huong Morris, Hui Liao, Sriram Padmanabhan, Sriram Srinivasan, Eugene Kawamoto, Phay Lau, Jing Shan, and Ryan Wisnesky. **Callisto: Mergers Without Pain.** Proceedings of the First International Workshop on Business Intelligence for the Real-Time Enterprise (BIRTE 2006).*
- *Ryan Wisnesky. **Evaluating Scheduling Algorithms on Distributed Computational Grids.** Stanford EE CS [Student] Research Journal. (Spring 2006).*

## Past Employment

- **Coq Consultant**  
*Swirlds, Inc. (Now Hedera)*  
Dallas, TX. Fall 2017. *Worked with Leemon Baird to formalize the correctness of the Hash-graph consensus algorithm.*
- **Research Intern**  
*IBM Research Almaden - Information Integration dept.*  
San Jose, CA. Summer 2010, Summer 2007, Summer 2006
- **Technical Intern**  
*IBM Software Group*  
San Jose, CA. Summer 2005.
- **Writer and Copy Editor**  
*The Stanford Review*  
Stanford, CA. 2001-2005.
- **Technical Intern**  
*IBM Printing Systems*  
Boulder, CO. Summer 2004, Summer 2003, Summer 2002
- **Quality Assurance Engineer**  
*eConvergent, Inc.*  
Longmont, CO. 2000-2001.

## Teaching

- **Teaching Fellow (Harvard University)**  
*CS 153: Principles of Programming Language Compilation*  
Fall 2013.
- **Teaching Fellow (Harvard University Extension School)**  
*CSCIE 268: Database and Information Management Systems*  
Spring 2011.
- **Teaching Fellow (Harvard University)**  
*CS 165: Information Management*  
Spring 2010.
- **Teaching Fellow (Harvard University)**  
*CS 51: Abstraction and Design in Computer Programming*  
Spring 2008.
- **Teaching Fellow (Stanford University)**  
*CS 242: Programming Languages*  
Fall 2005.

## Academic Honors

- Siebel Scholar, 2013-2014.
- Harvard Graduate Prize Fellow, 2006-2011
- IBM/GEM Consortium Fellow, 2006
- Stanford DKE Hettinger Service Scholarship, 2004
- National Merit Scholar, 2001

## Grants

- NIST SBIR phase I 70NANB15H290 (10/15-3/16), \$100,000.
- NIST SBIR phase II 70NANB16H178 (8/16-7/18), \$300,000.

## Patents

- *Entity integration using high-level scripting languages.* Armageddon Rhabdizo Brown, Lucian Popa, Mauricio Hernandez, Suresh Thalamati, Rajasekar Krishnamurthy, Georgia Koutrika, Ryan Wisnesky. Numbers 9535951 and 9,971,804B2, issued January 2017 and May 2018.
- *Data migration and integration system.* Eric Daimler, David I. Spivak, Ryan Wisnesky. Numbers 11,256,672 and 11720535, issued February 2022 and August 2023.