RAINMAKER
CONSULTING RESOURCES

John Wallis

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Software Engineer, Computational Scientist, Application Developer

Professional Summary

Senior Software Engineer with over 30 years programming experience and degrees in Chemistry, Mathematics and Physics. Broad experience developing large and small projects throughout the application life-cycle.

Technical Skills

Programming Languages	**C++, C**, MFC, Visual C, Visual Basic (VB) , Visual C# {also MVVM, MVC, xaml}, ASP (.net), Java, VBScript, Adobe Air (mxml, JS, HTML5/Canvas) (Development in both managed and unmanaged environments), Php
Database	MS SQL Server, MYSQL, SQLite, Oracle, Adabas, (Dynamic) SQL, T-SQL, QLikView
Web	JAVA, JavaScript, CGI (Perl, c, c++), HTML, TCP/IP, Php
Other	Basic, Forth, Eiffel, Mathematica, Maple, ML(Hex), Delphi/Pascal, FORTRAN, Perl, bash (sed, awk, etc), Labview, ASM [**SSE***], Matlab, Powershell and DOS scripts, Excel, C51-Compiler(c and asm), WebGL
Environments	Multi-Threading, Multi-Process, Multi-forked, Parallel: Mpi Math (Linear Algebra, Blas, Lapack, SSE, GSL, …) , Graphics (xlib, QT, quaternion rotations, MFC Visual C, …), DDK, (Tortoise-)Subversion(SVN), STL, Github
Operating Systems	Windows Linux/Aix/Solaris OS2/Warp, Commodore 64, Nintendo, Cell phones (Tomcat/Wep/Java/VS)
Software	Visual Studio, Net Beans, Eclipse, Quark Xpress publishing, Excel, Word, PowerPoint, Visio

Education

Doctorate in Chemistry, Dr. Rer. Nat., University of Heidelberg, Heidelberg, Germany 2000-2003
"Development of a Spectrally Resolved Fluorescence 3D for Lifetime Imaging Microscopy Precision Measurements in the Nanometer Range"

Master in Mathematics, Minor Astronomy- Finite Elements, University of Heidelberg, Heidelberg, Germany 1997-1999
"Efficient Multi-grid Solvers for Poisson Problems in General Coordinates on Tensor-product Meshes"

Bachelor in Mathematics, Minor Physics, University of Heidelberg, Heidelberg, Germany 1997

Associates Degree in Liberal Arts - Honors
City Colleges of Chicago/University of Maryland, Heidelberg, Germany 1990

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Experience

Wildcat Development, Software Engineer (Oct. 2012 – Present), Oil & Energy industry

- Forum Energy Technologies (FET): (Oct. 2012 – Present) Develop a Windows/iphone/Android application that presents oilrig monitored data to engineers (Adobe AIR, mxml, **HTML5/Canvas, JS**)
  - Development of front end with gauges, graphs, text outputs and menus, user settings
  - Development of ASP.net/C# code for secure login and Historical report menus based on User Id and chosen rigs/wells
  - Develop table and queries with SQL Server 2008
  - Develop Web-service to import and evaluate csv-files to add columns to SQL-tables
- JurEase: (Nov. 2012)
  - Develop pdf output from within a c# program and general code logic assistance
- Dynamic Drilling Systems LLC: (Jan. 2013 – Feb. 2013)
  - Development and Enhancement of existing application using Infragistics, Carnac and Nevron Libraries
- Weatherford: (Feb. 2013 – Present)
  - Develop communication interface API with Beagle-board using c#, managed and unmanaged code
  - Consolidate, optimize and clean existing code
  - Develop and perform stress-tests
  - Program and coordinate Tray, riser-arm and pedestal motions (including anti-collision logic)
- OrthoAccel
  - Develop of Flash tool
  - Develop html/php/mysql code to interpret evolving data on device
- Canyon: A Helix Energy Solutions Company: (Feb. 2013)
  - Develop and enhance existing Labview program.
  - Developed a reusable vi module for variable unit selection and conversion
- *The* Deepwater Technology Company: (March –April 2013)
  - C#/Labview
- NOV (Oct - Dec 2017)
  - Development of c# code to read and monitor device. Development of two dimensional binning method to identify maxima. Error analysis report to identify range of measurements.
- Baker Hughes
  - Embedded C51 programming (included assembly) for Modbus communication using a ds89c450 chip
- GeoDynamics: (long term project: iPerf, java)
  - Perforation Simulation application
  - All aspects { interface, licensing, calculations, reports}
- Holt and Young: (March 2013 -) Legal Management System (LMS). LMS is the application that Holt & Young uses for invoicing and case management.
  - Weekly LMS Maintenance and Enhancements **-** Wildcat Development is responsible for providing regular support for LMS as needed. Much of the work surfaces due to specific circumstances or errors that the Holt & Young staff experience; however, scheduled enhancements are often provided under this work. These enhancements are communicated by Holt & Young and prioritized according to their need. Once the

hour threshold is exceeded for the week, development is paused until the following week. Timesheets are presented along with the invoice to validate work.
    - Develop a service to query an SQL Database at timed intervals, retrieve and log latest data to a file and save the last query time to the registry for the next run.
    - Add c# API functions for archival and append for ASP/VBScript application.
    - Develop module for automated invoice data entries from excel in an SQL database
    - Modify existing asp modules and stored procedures to enhance capabilities of existing program.
    - External Website development (php, mysql)
- Milton & Roy (March 2014)
    - Translate Odorant injection VB6 code to .net4 code. Add USB support. Include .net verion of Gigasoft ProEssential graphic library.
- DigitalWellFile: (March 2013 –) (ASP.NET)
    - Study code, Give suggestions regarding design, logic and optimization
    - Modify existing asp modules and stored procedures to enhance capabilities of existing program.
- Halliburton: (March – April 2013) InView (WPF/XAML)
    - Develop and implement a Gantt chart.
- ABS: (2013 –)
    - Review National Oilwell Varco (NOV), Nautronix and Cameron documentation
    - Develop FMECA and specialized FDD 'Review' template documents
- Wildcat
    - Add WIKI pages
    - Use SVN for all projects
    - Give daily and weekly reports
- Identity Automation
    - Two factor Authorization – Development of Server Side Web management{C#, javascript, xaml, MVC, MVVM } and Android/iPhone clients

Hewlett Packard, SQL Developer : Platform Software Engineering for ISS, Houston, Texas (Mar 2012 – Aug 2012) ESSN ISS Platform Software: HP Active Health System (AHS) Monitoring for HP ProLiant Integrated Lights-Out (iLo) Management Interface

- Project Excavator: (C++, Linux, Windows, SVN)
    - Enhance, troubleshoot and debug issues (Quix) that arise (Linux, Windows, (visual-)c++)
    - Add more verbose- and debug-mode output
    - Enhance , Clean, Test existing code
    - Communicate via XML with iLo chip
    - Document to explain current and new functionalities, error messages and parameters
    - Built and maintained a Subversion(SVN) for the project
- Project Aviator (Aviator Library)
    - Automate Aviator process (File Transfers, Storage)
- Windows 2008 server and SQL Server (Java, SVN)
    - Replace java WebDAV- with ftp-transport method to transfer AHS files to a Windows 2008 server
- SQL Server 2008
    - Develop reports: Use (Dynamic) SQL queries and stored procedures along with VBScripts and Excel macros to create and automate (scheduled) QLikView, CVS,

Excel (-pivot tables) and formatted PowerPoint Presentations from SQL and send email these reports to executives.
    - Usage of complex SQL queries including rank, case statements, joins, unions, sub-queries, triggers and temporary tables

Hewlett Packard, Windows Application Developer, Houston, Texas (Dec 2011 – Mar 2012)
Data-Center Infrastructure (Rack and Power)

- Greenland Project : Optimize efficiency of EcoPod cooling system
    - Mainly C# in the MS Visual environment
    - Simulation of the C# project in Java, Matlab and Excel
    - Used SQLite for to read weather database with optimized SQL queries
    - Includes TCP/IP SNMP communication, packet encoding and decoding
    - Some C++ code developed in MFC environment for SSE studies
    - Java to C# translation, Matlab Optimization and translation to C#, Development of optimization routines for EcoPods, Collaborate with teams in California
    - Usage of C# equivalent of STL objects
- Improve/Update models for garage components/replacements for Matlab placeholders
- Investigate non-model based optimization calculations
- Calculate and Suggest optimal supply-air and –water temperature set point(s) for/to Direct Controller and/or Programmable Logic Controller (PLC, structured text)
- Produce Functional and Technical documentation

Hewlett Packard, BIOS Firmware Developer, Houston, Texas (Jun. 2011- Dec 2011)
Innovation/Differentiation

- Enhance, Optimize part of UEFI which replaces BIOS (c, asm, Windows ddk, debugger)
- Projects (J01, K01)/Results:
    - Enhancements to MBR-Protection and Security, WMI CMI password correction, [build.2931],
    - Developed New Memory management logic for S4 Hibernation (Memmap reorganization, tests),
    - Implemented changes to realize UEFI specification 2.3.1
        - Expose and Implement through a protocol new raw hash SHA-256 functions (init, update, and finish) and functionality. Add interface to validate Signature + HASH + Public Key (currently only Signature + DATA + DATASIZE + Public Key)
        - Add logic for authenticated variable services, secure boot, add/append signatures/certificates (PKCS7, OpenSSL, ASN.1, DER, Certificates)
        - Write, modify and run EFI programs to test “Variable Services” and authenticated certificate processing
    - Develop and Implement Secure-Erase (for Startup Menu) logic. Test-Driven Developement
    - BiosConfigurationUtility (WMI) / Repsetup Debugging
    - Batch and Powershell Scripts used for compilation and certificate generation
- All developments, Fixes and test committed to a SubVersion(SVN).

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Korean Advanced Institute of Science and Technology (KAIST), Research Scientist, South Korea (Jun. 2010 –May 2011) **Global Navigation Satellite Systems Laboratory, Department of Aerospace Engineering**

- Objective: Development of a GNSS for Korean aviation. (Linux, C, C++, Matlab, Multithreaded)
    - Ground Based Augmentation System (GBAS)
    - Evolutionary GNSS
    - Integrity Theory
    - Integrity Generalization
- Visual C/ Windows: Implementation of a "Gold-" file (FAA/ NSTB) decoder. The program compiles satellite signal code into a 3d color coded representation of space weather above the Earth. Has user menu with options: save excel data, bmp/jpg snapshot and movie creation.
- Linux / C/C++: Development and optimization of an **Ionospheric monitoring/analysis program for differential GPS** (FAA, low visibility landing, CAT V)
    - Real-time multithreaded monitoring of 3+ GPS receivers over RS-232 serial ports
    - Program to send commands to control GPS-receiver output logs and their frequencies
- Performed Matlab optimization and replaced some Matlab code with c modules.
- Linux / C/C++/Matlab: Development and optimization of a **Long Term Ionospheric Analysis program**, Matlab to C translation: Resulted in a program that is over 300 times faster than the original.
- Java/PHP/CGI(PERL/C) Website
- Linux scripts to set/run tests, collect statistics and make gnuplots

Hannam University – Lecturer (June, 2008 – Jun. 2010)

- Classes: Toefl I, II, III, IV (English), Critical Thinking, Desktop Publishing and International News Analysis
- Design course syllabus, manage class learning flow, design tests, post grades, report to dean
- Development of an online education-enhancement using the *Claroline* (php) online education system. Use Excel to MySql database connection-queries and Excel-Macro/VBasic scripts for tracking student work, progress and homework assignments. Install DB-System and create tables

KAIST, Research Scientist, South Korea (Aug. 2009 – Oct. 2010) **Nano/Bio Structural Dynamics Lab – Department of Chemistry**

- Objective:
    - Simulation of Single Molecule **X-Ray Diffraction** and **Photo Acoustic Spectroscopy**
    - Protein Structural Dynamics: Time-Resolved X-ray Crystallography
    - Molecular Dynamics of Small Molecules, Nano-Scale Molecules and Macromolecules in Solution: Time-Resolved X-ray Liquid Diffraction
    - Time-Resolved Electron Diffraction
- Labview: set oscilloscope modes, adjust laser light travel length, adjust pinhole size, etc to gather/post-process data for Time-resolved photo-thermal spectroscopy.
- Windows/Visual C: Implementation of molecular structure analysis program using high performance methods. Resulted in a program that is over 22 times faster than the original.
- Windows/Visual C: Implementation of non-linear global fitting. Uses amoeba simplex and SVD methods. Has user GUI with multi-folder menus all sorts of buttons, text I/O.
- Windows/Linux/C: Multi-threaded/SSE program to analyze X-Ray diffraction data
- Other result: Routines for spherical harmonic calculations that are 15% faster than libraries formerly used by the students/section.

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KAIST University, Research Scientist, South Korea (Feb.2008- Aug. 2009)

- Research Multi-grid Techniques for **computational fluid dynamics** (CFD)
- Visual C/Fortran/CFD: Calculation, study and 3d visualization of pressure, velocity components.
- Teach differential and integral Calculus to a part of the student body.
- Help design final test for student body.

University of Maryland University Colleges, South Korea (2003 - 2007) Assistant Professor,

- Classes:
  - Algebra, Linear Algebra
  - Astronomy (with LAB)
- Design course syllabus, manage class learning flow, design tests, post grades, report to dean
- Attend numerous workshops given by UMUC + receive Certifications
- Travel throughout S. Korea
- Assist other professors with online tools

Ruprecht-Karls-University of Heidelberg - Physical Chemistry Heidelberg, De (2000 - 2003) , Research Scientist, Doctorate

- Visual C: Implementation of 3d visualization and analysis tools for **Fluorescence nano-scopy** in 3d. The program synchronized laser pulses and detected photons and controlled the motion of a 3d nano-precision motion-table and saves the data in real time.
- Has user GUI with multi-folder menus all sorts of buttons, text I/O, modeless dialog windows, scrollbars, multi-views, etc.
- Assist professors by reviewing, testing and grading students in various subject matters including calculus, complex analysis and linear algebra.
- Linux/WebPages/PHP/PERL: Develop dynamic member and seminar announcement pages (mysql, cgi)

Ruprecht-Karls-University - Reactive Flow, Diffusion and Transport Heidelberg, De (Nov. 1997 – May. 2003) , Research Scientist, Masters

- (FORTRAN, UNIX, Linux, parallel computing): *"Efficient Multi-grid Solvers for Poisson Problems in General Coordinates on Tensor-product Meshes."*
- Develop, benchmark and optimize the CFD packages: FEAT, FEAST, FEATFLOW (now in Dortmund, Germany) http://www.featflow.de/en/index.html
- Development, testing and optimization of high performance finite element solvers used for **computational fluid dynamics** (CFD) and astrophysics on heterogeneous, highly-parallel computing platforms
  - Write interfaces to test various **finite element** (FEM) types (constant, linear, bi-linear, bi-quadratic, bi-quadratic rotated, etc)
  - Write and bench-mark several pre-conditioners
  - Write and bench-mark prolongation/restriction routines
  - Develop optimized block matrix strategies
- Examine performance of varying aspect ratios, meshes and Cartesian, cylinder and spherical coordinate systems
- Examine performance of various grids and prolongation/restriction/block techniques for **multi-grid-solvers**
- Simulation of driven cavities, Venturi Pipe, accretion disks and black holes (astronomy).
- Linux scripts to set/run tests and compile output data into Latex, etc

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Falcom Engineering (On Call 1995 – 2003)

- •Linux installation and Administration, Troubleshooting
- •Website development and maintenance (HTML, Java, JavaScript, sql ...)
- •Develop database structure and automation for a telephone company
- •Java implementation of Tarot Game (HTML, Java, JavaScript, sql ...)
  Install DB-System and create tables

SNP Wiebligen , De (1999 - 2000) Programmer

- Develop a web-based schedule-program: NT-**Service** to monitor a pop3 mail server, interact with Excel and transfer data into and from a database using SQL.
- Team project development of web-based Visual-Basic script scheduler program for SAP customers
- VRML website alternative for the company
- Java website alternative for the company: Complex math (links on a sphere) site navigation

G-Logic Software Heidelberg , De (1995 - 1998) Programmer

- Development of new **modules** for a statistical-graphics program. (FORTRAN, ASM, VBasic, C/C++ and cross language interfacing)
- C-code optimization of a chemical regression analysis program. Result: Optimized program that is 20% faster
- Customer support and development of special customer modules, etc in various programming languages
- Development of Postscript Printer Drivers
- Program hardware modules with assembler. Result: Working code and report hardware bugs found to the manufacturer.
- Translation of graphic output to windows metafile format (wmf).

IBM Heidelberg , De (1993 - 1995) Systems Administrator

- OS2/Warp administrator, local resident PC-guru …
- OS Installation
- Printer supervision

Certificates from the "University of Maryland" (for Professors)

Face-to-face/**Online teaching** Workshop	"Software and Technology Applications for WebTycho Enhancement" Part 1 & 2, Nov. – Dec. 2006
Faculty **WebTycho** Training Course"	May – June 2006
Interdisciplinary Workshop: Classroom **Assessment Techniques**	Oct 2005
Natural Science Faculty Workshop	April 2006

Publications

Wallis, J.: Methods toward better Multi-grid Solver Convergence, June 1, 2008, *arxiv.org*

Wallis, J.: *Efficient Multi-grid Poisson Solvers in General Coordinates on Tensor-product Meshes*, Master's Thesis, 1999

Wallis, J.: "***Development of a Spectrally Resolved Fluorescence 3D for Lifetime Imaging Microscopy Precision Measurements in the Nanometer Range***" PhD Dissertation**, University of Heidelberg, Heidelberg, Germany 2003**

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Turek, S.; Altieri, M.; Becker, Ch.; Kilian, S.; Oswald, H.; Wallis, J.: *Some Basic Concepts of FEAST*, Notes on Numerical Fluid Mechanics, Proc. 14th GAMM Seminar `Concepts of Numerical Software`, Vieweg, 1998

"Anomalous small-angle x-ray scattering from mercury labeled ubiquitin in solution for structural characterization", 김영민 이재혁 김장배 *Wallis John Taylor 이효철KAIST 화학과 *한국과학기술원 화학과, Poster for April 16, 2009 KCS Meeting

Jungkweon Choi, †,§ *Srinivasan Muniyappan,* †,§ *John T. Wallis,* ‡ *William E. Royer, Jr.,* ‡ *Hyocherl Ihee,* †, .*JACS Received 16-Jul-2009, "Conformational Dynamics and Thermodynamics of Homodimeric Hemoglobin from *Scapharca inaequivalsvis"*

Pending: "XSOL: A new program to calculate a SAXS/WAXS curve from atomic coordinates", John Wallis, H. Ihee

Jungkweon Choi, Dr.[1]†, Srinivasan Muniyappan[1]†, John T. Wallis, Dr.[1], William E. Royer Jr.[2], Hyotcherl Ihee, "Protein Conformational Dynamics of Homodimeric Hemoglobin Revealed by Combined Time-Resolved Spectroscopic Probes", ChemPhysChem Volume 11 Issue 1, p 109-114

Other Experience

Radio Show: (Far-East Broadcast 93.3) [Korea] Oct, 2010 "Our Daily Bread"

I can communicate in German.

Wrote an assembler for the 65816 chip: I had a 4MHz Commodore 64 with 500Mb and got tired of HEX programming.

I wrote a c-compiler with a basic hash/index function for quick variable queries during my studies at the Ruprecht-Karls-University of Heidelberg.

At the Ruprecht-Karls-University of Heidelberg I participated in 4 semesters of Database theory/principles and technology (Oracle).