

Michael Hansen

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Indiana University Bloomington

Education

- **Ph.D. Student in Computer Science and Cognitive Science** (2009 - present)
 - Indiana University (IU), 3.98 GPA
- **M.S. in Computer Science** (2012)
 - Indiana University (IU)
- **B.S. in Computer Science** (2006)
 - University of Wyoming (UW)

Work Experience

- **Research assistant** for the [CREST Lab](#) at IU (2009 - present)
 - Wrote software for processing and rendering [plenoptic lightfields](#) using GPU shaders (C#, DirectX).
 - Implemented and optimized algorithms for [Schrieber's Transfer Entropy](#) measure, available in the [Transfer Entropy Toolbox](#) (MATLAB/C, C++).
 - Implemented algorithms in the [Boost Graph Library](#) for [McGregor common subgraphs](#) and [multi-dimensional grid-graphs](#) (C++).
- **Associate instructor** for [Advanced Operating Systems - CSCI-P 536](#) (Fall 2012)
 - Graded coding assignments and conducted one-on-one student code reviews.
 - Taught weekly lab section and several lectures.
- **Research intern** for the [Air Force Research Lab](#) (Summer 2012)
 - Designed and implemented a cognitively-enhanced complex event processing infrastructure using [Esper](#) and [Scala](#).
 - Created agents for a checkpoint scenario using [Unreal Tournament](#) and [Google Maps](#).
 - Assisted in the design of meta-models for the graphical development of behavioral models in the [Generic Modeling Environment](#).
- **Contract programmer** for [Quartermain Inc.](#) (2006 - present)
 - Implemented and maintained the [ExcelCube](#) spreadsheet consolidation desktop application (C#, Windows Forms, see link for details).
- **Student programmer** for the [Percepts and Concepts Lab at IU](#) (2008 - 2009)
 - Designed and implemented several cross-platform research games (C#, [Mono Framework](#), OpenGL). See [personal web site](#) for details.
- **Contract programmer** for [Logical Information Machines](#) (2007 - 2008)
 - Designed and implemented a desktop application for querying and visualizing stock-market data from an in-house time-series database (C#, [Windows Presentation Foundation](#)).
- **Contract programmer** for [HappyJack Software LLC](#) (2007-2008)

- Designed and implemented a student records web management system for the UW School of Nursing (C# ASP.NET, MySQL, 100's of students, 10's of users)
- Implemented a two-way synchronization plug-in for Microsoft Outlook and the web-based [Kalendi](#) product (C#, VB.NET, [SyncML](#))
- **Co-founder and programmer** for [chapaCode Inc.](#) (2003-2007)
 - Designed, implemented, and maintained web-based student management system for UW College of Education (C#, ASP.NET, SQL Server, 100's of students, 10's of users)
 - Implemented database and reporting website for The Center for Performance Assessment and the state of Nevada (C#, ASP.NET, Sqlite)
 - Designed, implemented, and maintained legal records and reporting system for the Laramie, WY City Attorney's office (C#, Windows Forms, SQL Server, Microsoft Word)
- **Student programmer** for multiple UW departments (2002-2005)
 - **Mechanical Engineering** (2004-2005): Implemented CALISYS program (see Honors and Publications).
 - **Student Educational Opportunities** (2004-2005): Administered student database, automated tasks and reports for staff.
 - **Admissions** (2003-2004): Administered database and automated tasks for staff (e.g. detecting duplicate students, assigning e-mail addresses).
 - **Computer Science** (2002-2003): Created utility programs for lab assistants to access Novell Directory Services.

Skill Set

- **Graphics and Game Development**
 - 2-D/3-D game development in OpenGL. Experience with DirectX, [SDL](#), [CUDA](#).
- **Databases**
 - Design and maintenance of production databases in MySQL, PostgreSQL, SQL Server, SQLite.
- **Web Development**
 - Design and implementation of data-driven websites (ASP.NET, PHP, Python, Ruby on Rails).
- **Programming Languages**
 - C# (9 years professional experience), C++ (10 years personal, educational experience)
 - C, Python, Java (5+ years personal, educational experience)
 - Scala (1 year professional experience)

Honors and Organizations

- **Nominated for UW Student Employee of the Year** (2006)
 - Nominated for my work on the Computer-Aided Laboratory Instruction System (CALISYS) project, a virtual lab environment similar to [LabView](#) for students to collect, manipulate, and visualize real-time measurement data (C#, [Windows Presentation Foundation](#)).
- **Microsoft Most Valuable Professional in Visual C#** (2004 - 2005)
 - Received for my work with the Wyoming ACM chapter as President and activity organizer.
- **4th place regional winner for Microsoft Imagine Cup** (2004)

- Received for the ShopNET application, which provided a 3-D multi-user environment for purchasing books from Amazon. Users inhabited a virtual bookstore that was populated with real products using Amazon Web Services. The application was written in C# and used a custom OpenGL engine which was compatible with Quake 3 maps and models.
- President of the Wyoming Association of Computing Machinery chapter (2003 - 2004)

Publications

- [1] Michael Hansen, Raquel Hill, and Seth Wimberly. Detecting covert communication on android. In *IEEE Local Computer Networks 2012 Conference*, 2012.
- [2] Michael Hansen, Andrew Lumsdaine, and Rob L. Goldstone. Cognitive architectures: A way forward for the psychology of programming. In *Onward! Workshop at the Third Annual SPLASH Conference*, 2012.
- [3] Shinya Ito, Michael E. Hansen, Randy Heiland, Andrew Lumsdaine, Alan M. Litke, and John M. Beggs. Extending transfer entropy improves identification of effective connectivity in a spiking cortical network model. *PLoS ONE*, 6(11):e27431, 11 2011.
- [4] Scott A. Morton, Robin Hill, and Michael E. Hansen. Progress in developing a computer aided laboratory instruction system. In *2007 Rocky Mountain Section ASEE Conference*, Provo, UT, April 2007.