

Dr. Michael Barnathan

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Objective: To utilize and refine my unique combination of interests, talents, and vision to perform significant purpose-driven work which changes the world for the better.

Selected Interests: Data Mining/Machine Learning, Computer Aided Diagnosis, Oncology, Neurology, Education, Data Structures, Software Development, and Artificial Creativity.

Technical Knowledge

Programming Languages: Java, C++, Visual Basic, Perl, Matlab, R, C#, Prolog, GOLOG.

Web Development: (X)HTML, CSS, JavaScript, SQL, Flash, XML, AJAX, JSP, Struts, jQuery, some RSS.

Development Tools: Visual Studio 2010, Eclipse, Spring, Maven, Hadoop (**Cloudera Certified Hadoop Developer**), NetBeans, vi, svn, cvs, gdb.

Database Systems: MySQL, Hive, SQLite, Microsoft Access.

Operating Systems: Windows (including Windows 7 Beta), Linux (Gentoo, RedHat/Fedora, Debian, Ubuntu), Mac OS X, DOS. Very experienced with Linux administration.

Productivity Software: Microsoft Office, Dreamweaver, Photoshop, OpenOffice.

Scientific Software: Maple, Matlab, Maxima, R, LyX, LaTeX, BibTeX.

Modeling Techniques: UML, E-R modeling, flowcharts, grammars/FSAs.

Education

Temple University Philadelphia, PA

Aug. 2006 – May 2010 **Ph. D.** in Computer and Information Sciences. **GPA: 3.92**
Aug. 2006 – Aug. 2007 **Master of Science** in Computer and Information Sciences. **GPA: 3.89**

Advisor: Vasileios Megalooikonomou.
Thesis Topics: Dissertation: Mining Complex High-Order Datasets, defended April 23, 2010.
Master's Project: Medical Image Data Mining System, published at ISBI 2008.

Fellowships: Temple University Fellowship, CST Dean's Scholarship.

Honor Societies: Member of the Golden Key International Honor Society.

Other Activities: Member of the Temple University ACM and CIS Faculty Selection Committee.

Monmouth University West Long Branch, NJ

GPA: 3.96

Sep. 2002 – May 2006 **Bachelor of Science** *Summa Cum Laude* in Computer Science, Math minor.

Awards: **\$5,000 Academic Achievement Award for the Highest GPA in the Class of 2006, Computer Science Award (2006), Dean's List:** All semesters.

Scholarships: \$6,000/year Monmouth University Scholarship, Dr. Harold Jacobs Scholarship for Excellence in Sci., Tech., or Engineering (twice).

Honor Societies: Phi Eta Sigma, Lambda Sigma Tau, Kappa Mu Epsilon, Omicron Delta Kappa, National Dean's List (twice). Officer of Lambda Sigma Tau (2005-2006).

Other Activities: President (2005-2006) and Vice President (2004-2005) of the Monmouth University Association for Computing Machinery (ACM) chapter. Member of the Science, Technology, and Engineering Advisory Council (2004-2009).

Recent Employment Affiliations

June 2010 – Present **Chief Software Developer**
Wixity

Led both frontend and backend development of Wixity's event recommendation platform and website using Java, Tomcat, Struts, JSP, Hibernate, Spring, Tiles, MySQL, HTML, CSS, and Javascript, including addition of new functionality and improvement of the entire existing codebase.

Dec. 2009 – July 2010 **Data Scientist**
Media Six Degrees

Applied machine learning, graph theory, and statistics to analyze and improve the company's sociographic targeting and conversion models, directly improving the advertiser's ability to accurately match users with relevant content. Designed graphical machine learning algorithms for classification, regression, clustering, KL, tf-idf, multidimensional scaling, and singular value decomposition using Java, Spring, Maven, Hadoop, Perl, R, and MySQL, serving as the link between data science and software development in the company.

Sep. 2008 – May 2009 **Adjunct Professor (of Computer Science)**
Monmouth University

Taught CS305 and CS503, Monmouth University's undergraduate and graduate courses in data structures and algorithms in Java, during the Fall 2008 (CS503) and Spring 2009 ([CS305/503](#)) semesters.

Aug. 2006 – May 2010 **Research Assistant and System Administrator**
Data Engineering Laboratory (DnLab), Temple University

Responsible for conducting formal research to advance the fields of data mining and bioinformatics, especially computer-aided diagnosis of biomedical images. Also responsible for administration of the lab's Linux workstations and servers after rapidly recognized for Linux competence.

Selected Publications 15 Total

TWave: High-Order Analysis of Spatiotemporal Data: By Michael Barnathan, et al. Published in Proceedings of the Pacific-Asia Conference on Knowledge Discovery and Data Mining 2010, Hyderabad, India, June 2010.

High-Order Concept Discovery in Functional Brain Imaging: By Michael Barnathan, et al. Published in Proceedings of the International Symposium on Biomedical Imaging, Rotterdam, April 2010.

A Representation and Classification Scheme for Tree-like Structures in Medical Images: Analyzing the Branching Pattern of Ductal Trees in X-ray Galactograms: By Vasileios Megalooikonomou, Michael Barnathan,

Despina Kontos, Predrag Bakic, and Andrew D.A. Maidment. Published in IEEE Transactions on Medical Imaging (2009), Vol. 28, Issue 4, pp. 487-493. **(Journal paper)**

A Texture-Based Methodology for Identifying Tissue Type in Magnetic Resonance Images: By Michael Barnathan, et al. Published in Proceedings of the International Symposium on Biomedical Imaging (ISBI) 2008, Paris, France, May 14 – 17, 2008.

A High-Level Language for Homeland Security Response Plans: By Richard Scherl and Michael Barnathan. Published in Proceedings of the 2005 AAAI Spring Symposium on March 22, 2005.

Relevant Personal Experience

Dec. 2007 – Present **Founding Director and Course Instructor, The Polymath Foundation**

Founded [an educational 501\(c\)\(3\) nonprofit](#) dedicated to establishing an interdisciplinary educational institution. Responsible for initial strategic planning, articulating the vision, designing the website, and recruiting the initial 9 directors, over 50 prospective instructors, and over 1,000 supporters. Currently leading the organization's outreach and fundraising drives by teaching [courses](#) in web development and cross-disciplinary reasoning.

Aug. 2006 – Nov. 2009 **Founder, HireGeeks.com / LanceRates.com**

Created [HireGeeks.com](#), a registered small business specializing in providing skilled services through freelance auctions, and [LanceRates.com](#), a companion freelance market rate analysis site. Responsible for all facets of business operation, including registration, accounting, legal research, web design (including development of over 20,000 lines of Perl code), marketing, customer service, dispute resolution, and public relations.

Sep. 1997 – Present **Software Developer, Metasquarer**

Developed, hosted, and supported [Metasquarer](#), an online game, from the age of 12. Promoted the game to a cumulative population of approximately 10,000 users. Developed over 70 revisions of the game, currently 27,596 lines of code in size, while providing documentation and support. Created an $O(n)$ algorithm to find squares within a grid and an AI opponent utilizing alpha-beta pruning from intuition years prior to learning the theory.

Oct. 1994 – Present **Web Developer and System Administrator**

Developed the [metasquared.com](#), [lancerates.com](#), [barnathan.name](#), [projectpolymath.org](#), [polymathlectures.org](#), [hiregeeks.com](#), [ecossaise.com](#), [letscompose.com](#), [ethereallamentations.com](#), [freelancemining.com](#), and [denlab.temple.edu/midms](#) websites, among others, using XHTML, CSS, Perl, MySQL, JavaScript, and Flash. Recently installed a complete “LAMP” hosting environment on a dedicated server from scratch, including Gentoo Linux, BIND, Apache, MySQL, Perl, PHP, Postfix, Dovecot, iptables, and other services. Responsible for timely completion and maintenance of website content, development of server-side scripts, and administration.

January 2000 PlanetSourceCode Superior Coding Contest Winner (of ~50,900 coders, Age 15)

Other Skills:

- Trained in formal logic (propositional, predicate, situation calculus, fuzzy, probabilistic).
- Proficient as a pianist and composer (including concert and music festival experience).
- Experience in photography, poetry, writing, philosophy, and game design.
- Broad, interdisciplinary, motivated, and creative approach to problem solving.
- Extremely independent and self-motivated.