

# CURRICULUM VITAE

## JOY KHORIATY

### Education

[2004 - 2005]

- Masters of Science (MSc) in High Performance Computing (HPC), Edinburgh Parallel Computing Center (EPCC), University of Edinburgh, UK.  
MSc thesis entitled “Kernel Performance on QCDOC”, supervised by Joachim Hein and Peter Boyle

[1999-2002]

- Bachelor of Science (BSc) in Computer Science, American University of Beirut (AUB), Beirut, Lebanon

[1998-1999]

- French Baccalaureate Diploma with emphasis in Mathematics, Lycee Francais, Jbeil, Lebanon

### Experience

[Jan 2011 - Present] – CTO - Nextly

[Sep 2008 - Present] – Principal - Joylab

Launched Joylab, a technology consulting and development company with emphasis on early stage startups.

- Designed a multi-agent system for automating submissions to online resources
- Built an inventory driven web application that creates a store front and automates listing/relisting/scheduling products on eBay
- Built a web application for posting long twitter messages that includes its own base32 url shortening system with API
- Developed a Linux based access control system that supports role based authentication
- Managed (setup and monitoring) client servers used for high load product launches including Apple Xserve and Linux servers

[Jan 2006 - Aug 2008] – Research Physicist - MIT

Working at the MIT Nuclear Science Laboratory on optimizing QCD codes on our BlueGene system called Bugle.

- Administering Bugle as well as the associated 70TB+ parallel storage (PVFS2 filesystem)
- Writing disk monitoring system for tracking S.M.A.R.T attributes from a clustered 400+ disks storage system and indicating pre-failures
- Maintaining internal documentation for Bugle usage and website
- Helped develop a gcc extension that generates optimized SIMD instructions for the BlueGene double hummer
- Benchmarked USQCD Chroma codes on Bugle, as well as PVFS2 performance
- Wrote build scripts to simplify automated build/installation/test of Chroma/QLA/QDP

- Wrote test libraries for the QLA 2000+ linear algebra function calls

**[Sep 2005 - Dec 2005]** – Applications Consultant - EPCC

Developed a prototype supercomputer based on FPGAs in collaboration with partners from industry (FH-PCA)

- Built, installed and tested the prototype system with Alphadata and Nallatech FPGA boards, backplane and SBC.
- Profiled OHM (oil surveying simulation) and LINPACK
- Examined issues involved in porting the Parallel Toolkit (PTK) onto the system
- Wrote Test Units for the Parallel Toolkit library (PTK)
- Setup build environments for OHM/PTK, as well ToyApp, linear allocator, matrix multiplier, boundary swapper, global summer

**[Sep 2004 - Sep 2005]** – Software Development - EPCC

- Ported image processing kernels, FFT kernels, and benchmark codes to the QCDOC, BlueGene, and HPCx systems and benchmarking them. This work includes implementing basic collective message passing type routines.(Scatter, Gather, All-to-All)
- Implemented a parallel version of TRED2, a program derived from the eigenvalue analysis package EISPACK, which reduces a real symmetric NxN matrix to tridiagonal form using OpenMP
- Parallelized an image processing code which reconstructs an image from its edges using Jacobi iterations in a 2-dimensional domain decomposition with halo swapping using MPI
- Optimized a serial Molecular Dynamics code for the Sun 15K server using techniques such as array padding, loop interchange, fusion, unrolling, and function inlining as well as exploiting compiler expertise

**[Sep 2001 - Aug 2004]** – System Administrator - CAMS / AUB

Responsible for the well-being and growth of the heterogeneous network at the Center for Advanced Mathematical Sciences (CAMS) where I administered over 30 clients (Linux, True64, Windows), 3 servers (Mail, Web, Samba, NFS, NIS, Squid), and 3 parallel computing clusters.

- Assisted in the bidding and acquisition process of the CAMS high performance cluster Ibnsina, an IBM Cluster 1600 of 8 p630 nodes (16xPOWER4 processors) interconnected via an SP2 switch
- Planned and conducted the installation and setup of Ibnsina
- Taught mini-courses on using Ibnsina; this included working with the parallel environment(POE), compiling programs (C,C++,Fortran), using the loadleveler system, and debugging/profiling
- Supported end-users in porting, running, debugging, profiling and optimizing their parallel programs
- Built and set up a 8 node Intel cluster(Alkhayyam) for running development jobs.(LAM/MPI, OpenPBS)
- Created the CAMS website, which uses dynamic pages generated from a MySQL database using PHP

**[Apr 2002 - May 2002]** – Consultancy

Guided Compaq's Lebanon representatives, Middleware Data Systems(MDS), in the setup of a High Availability Cluster (HACMP)

- Presented the MDS staff with key HACMP concepts such as heart-beats, multi-homing, and transparent failovers

[Apr 2000 - Jun 2000] – Web Development

Designed the American University of Beirut Chemistry Department website

- Acquired proficiency in design using Macromedia Dreamweaver, Photoshop, and web development using PHP and MySQL

## Skills

### Familiar HPC Platforms

IBM BlueGene Systems (Bugle, BlueSky), QCDOC Supercomputer, IBM p690+ Regatta Clusters (HPCx), IBM p630/SP2 Clusters (Ibnsina), Sun SunFire 15K (Lomond)

### Parallel Environments

MPI (preferred), OpenMP, POE, PVM, OpenMosix, Globus

### Benchmarking Tools

Linpack (HPL), NAS (Serial and Parallel), STREAM

### Programming/Scripting Languages

C (preferred), C++, Fortran/HPF, Java, Scheme, Bash, Perl, PHP, XML/Ajax, SOAP, REST (Web services/APIs)

### Web Programming

Ruby, PHP, Javascript, jQuery, HTML5, CSS3

### Web Technologies

Websocket, PubSub, Ajax, SOAP, REST (Web services/APIs), HTML5, CSS3

### Web Frameworks and Libraries

Ruby on Rails (RoR), CakePHP, Sencha (ExtJS, Sencha Touch), jQuery

### Instrumentation/Profiling/Debugging

GDB, HPMcount, Totalview, Vampir

### Server Applications

Apache, Nginx, Node.js, Bind, Exim, PostFix, Dovecot, SendMail, IPtables, MySQL (preferred), DB2, MySQL, MongoDB, Redis, PostgreSQL, Samba, SSL, Squid

### Server Monitoring and Security

Nagios, Munin, Nessus, Chkrootkit, Rkhunter, Ettercap, Wireshark, Ethereal

### OS Environments

AIX, Digital Unix (True64), Linux (Debian, Gentoo, LFS, Mandrake, RedHat, SUSE), Mac OS X, Plan 9, Solaris, Windows (2000, XP)

### Visualization Tools

AVS Express, VTK

### Authoring

LateX, Markdown

### Code Repositories

Git, SVN, CVS

## Certifications - Affiliations - Training

IBM Rochester Blue Gene/L System Administration Training - March 2006

LPI (Linux Professional Institute) Level I - February 2004

IBM Certified Specialist in pSeries System Support - November 13, 2003

IEEE member for 7 years

## Conferences - Schools - Workshops

[Jun 24-28, 2007] - “Scientific Discovery Through Advanced Computing”, Boston, USA  
[Jan 27-28, 2006] - “QCD BlueGene/L Software Workshop”, Boston, USA  
[Oct 4-6, 2005] - “QCDOC and BlueGene: Next Generation of HPC Architecture”, Edinburgh, UK  
[May 31-June 3, 2005] - “IBM Scientific Computing Conference - Scicomp 2005”, Edinburgh, UK  
[Apr 13-14, 2005] - “UKQCD HackLatt Workshop...a workshop on lattice QCD codes”, Edinburgh, UK  
[Feb 21-22, 2005] - “Technical Symposium on Reconfigurable Computing with FPGAs”, Manchester, UK  
[Jul 19-23, 2004] - Organizing Committee Member for the “ACS/IEEE International Conference on Pervasive Services (ICPS’2004)”, Beirut, Lebanon  
[Dec 18-21, 2002] - “9th International Conference on High Performance Computing”, Bangalore, India  
[Jul 08-19, 2002] - “First Middle East/North Africa Summer School on Parallel, Distributed, Mobile and Internet Computing”, Beirut, Lebanon

## Publications - Articles

“Deep Into BlueGene, Open Technologies in a Petaflops Supercomputer”, Khoriaty J., Linux World magazine feature (<http://www.linuxworld.com/story/48131.htm>), Feb. 1 2005, 34-37, 46.

“Kernel Performance on QCDOC”, Khoriaty J., *MSc Dissertation*, University of Edinburgh, Aug. 2005

Work in progress:

“Accelerating Supercomputers, FPGAs, GPUs and the Cell Processor”, Khoriaty J.

## Personal

Languages: Fluent in Arabic, English, and French. Basic German. Learning Swedish.

## Interests

### Parallel Computing

Interested in new ways to build, manage and program Massively Parallel Systems (MPPs) – currently following up on the issues involved with using FPGAs

### Web Services and Data Mining

I’m maintaining personal codes which tap into existing web services in media/trade/news then generate recommendations and predictions

### Open Source

I am an active member in the Lebanese Linux User Group, I was president of the LUG in 2002

## References

References are available upon request. They include people from both academia and industry

## Contact

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