CLARK ZINZOW

344 West Dayton St Apt 301 ◇ Madison, WI - 53703
(262) · 903 · 0034 ◇ czinzow@wisc.edu

OBJECTIVE

To do exciting and wide-ranging R&D work in both industry and academia, where I will use my mathematics and computer science training, strong analytical skills, persistent work ethic, and propensity for learning new methodologies quickly to help push projects toward their completion and advance the field as a whole.

RESEARCH INTERESTS

- Quantum computation theory
- Quantum machine learning
- Smoothed analysis of algorithms
- Quantum topological data analysis
- Categorical databases
- Quantum programming language theory
- Knowledge representation
- Spectral theory of self-adjoint operators
- Quantum domain theory
- Topological quantum computing

EDUCATION

University of Wisconsin, Madison *(expected) December 2015*
B.S. in Mathematics & Computer Science (in progress)

AFFILIATIONS

UW Math Club	Member since 2011.
Economics Student Association	Member from 2011-2013.
The Hub	Member since 2012.
The Physics Club	Member since 2013.
The UPL	Member since 2013.
Badger Entrepreneurs	Member since 2013.

PROFILE

I am an undergraduate, majoring in Mathematics and Computer Science, with interests in research and entrepreneurship. My undergraduate experience has not been conventional, in that I have devoted far more time to learning outside of the prescribed curriculum than within. This co-curricular program has consisted of sitting in on departmentally diverse lectures and seminars, talking to professors and students about their fields of interest, working through online lecture series, and reading an exorbitant number of books and papers. The subjects introduced to me through these multifarious learning activities have provided me with many profound insights into the underlying motivations of much of mathematics, while giving me extremely useful foundational knowledge of subjects outside of mathematics and computer science.

My fervent enthusiasm for subjects that I am interested in, coupled with my unrelenting self-teaching proclivities and the analytical digestion process through which all newly ingested information goes, allows me to confidently take on challenging new problems - while possessing minimal background knowledge - by quickly and self-sufficiently learning the requisite concepts to understand the problem, immediately followed by learning the appropriate methods to competently tackle the problem. My background in mathematics and computer science only expedites and strengthens this process, with well-formed problems that are reducible to mathematical formalism and/or computational models being particularly susceptible. I look forward to solving such problems for many years to come, and I am excited to see what interesting projects the future holds.

For more information about me and my interests, visit my personal website: clarkzinzow.me

PROJECTS

Ontological Project — A collection of mathematical structures and associated theorems, with a variety of interrelationships therein explored via category theory and implemented by morphism-representative data structures. (in progress)

Mathematics

Modified Nim Game research	Under the direction of Jordan Ellenberg. (in progress)
L_p **Tic-Tac-Toe research**	Under the direction of Jordan Ellenberg. (hiatus)
Planted Clique research	Under the direction of Jordan Ellenberg. (in progress)
Molecule reconstruction research	Under the direction of Jordan Ellenberg. (hiatus)
C*-algebras independent study	Under the direction of Gregory Shinault and James Sizemore. (Unaccredited, Summer/Fall 2013)
Operator Theory research	Looking for supervising professor. (Fall 2015)
Algebraic Topology research	Independent research. (in progress)

Computer Science

Quantum Artificial Intelligence research	Looking for supervising professor. (Fall 2015)
Quantum Domain Theory	Independent research. (in progress)
Smoothed Analysis of Algorithms	Independent research. (hiatus)
Categorical Databases research	Exploring schema mappings and data migration through category theory. (in progress)
Python Artificial Intelligence Sandbox	Implementation of various Artificial Intelligence algorithms and systems in Python. (in progress)
C++ Algorithms Library	Performance-centric library of frequently used algorithms implemented in C++. (in progress)

Professional

Flexy	Fitness-oriented social network, with native smartphone meet-up app. (hiatus)
MeetSnap	Contact information sharing app. (in progress)
The Vote Calculator	Ranked-Pairs voting web application constructed for the Madison City Council. (in progress)
ExploreWho	Company geared towards connecting students with their interests and professionals with their field of interest in the form of job shadowing experiences. Encourages peer-to-peer and student-to-professional connections through social network functionality and user-supplied content. (hiatus)

Note: For more information on these projects, visit my personal website: clarkzinzow.me

AWARDS AND HONORS

2013 Mathematical Contest in Modeling	Successful Participant
2011 Wisconsin State Math Meet	Team State Runner Up
2010 Wisconsin State Math Meet	Team State Champion

COURSEWORK

Mathematics

Class	Semester	Instructor
Math 319: Techniques of Ordinary Differential Equations	Fall 2011	Scott Anderson
Math 521: Analysis I	Spring 2012	Alexander Fish
Math 431: Introduction to Probability Theory	Spring 2013	Benedek Valko
Math 522: Analysis II	Spring 2013	Howard Becker
Math 551: Elementary Topology	Spring 2013	Mingzhong Cai
Math 541: Modern Algebra	Fall 2013	James Sizemore
Math 721: First Course in Real Analysis	Fall 2013	Brian Street
Math/CS 435: Introduction to Cryptography	Spring 2014	Nigel Boston
Math/CS 475: Introduction to Combinatorics	Spring 2014	Paul Terwilliger
Math 340: Elementary Matrix Theory & Linear Algebra	Summer 2014	Sharad Chandarana
Math 571: Mathematical Logic	Fall 2014	Terry Millar
Math 704: Methods of Applied Mathematics II	Spring 2015	Samuel Stechmann
Math/CS 715: Methods of Computational Mathematics II	Spring 2015	Saverio Spagnolie
Math 773: Computability Theory	Fall 2015	Joseph Miller
Math 846: Quantum Groups and Hopf Algebras	Fall 2015	Paul Terwilliger

Computer Science

Class	Semester	Instructor
Comp Sci 302: Introduction to Programming	Fall 2013	Deb Deppeler
Comp Sci 352: Digital System Fundamentals	Fall 2013	Michael Morrow
Comp Sci/Math 240: Introduction to Discrete Mathematics	Spring 2014	Jordan Ellenberg
Comp Sci 354: Machine Organization and Programming	Spring 2014	Karen Miller
Comp Sci 367: Introduction to Data Structures	Spring 2014	James Skrentny
Comp Sci 537: Introduction to Operating Systems	Fall 2014	Vijay Chidambaram
Comp Sci 540: Introduction to Artificial Intelligence	Fall 2014	Jude Shavlik
Comp Sci 577: Introduction to Algorithms	Fall 2014	Dieter van Melkebeek
Comp Sci 536: Intro. to Programming Languages & Compilers	Spring 2015	Mohammed Ansari
Comp Sci 640: Introduction to Computer Networks	Spring 2015	Aaron Gember-Jacobson
Comp Sci 699: Directed Study	Fall 2015	TBA
Comp Sci 760: Machine Learning	Fall 2015	Mark Craven
Comp Sci 787: Advanced Algorithms	Fall 2015	Shuchi Chawla

Note: See my personal website for details on co-curricular activities: clarkzinzow.me

EXPERIENCE

100State/100Health July 2014 - Present
Software Engineer/Web Developer *Madison, WI*

- Worked on software/web development projects focused on improving healthcare and helping the Madison community.
- Learned how to use agile software development frameworks for managing product development.
- Gained valuable experience developing with JavaScript and many JavaScript frameworks.
- Created applications using modern technologies, such as the MEAN stack.
- Learned many modern software development practices from former Epic software engineers.

Benefit Concepts Inc. January 2014 - Present
Technology Consultant/Web Developer *Whitewater, WI*

- Provided consultation on HR/payroll software systems, cloud services, and computer security.
- Researched HR/payroll software for inclusion in company's offerings (in order to compete with Zenefits).
- Researched and set up viable cloud services solutions for the company.
- Set up and maintained company's encrypted e-mail system via Microsoft Azure RMS.
- Recently started working on a new website for the company. (in progress, not deployed)

Northwestern Mutual Life Insurance Company December 2014 - May 2015
Technology Consultant/IT Support/Administrative Assistant *Milwaukee, WI*

- Provided consultation on enterprise software, cloud services, and computer security for financial advisor.
- Provided general IT support.
- Compiled information packets for prospective clients and took care of document format conversions.
- Learned how to make software and cloud services compliant with strict company-defined security standards.

Division of Information Technology at UW-Madison June 2014 - September 2014
Web Developer *Madison, WI*

- Performed web development contract work for a variety of UW-Madison departments.
- Created websites, WordPress plugins and themes, and provided general website maintenance.
- Extensive experience developing using WAMP/MAMP stack and programming in PHP, JavaScript, jQuery, SQL, and a variety of PHP/JavaScript frameworks.
- Learned how to complete a project efficiently via test-driven development, source control, issue tracking, and good programming practices, and how to work within a team of developers.
- Learned the proper practices for developing code on a local development instance, transferring the code to a development server once local tests succeeded, and eventually transferring to the production server once the live version of the product is available.

Purple Comet Math Meet March 2013 - April 2013
IT Support *Madison, WI*

- Assisted users of www.purplecomet.org with any difficulties with the website or with the math competition.
- Gained valuable people skills while assisting supervisors of math teams who were operating under stressful circumstances (competition ongoing, time therefore being important).
- Learned how to comprehensively manage a team registry, experience that can apply to many facets of data management.

TECHNICAL SKILLS

(1) Proficient Competency - Strong understanding of core concepts; very familiar with documentation.
(2) Intermediate Competency - Intermediate knowledge of core concepts; familiar with documentation.
(3) Basic Competency - In the process of learning core concepts and working through documentation.

Software Development

Programming Languages	(1) Java, C, C++, Python, PHP, MIPS Assembly Language; (2) Objective-C, Ruby, Perl, Visual Basic, Elisp, Scala, C#, X86 Assembly Language, MIX Assembly Language; (3) Swift, Haskell, MMIX Assembly Language, Go, Julia, Lua
Libraries	(1) JCL, STL, C++ Standard Library, Boost; (2) Commons Collections, Commons Math, Guava, STXXL
Frameworks	(1) .NET; (2) Qt, Hadoop
Testing Frameworks	(1) JUnit, googletest; (2) Arquillian, JTest, CxxTest, Boost.test, pyUnit; (3) CppUnit, TestNG, JWalk, Mockito, PowerMock, Fructose, The Grinder, py.test
IDEs/Text Editors	(1) Emacs, Vim, Sublime Text, Eclipse, Notepad++, Visual Studio, Python's IDLE;
Version Control Systems	(1) Git, Github, BitBucket, SourceTree, Mercurial; (2) Subversion, Team Foundation Server
Tools/Environments	(1) Bash, Windows, Linux, CASE, WinSCP, PuTTY; (2) PowerShell, SmartDraw, MacOS

Web Development

Programming Languages	(1) JavaScript, PHP, Python, Java, C++, Ruby, SQL; (2) Go, Perl, Scala, C#, CoffeeScript, ASP, TypeScript
Libraries	(1) jQuery, Underscore.js, React.js, Socket.IO
Markup Languages	(1) HTML5, XML, SOAP, XHTML, SVG
Stylesheet Languages	(1) CSS3, Less, Sass
Frameworks	(1) Bootstrap, Ionic Framework, Node.js, Ember.js, AngularJS, Sails.js, Backbone.js, Express.js, Underscore.js, PhoneGap, Zend, Laravel, CakePHP, Google Web Toolkit, Symfony, Spring; (2) Django, CherryPy, Meteor, Rails, Grails, Wt, CodeIgnitier, FuelPHP, Spark, Foundation, Servlet API, CppCMS, ASP.NET; (3) Log4j, SLF4J
Testing Frameworks	(1) Jasmine, Karma, Mocha, Chai, Sinon, Protractor (2) PHPUnit, Codeception
Content Mngmt Systems	(1) WordPress; (2) Drupal; (3) Joomla!
Database Mngmt Systems	(1) MySQL, MongoDB, PostgreSQL, Redis; (2) Cassandra, OrientDB, Neo4J, HBase, Couchbase, CouchDB; (3) RethinkDB, Kyoto Tycoon, MariaDB
IDEs/Text Editors	(1) Emacs, Vim, Sublime Text, Eclipse, Notepad++, NetBeans, Visual Studio, Python's IDLE;
Version Control Systems	(1) Git, Github, BitBucket, SourceTree, Mercurial; (2) Subversion, Team Foundation Server
Tools/Solution Stacks	(1) MEAN stack, NPM, Bower, Cordova, Restify, http-server, JSHint, Gulp.js, Grunt.js, Async.js, Connect.JS, PhantomJS, UglifyJS, Mongoose, AJAX, JSON, Codecov, Travis CI, CircleCI, WinSCP, PuTTY, (W $\oplus$ M $\oplus$ L)AMP, Photoshop, inDesign; (2) Jade, Composer, SmartDraw, Balsamiq

Numerical & Scientific Computing

Software/Environments	(1) Quartus, IPython, MATLAB, Sage; (2) APMonitor, Mathematica; (3) ND4J, Deeplearning4j, Torch
Programming Languages	(1) MATLAB, Python, C++, Java; (2) Wolfram, R; (3) LabVIEW, Julia, Maple, Verilog, Lua
Frameworks	(2) Cactus Framework; (3) OpenOpt
Libraries/Packages	(1) NumPy, SciPy, ScientificPython, mpmath, matplotlib, pandas; (2) PyACTS, PyDSTool, scikit-learn, mlpy, ALGLIB, PETSc, Boost, MLPACK; (3) ad, graph-tool, SpPy, SymPy, PyVISA, DUNE, Trilinos, Blitz++, Dlib, GSLMTL4, IT++, Eigen, SciLua
APIs	(3) PyGSL, PyIMSL, Quandl Python API
Markup Languages	(1) LaTeX; (2) MathML
IDEs/Text Editors	(1) Emacs, Vim, Eclipse, Visual Studio, Python's IDLE, TeXstudio
Tools	(1) Wolfram Alpha; (2) Numba, Hierarchical Data Format, CAD software;

FURTHER QUALIFICATIONS

Languages

Chinese	Beginner-conversational; 2 semesters; 3 years removed from practice
French	Beginner-conversational; 2 semesters; 5 years removed from practice
Spanish	Beginner-conversational; 3 semesters; 4 years removed from practice

EVENTS ATTENDED

Conferences, Workshops and Seminars

High Tech Happy Hour	Attended Madison tech community networking conference that, partnering with the Second Harvest Food Bank hunger relief organization, helped raise money to fight world hunger.	*August 2014*
Bridge the Gap	Attended Capital Entrepreneurs, Startup Milwaukee, 100state, Forward Technology Festival joint event aimed at brainstorming ideas for bridging Wisconsin's various startup communities.	*Januray 2014*

Math Competitions, Coding Competitions and Hackathons

MadHacks	Attended hackathon at the University of Wisconsin-Madison.	*April 2015*
MHacks IV	Attended hackthon at the University of Michigan.	*September 2014*
2013 MCM	Successful participant in 2013 Mathematical Contest in Modeling.	*February 2013.*

EXTERNAL LINKS

Personal Website	clarkzinzow.me
GitHub	github.com/ClarkZinzow
LinkedIn	linkedin.com/in/clarkzinzow
HackerRank	hackerrank.com/ClarkZinzow