

James J Rohal

Department of
Mathematics
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Education

- August 2007 – Present **Master of Science in Mathematics**, *Miami University*, Oxford, OH.
GPA: 3.9 (Cumulative)
- August 2003 – May 2007 **Bachelor of Arts**, *College of Wooster*, Wooster, OH.
GPA: 3.735 (Cumulative), 3.727 (Math major), 3.73 (CS minor).
- February 2006 – May 2006 **Budapest Semesters in Mathematics**, *Technical University of Budapest*, Budapest, Hungary.

Research Experience

- September 2008 – Present **Master's Thesis**, *Miami University*, Oxford, OH.
I am focusing my research on the nonlinear resource allocation problem. My advisor and I have developed an interior point algorithm that uses variable fixing to find a solution using MATLAB. The speed of this algorithm was increased by exploiting the relatively simple structure of the problem. By using an interior point method that converges quadratically, we were able to use Tapia indicators to identify variables to peg to upper and lower bounds, further improving the speed of our algorithm.
- August 2006 – April 2007 **Independent Study**, *College of Wooster*, Wooster, OH.
My focus was on problems proposed in the SIAM 100-Dollar, 100-Digit Challenge. I developed arbitrary-precision methods using interval arithmetic in *Mathematica* to calculate precise solutions that are verifiably correct.
- June 2006 – July 2006 **Research Experience for Undergraduates**, *University of Akron*, Akron, OH.
My REU group researched self-similar periodic tilings on nilpotent Lie groups. I had the opportunity to work with *Mathematica* and OpenGL to produce 3D graphical images.

Employment

- August 2007 – Present **Application Developer**.
Nintendo Network is a Facebook application that is funded via affiliate services offered through Amazon and GameFly. See <http://www.facebook.com/apps/application.php?id=7311467095>
- March 2007 – August 2007 **Prentke-Romich**, Wooster, OH.
I developed a web application in which participants of Continuing Education activities could receive certificates of completion and see upcoming events. It also allows event organizers to register and publicize their activities.
- August 2004 – May 2007 **Department of Mathematics**, *College of Wooster*, Wooster, OH.
Working as a tutor in the Math Center allowed me to help students with homework related questions. I also created study guides for tests. As a Teaching Assistant for Multivariate Calculus I helped answer questions during labs and rewrote labs in L^AT_EX for readability and compatibility with Maple 9.5. I also tutored a high school student in Geometry.
- May 2005 – July 2005 **Applied Mathematics Research Experience**, *College of Wooster*, Wooster, OH.
I served as a consultant for the Prentke-Romich company in Wooster, OH. My task was to add functionality to an existing web based Self-Study program. The Self-Study program allows an individual to take courses related to augmentative and alternative communication. These courses aid in assessment and intervention for the benefit of individuals with communication disorders.

Teaching

My primary teaching responsibilities include preparing and presenting all course lectures, writing course exams and quizzes, designing course projects and activities, and assigning student grades.

Fall 2007 & Fall 2008 **Precalculus with Algebra**, *Miami University*, Oxford, OH.
5 credit hours

Spring 2008 & Spring 2009 **Calculus I**, *Miami University*, Oxford, OH.
5 credit hours

Computer Knowledge

OS	Linux, Mac OS X, Windows	Scientific	<i>Mathematica</i> , Maple, MATLAB
Programming	Java, C, C++, OpenGL	Scripting	Javascript, PHP
Web Design	XHTML, CSS	Database	SQL, ODBC
Software	Adobe Photoshop, Adobe Illustrator, Cygwin, Microsoft Office	Typography	L ^A T _E X

Honors & Awards

Graduate Assistantship at Miami University.

NSF Student Travel Grant for 2007 Joint Mathematics Meetings in New Orleans.

Academic Achievement Scholarship.

Dean's List of Distinguished Students.

Organizations

AMS

MAA

Phi Beta Kappa

Pi Mu Epsilon

Posters & Presentations

- May 2007 Rohal, James J. *The SIAM 100.0000000-Digit Challenge: A Study in High Accuracy Numerical Computing Using Interval Analysis and Mathematica*. Senior thesis defense at the College of Wooster.
- March 2007 Rohal, James J. *Self-similar tilings of nilpotent Lie groups*. Colloquium presentation at the College of Wooster.
- January 2007 Hudelson, William P. and Rohal, James J. *Self-similar tilings of nilpotent Lie groups*. Presented during the AMS-MAA-SIAM Special Session on Research in Mathematics by Undergraduates, IV at the Joint Mathematics Meetings.
- January 2007 Hudelson, William P. and Rohal, James J. *Self-similar tilings of nilpotent Lie groups*. Poster presented during the MAA Undergraduate Poster Session at the Joint Mathematics Meetings.