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# BRYAN C. WOLFFORD

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## SUMMARY OF QUALIFICATIONS

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- M.S. in Scientific Computing - GPA USA 3.3 (German 2.1) Aug.'19
  - Thesis titled, “GPGPU Accelerated Iterative Filtering of Scalar Fields on Discrete Manifolds”
  - Application area in Environmental Physics
- B.S. in Computer Science – GPA USA 3.8 (German 1.3) May '12
- A.S. in Computer Science – GPA USA 3.8 (German 1.3) May '10
- 14 years Software Engineering:
  - 14 years building web interfaces, independently designing and implementing new procedures, and authoring and publishing technical manuals
  - 10 years Java, PHP, SQL, JavaScript, XML, HTML, Git and SVN version control
  - 8 years C++, Python 2.x and Python 3.x, MatLab/Octave, Shell scripting, HTML5, CSS3, and JQuery
  - 8 years engineering long-lasting, mobile-enabled, RESTful, web interfaces and custom APIs
  - 8 years Windows- and Linux-based server administration including: Microsoft IIS, Apache httpd, Django, JBoss, Tomcat, SQL, MySQL, PostgreSQL, DNS, and FTP servers
  - 8 years developing and designing parallelized algorithms regarding numerical optimization, data analysis, machine learning, and artificial intelligence, as well as supporting numerous legacy software projects
  - 6 years utilizing frameworks and middleware: e.g., GWT, J2EE, Maven, Angular.JS, Ruby on Rails, Cucumber, RSpec, jUnit, Unittest, py.test, PHPUnit, Mockito, LuaUnit, and Bootstrap
  - 6 years manipulating and analyzing numeric time series data, and creating visualizations
  - 4 years automating data analysis processes, and training colleges
  - 2 years in CUDA/OpenCL, Boost, R, Lua, Lisp, PDDL, AutoIt, Angular.JS, VisualBasic, Maven, and Ruby
- OCAJP7 - Oracle Certified Associate, Java Programmer SE 7 Sep.'14
- Goethe-Zertifikat Deutsch A2 Aug.'19
- Continued education utilizing Coursera, edX, and Udacity for advanced courses in data analysis, software engineering, cryptography, statistics, and computer science theory; earning 20 certificates, 11 with distinction

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## EXPERIENCE

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**Scientific Researcher**, *Forensic Computational Geometry Laboratory - Heidelberg, Germany* Jun.'17-Jul.'19

- Awarded 2 research fellowships and 2 extensions under the German Excellence Initiative, following initial position
- Principle author of 2 official university websites: GigaMesh and the Forensic Computational Geometry Laboratory; co-author of the website of the Visualization and Numerical Geometry Group
  - Developed and implemented a new custom API for simply and safely exposing server data, stored in varying types and locations, used to populate official websites as well as the GigaMesh software framework.
  - Incorporated custom implementations of the frameworks: openlayers, bootstrap, jquery, and 3Dhop
  - Published details for 6 major events and conferences, from 4 years prior up to current offerings
- Designed and implemented new pipeline for semi-automated software compiling and publication of GigaMesh;
  - Compilation and package builds for Arch, Manjaro, Debian, and Ubuntu Linux,
  - Automatic news authoring, updates, and online publication

**Systems Analyst**, *eWorld Enterprise Solutions - Honolulu, Hawai'i, USA* Jun.'14-Jan.'15

- Inspired 6 other developers to train for and certify for OCAJP 7 exam
- Delivered 2 training presentations, Automating Processes and Unit Testing, to 36 developers, business analysts, and project managers.
- Independently completed 3 professional development text-books, 2 training courses, and 2 certification exams
- PHIMS: Port Harbor Information Management System for the Dept. of Accounting and General Services, Honolulu, HI
  - Identified performance issues and optimized multiple SQL transactions, reducing queries-per-transaction by more than 10 million and boosting average performance from 91.9 secs to 0.1 secs
  - Maintained full-stack legacy code developed by 12 teams from 3 different organizations, over 1.5 decades

- Designed and implemented new version-control branching strategy, migrating from SVN to Git, which enabled patching legacy system while developing new features
- Implemented Maven dependency tracking on legacy code
- Model Application
  - Spearheaded new project to fully capitalize on new and pre-existing assets
  - Integrated generalized adaptations of 42 features developed across 8 major products, including web services, notifications, database retrieval and manipulation, etc.
  - Learned for new framework, Angular.JS, then assisted in training 6 other developers. This team designed and implemented a full-stack, working prototype of a database driven, web-service based notification system in less than 80 total man-hours
- FAMS: Federal Award Management System for the Dept. of Transportation, Harbors Division, Honolulu, HI
  - Built on the legacy DataMart system used by more than 12,000 state employees, this system manages essentially all of the State of Hawai'i's digital records, especially regarding all federal awards (monetary) and their recipients managed by the state
  - Rapid, full-stack, Oracle database driven feature development in only 2.5 days, from no IDE or preexisting project knowledge to acceptance testing

**Lead Software Engineer, *Oceanic Institute at HPU - Waimanalo, Hawai'i, USA*** Sep.'11-Mar.'13

- Streamlined and integrated more than 100 databases, maximizing 30 years' worth of data for Hawai'i Marine Recreational Fishing Survey (HMRFS), National Marine Fisheries Service (NMFS), Western Pacific Fisheries Information Network (WestPacFIN), and National Oceanic and Atmospheric Administration (NOAA)
- Designed and implemented customized diagnostics that identified and repaired more than 5,000 errors found by combining database sets. WestPacFIN adopted my algorithm, which enabled recalculation and correction of published fisheries reports from the previous decade, and consequently improved accuracy of usable data by 40%
- Supervised and trained 5 researchers and graduate students in database technologies and methods; impacted multiple other major Oceanic Institute researcher projects
- Authored and published data definition tables and line-by-line user manuals to multiple agencies for 100% of the 115 pages of customized, diagnostic SQL code; equipped agencies to continue using my algorithms independently
- Developed flexible, Windows UI automation scripts using AutoIt and proprietary conversion applications to optimize the human-computer interface, significantly reducing time per conversion from 1.5 days to 6 seconds
- Developed MatLab software and tests for integrating multiple numeric time series data stores from multi-sensory inputs, using GIS tagging to automatically generate standardized, print-ready, scientific plots and graphs for publishing and analysis, significantly reducing time spent per transect from multiple weeks to 15 seconds
- Designed, developed, tested, and implemented data management policies for all current and future user accounts, scientific documents, and sensory data stores
- Designed and published user manual for all software and trained all members of organizationally-flat group of lab scientists, researchers, and engineers
- Integrated 7 high- and low-definition GIS resources (University of Hawai'i (UH), Hawai'i Pacific University (HPU), British Oceanographic Data Centre (BODC), NOAA, Google) for combined mapping of research results spanning 2009-2013
- Developed and tested new MatLab software to communicate with and control multiple Metrohm Dosimat 665 titration machines via RS232 serial ports (original 1988 software lost in 1992), eliminating the need for maintaining several pieces of legacy hardware
- Tutored Oceanic Institute's graduate students in the use of R for data analysis and Probabilistic Graphical Models with respect to Bayesian statistics and Hidden Markov Models
- Voluntarily attended all inter-departmental/lab collaboration meetings as well as met off-site, made use of instant messaging, social media, sms/text messaging, email and off-hour cell phone calls in order to interact with team members at every level of the project.

**Software Engineer/Owner, *Wolfford Logic, Houston, Texas, USA*** Jun.'05-Mar.'10

- Identified prospective clients and initiated contact; designed, marketed and sold specialized IT solutions and web design packages:
  - Developed multiple PHP/XML-based E-Commerce web sites; designed and maintained hardened, customized MySQL databases
  - Developed a SCORM-compliant Learning Management System (LMS) Portal for Aramark (One of Fortune Magazine's 2013 "World's most admired companies")
  - Performed network administration, systems maintenance, and repairs on workstations, servers, security systems, phone systems, and point-of-sale (POS) systems
  - Authored workflow manuals and database user guides for customized products
  - Designed and implemented new inventory nomenclature and SKU systems; custom-designed data entry procedures for POS system

## EDUCATION

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### Heidelberg University, Heidelberg, Baden-Wurttemberg, Germany

M.S. in Scientific Computing - GPA USA 3.3 (German 2.1) Aug.'19

Applicable Lectures, Seminars, and Practicals:

- Numerical Analysis of Ordinary Differential Equations
- High Performance Parallel Computing
- Algorithmic Optimization I (Non-linear Optimization)
- Intro to Computer Vision in 3D
- Algorithmic Optimization II (Linear Optimization)
- Environmental Physics
- Machine Learning for Computer Vision in 3d
- IT-Cyber-Security
- Intelligent Systems (Advanced System Theory)
- Compressed Sensing
- Numerical Optimization of Differential Equations
- Digital Image Processing
- Chaotic, Complex, and Evolving Environmental Systems
- Real Time Optimization and Control

### Coursera.org (all advanced tracks), edX.org, and Udacity.com

Practical Machine Learning	John Hopkins University	Mar.'15
Regression Models	John Hopkins University	Feb.'15
Reproducible Research	John Hopkins University	Feb.'15
Statistical Inference	John Hopkins University	Feb.'15
R Programming	John Hopkins University	Jan.'15
Exploratory Data Analysis	John Hopkins University	Jan.'15
Getting and Cleaning Data	John Hopkins University	Jan.'15
ESaaS: Managing Distributed Teams	UC Berkeley	Apr.'14
Computing for Data Analysis	John Hopkins University	Nov.'13
Cryptography I	Stanford University	Aug.'13
SaaS: Software as a Service – Engineering Long-Lasting Software	UC Berkeley	Aug.'13
Gamification	University of Pennsylvania	May '13
Machine Learning	Stanford University	Mar.'13
Neural Networks for Machine Learning	University of Toronto	Dec.'12
Probabilistic Graphical Models	Stanford University	Dec.'12
Web Intelligence and Big Data	Indian Institute of Technology	Nov.'12
Computing for Data Analysis	John Hopkins University	Oct.'12
Artificial Intelligence	Udacity.com	Oct.'12
Artificial Intelligence	Stanford University	Dec.'11
Machine Learning	Stanford University	Dec.'11

### Hawai'i Pacific University, Honolulu, Hawai'i

B.S. in Computer Science – GPA USA 3.8 (German 1.3) May '12

A.S. in Computer Science – GPA USA 3.8 (German 1.3) May '10

Applicable Courses:

- Assembly Lang. and Sys. Programming
- Discrete Math for Computer Science
- Database Technologies
- Mobile Programming (Android)
- Data Structures
- Mobile Design
- Algorithms
- Systems Analysis
- Operating Systems
- Artificial Intelligence I
- Advanced Programming in Python
- Adv. Artificial Intelligence II

## AWARDS AND HONORS

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- Awarded 2 research fellowships and 2 extensions under the German Excellence Initiative 2017 - 2018
- Chosen as the representative for Heidelberg University at the European Career Fair at Massachusetts Institute of Technology campus, Cambridge, Massachusetts, USA 2016
- 20 certifications, 11 with distinction, earned from 3 various MOOC platforms 2011 - 2015
- 6-time Hawai'i Pacific University's Dean's List laureate 2009 - 2011
- Summa Cum Laude graduate of Channelview High School, as Advanced Placement (AP) Scholar with Honors 2004
- AAAAA All-State 1st place winner Individual Web site Design; Computer Maintenance and Repair individual finalist, Vocational Industrial Clubs of America 2004
- AP Computer Programming team leader and individual award winner Compaq Code Wars 2002
- Winner of 81 TMSCA and UIL awards in Creative Math and Science competitions 1997 - 2001

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## PROFESSIONAL ORGANIZATIONS

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- YIII - Honor Society for the Computing Sciences
- IEEE - Institute of Electrical and Electronics Engineers
- ACM - Association for Computing Machinery
- Intertel - International Society of the Intellectually Gifted (99th percentile IQ)
- Mensa - International High IQ Society (98th percentile IQ)
  - Regional Webmaster/Coordinator for the Far West (9th region) 2014 - Present
  - Webmaster/Coordinator for Hawai'i and Pacific Islands 2012 - Present
  - Executive Committee - Member at Large 2014 - 2016
  - Mensa Hawai'i Scholarship Chair 2013 - 2015
  - Chair of Website Development Committee 2012 - 2015
  - Bylaws Development Committee 2012 - 2015
  - Gifted-Youth Assistant Coordinator 2012 - 2015
  - National Annual Gathering and Leadership Workshop Participation:
    - \* Boston, Massachusetts 2014
    - \* Ft. Worth, Texas 2013
    - \* Reno, Nevada 2012
  - Chair of Nominating Committee 2011
  - Chair of Elections Committee 2011
- ΣN - Men's Leadership Fraternity
  - Education Officer 2004
- ResearchGate - Research Affiliation and Projects profile at [https://www.researchgate.net/profile/Bryan\\_Wolfford](https://www.researchgate.net/profile/Bryan_Wolfford)
- Linked In - Professional profile at [www.linkedin.com/in/bryan-wolfford](http://www.linkedin.com/in/bryan-wolfford)
- GitHub - Open Source Programming profile at <https://github.com/brychrwolf>
- StackOverflow - Crowd-Sourced Programming Q&A profile at <http://stackoverflow.com/users/1239186/bryan-wolfford>
- TopCoder - Competitive Crowd-Sourced Programming profile at <http://community.topcoder.com/tc?module=MemberProfile&cr=22841718>

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## REFERENCES

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- **Dr. Dipl.-Ing. Hubert Mara**  
Junior Research Group Leader  
*FCGL - Forensic Computational Geometry Laboratory,*  
*IWR - Interdisciplinary Center for Scientific Computing*  
Heidelberg University  
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- **Dr. Susanne Krömker**  
Research Group Leader  
*vNGG - Visualozation and Numerical Geometry Group,*  
*IWR - Interdisciplinary Center for Scientific Computing,*  
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