

Gaurav Mitra

CONTACT INFORMATION

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RESEARCH INTERESTS

Energy Efficient High Performance Computing, Computer Architecture, Real Time and Embedded Systems, Concurrent & Distributed Systems, Machine Learning, Computer Vision

TERTIARY EDUCATION

Australian National University, Canberra, ACT, Australia

Doctor of Philosophy - Computer Science

February 2011 – Present

- Panel: Prof. Alistair Rendell and Dr. Eric McCreath (ANU), Dr. Jun Zhou (Griffith)
- Research Statement: Low-powered System-on-chips are effective building blocks for energy efficient high performance cluster computers
- Research Objectives:
 - Effective utilization of disparate processing elements on low-power SoC's
 - Evaluation of processing element capabilities on low-power SoCs including CPU, FPU, SIMD vector unit, GPU, DSP for different HPC workloads
 - Evaluation of cluster programming models including Hybrid OpenCL+MPI, OpenMP Accelerator+MPI, OpenCL+PGAS(UPC/X10) and OpenMP Accelerator+PGAS
 - Build hardware and software framework for high resolution measurement of energy and power consumption on ARM SoCs

Bachelor of Software Engineering(Hons.)/Bachelor of Science **February 2006 – December 2010**

- Graduation date: 10th December, 2010
- Degree Average : **77% (Distinction Average)** over 42 courses
- Honours Grade: **Second Class, Division A**
- Majors : Software Engineering, Mathematics, Computational Modeling
- Significant projects completed during coursework :
 - *Project Name* : The Linux Robotics Framework
Supervisor : Ms. Lynette Johns-Boast, ANU
Description : Open-source C library API that provides standardized interfaces for the development of basic robotics functionalities such as servo control, motor control, kinematics, navigation etc. Portable across several architectures including the Atmel AVR32, ARM and the Intel x86. **This project won the 2009 AIIA National iAward in the tertiary project category.** www.iawards.com.au.
 - *Project Name* : Query Interface for Semantic Web Services
Supervisor : Dr. Xuan Zhou, Dr. Athman Bouguettaya, CSIRO
 - *Project Name* : A Web Service Request Language
Supervisor : Dr. Xuan Zhou, Dr. Athman Bouguettaya, CSIRO

PUBLICATIONS

- **Gaurav Mitra**, Eric Stotzer, Ajay Jayaraj, Alistair P. Rendell. *Implementation and Optimization of the OpenMP Accelerator Model for the TI Keystone II Architecture*, 10th International Workshop on OpenMP, IWOMP 2014, Salvador, Brazil, September 28-30, 2014.
- Anish Varghese, Robert Edwards, **Gaurav Mitra** and Alistair P. Rendell. *Programming the Adapteva Epiphany 64-core Network-on-chip Coprocessor*, Parallel and Distributed Processing Symposium Workshops & PhD Forum (IPDPSW), 2014 IEEE 28th International. IEEE, 2014.
- Eric Stotzer, Ajay Jayaraj, Murtaza Ali, Arnon Friedmann, **Gaurav Mitra**, Alistair P. Rendell, Ian Lintault. *OpenMP on the Low-Power TI Keystone II ARM/DSP System-on-chip*, 9th International Workshop on OpenMP, IWOMP 2013, Canberra, Australia, September 16-18, 2013.
- **Gaurav Mitra**, Beau Johnston, Alistair P. Rendell, Eric McCreath, Jun Zhou. *Use of SIMD Vector Operations to Accelerate Application Code Performance on Low-Powered ARM and Intel Platforms*, Parallel and Distributed Processing Symposium Workshops & PhD Forum (IPDPSW), 2013 IEEE 27th International. IEEE, 2013.
- **Gaurav Mitra**, Xuan Zhou, Athman Bouguettaya and Xumin Liu. *A Request Oriented Model for Web Services*, 1st Australasian Web Conference (AWC 2013), Adelaide, South Australia. Conferences in Research and Practice in Information Technology (CRPIT), Vol. 144, pages 13-20, 2013.

SECONDARY EDUCATION	Don Bosco School , Park Circus, Kolkata, India	March 1993 – March 2005
	<i>Higher Secondary Level, 2005</i> <ul style="list-style-type: none"> Indian School Certificate (ISC): 93.25% (Within top 0.3%) <i>Secondary Level, 2003</i> <ul style="list-style-type: none"> Indian Certificate of Secondary Education (ICSE): 94.4% (Within top 0.2%) 	
EMPLOYMENT EXPERIENCE	Texas Instruments Inc. , Houston, TX, USA	
	<i>Software Engineer Intern</i>	November 2013 – July 2014
	Implemented the OpenMP 4.0 Accelerator Model runtime and shell compiler in C++ for the TI Keystone II ARM/DSP System-on-chip.	
	Supervisors : Ajay Jayaraj, Dr. Eric Stotzer.	
	nCore HPC LLC. , Silicon Valley, CA, USA	
	<i>Software Engineer</i>	July 2013 – October 2013
	Software tools development for the nCore BrownDwarf ARM/DSP supercomputer.	
	Manager : Ian Linlault.	
	Australian National University , Canberra, ACT, Australia	
	<i>Tutor/Teaching Assistant</i>	July 2014 – Present
	Computer science unit: Operating Systems Implementation (COMP 3300).	
	Course lecturer : Dr. Eric McCreath (2014).	
	<i>Tutor/Teaching Assistant</i>	July 2009 – November 2009, July 2010 – November 2010
	Computer science unit: Concurrent & Distributed Systems (COMP 2310).	
	Course lecturer : Prof. Alistair Rendell (2009), Dr. Felix Shill (2010).	
	<i>Tutor/Teaching Assistant</i>	February 2010 – June 2010, February 2011 – June 2011
	Computer science unit: Introduction to Programming and Algorithms (COMP 1100).	
	Course lecturer : Dr. Clem Baker-Finch.	
	<i>Tutor/Teaching Assistant</i>	February 2013 – June 2013
	Engineering unit: Systems Engineering Design (ENGN 2225).	
	Course lecturer : Chris Browne.	
	National ICT Australia , Canberra, ACT, Australia	
	<i>Visiting Researcher (Software Engineer)</i>	August 2009 – May 2010
	C/C++ software development for ARM embedded systems in the InterfereX project at NICTA Canberra Research Lab. Project Leader : Dr. Mark Reed.	
	Burton & Garran Hall , Canberra, ACT, Australia	
	<i>IT Assistant / Webmaster</i>	February 2009 – November 2009
	Residential scholar with a portfolio of IT Assistant / Webmaster for residents of the hall.	
	CSIRO , Canberra, ACT, Australia	
	<i>Vacation Scholarship Student</i>	November 2008 – February 2009
	Implemented a semantic web search engine in Java while working in the Web Services Division at CSIRO, ICT Center, Canberra.	
	Supervisor: Dr. Xuan Zhou, Dr. Athman Bouguettaya	
EMPLOYMENT EXPERIENCE (PASTORAL CARE)	Unilodge@ANU , Canberra, ACT, Australia	
	<i>Senior Residential Scholar</i>	January 2013 – October 2013
	Responsible for incident and first-aid emergency response, pastoral care. Scholarship of \$5000.	
	Burton & Garran Hall , Canberra, ACT, Australia	
	<i>Summer Senior Residential Scholar</i>	November 2008 – February 2009
	Responsible for residence warden duty during the summer period.	

AWARDS AND SCHOLARSHIPS

- **Microsoft Imagine Cup Australia, 2011,** Placed 3rd in Australia for developing “Social Alert“- Disaster Response and Management System
- **Australian Postgraduate Award, Aug 2011 - Present,** Australian Government PhD stipend scholarship of \$24,653 per annum replacing CSIRO stipend as a result of getting Australian permanent residency.
- ANU Miscellaneous Scholarship, Feb 2012 - Present, ANU PhD stipend top-up scholarship of \$7000 per annum.
- CSIRO OCE Postgraduate Top Up Scholarship, Feb 2011 - Feb 2012, PhD stipend top-up scholarship of \$7000 per annum.
- CSIRO ICT Centre Postgraduate Research Scholarship, Feb 2011 - Aug 2011, PhD stipend scholarship of \$20,000 per annum.
- ANU HDR Merit Scholarship, Feb 2011- Aug 2011, Covers full international student tuition fees for entire duration of PhD.
- **AIIA National iAward,** Australian Information Industry Association (AIIA), Callista Tertiary Student Project Category, for the Linux Robotics Framework, 2009 Participated in the Asia Pacific ICT Awards, Melbourne 2009.
- **ANU International Undergraduate Scholarship, 2006-10,** Covered full international undergraduate student tuition fees for entire duration of BSEng/BSc degree.
- Member of Golden Key International Honour Society

COMPUTER SKILLS

- *Programming Languages :* C, C++, Java, Python, C#, Haskell, ADA, PHP, Bash
- *Parallel Programming :* pThreads, OpenMP, MPI
- *GPU Programming :* Nvidia CUDA, OpenCL, Google Renderscript
- *DSP Programming :* TI Code Composer Studio, SYS/BIOS MCSDK, Linux MCSDK
- *Software Development Kits :* Android, Google Web Toolkit, Microsoft Silverlight
- *Version Control :* Git, Mercurial, SVN, CVS
- *Operating Systems :* Linux, Mac OS X, Windows
- *Project Management :* Jira, Crucible, Fisheye
- *Computer Aided Designing :* The Gimp, Adobe Photoshop, L^AT_EX

REFEREES

Prof. Alistair Rendell
Director, Computer Science, CECS
Australian National University
Canberra, ACT, Australia
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Dr. Eric McCreath
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