

# Chad Brewbaker

SOFTWARE ENGINEER · CELL FORENSICS EXPERT

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## Education

### Drake University

Des Moines, Iowa

B.S. IN COMPUTER SCIENCE AND MATHEMATICS W BUSINESS MINOR

2001

- Drake Track, Combinatorics, Computer Graphics, Numerical Analysis, Differential Equations

### Iowa State University

Ames, Iowa

M.S. IN COMPUTER SCIENCE W MATHEMATICS AND COMPLEX ADAPTIVE SYSTEMS MINORS

2005

- Combinatorics, High Performance Computing, Bioinformatics

## Skills

### Certifications

Cellebrite Certified Logical Operator, Cloudera Certified Developer for Apache Hadoop

### Programming

Ruby, Python, C/C++, Bash, PHP, C#, JAVA, Haskell, LaTeX, Matlab, Mathematica

### Back End Frameworks

AWS Lambda, AWS S3, MPI, Postgres, SpatialLite, RabbitMQ

### Front End Frameworks

Qt, Django, GWT, JSP, Razor

### Web

Webdriver (Selenium), HTML5, CORS

### Dynamic Program Analysis

Unit testing, QuickCheck, AFL Fuzzing, strace, Valgrind

### Static Program Analysis

clang-analyzer, Z3 SMT Specification

## Experience

### Flying Dog Solutions

Clive, Iowa

PRINCIPAL

July 2016 -

- Cell phone forensics expert
- Enterprise architect for high performance data pipelines
- Custom solutions for large scale software safety

### DataCulture LLC

Clive, Iowa

CTO

May 2014 -

- Business model validation consulting
- Interim lead developer for real estate platform
- Custom franchise site for Midwestern Radon Supplies
- Cogwell for President campaign website
- Wuf Kickstarter Campaign
- Back end development for DuPont Encirca

### Pillar Technology

Des Moines, Iowa

SOFTWARE CRAFTSMAN

November 2014 - December 2015

- Embedded vehicle applications for John Deere
- Lease automation for John Deere Financial

### Modis

Des Moines, Iowa

TEST AUTOMATION

February 2013 - April 2014

- Webdriver automation for Nationwide's Commercial Internet Quote System
- Automated underwriting and commercial driving record enhancements

### Telligen

West Des Moines, Iowa

DEVELOPER

May 2011 - February 2013

- Development lead for Section 3004 of the U.S. Affordable Care Act, Hospice Quality Report
- Security remediation of legacy CMS PHP applications
- CMS health care Measure Authoring Tool

## Various

Iowa, Massachusetts, and New Mexico

### ANCIENT HISTORY

1996 - 2011

- Indianola HyVee Seafood Dept
- Jewett Hall Front Desk Monitor
- Drake Undergrad Computer Science TA
- Drake Math Tutor Lab
- Drake Computer Science Systems Administrator
- Avatech C++ AutoCAD Developer
- UMass NSF CIIR Java Video Analysis REU
- ISU Matlab Voronoi Quantization REU
- ISU Math Graduate Research Assistant
- ISU Computer Science Graduate TA
- Private HPC consultant for ISU Physicists
- Ames Lab/Sandia Dept of Energy Research
- ISU GAANN Research Fellow in Computer Engineering

## Speaking

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### Iowa Code Camp

DMACC, Ankeny, IA

#### SPEAKER

November 2015

- 57 Exercises for programmers: A test driven approach (2nd highest attended talk)

### Iowa .Net User Group

Gravitate, Des Moines, IA

#### SPEAKER

May 2016

- Programming with Algebra

### Des Moines ISSA

FBL Financial, West Des Moines, IA

#### SPEAKER

May 2016

- SMT and Me: The power of fuzzing and SMT solvers to find program errors.

### LambdaConf 2016

UC Boulder, Boulder, CO

#### SPEAKER

May 2016

- Programming with Algebra

### Iowa Ruby Brigade

West Des Moines, IA

#### SPEAKER

June 2016

- Introduced Distributed Ruby and Algebraic Program Refactoring

## Writing

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### A Combinatorial Interpretation of the Poly-Bernoulli Numbers and Two Fermat Analogues

INTEGERS: The Electronic Journal of Combinatorial Number Theory

#### AUTHOR

Volume 8(1) 2008

- A generalization of polynomials with application to discrete tomography.

### Exploring Endofunctions via Composition

Publication Venue TBA

#### AUTHOR

Expected December 2016

- An optimal subroutine for Babai's fast graph isomorphism algorithm
- A generalization of the AKS primality test
- Insight into the complexity of integer factorization and matrix multiplication