

Atri Bhattacharyya

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Chambre 106

Av. de Marcelin

1110 Morges

INTERESTS

- Datacenter architectures
- Computer architecture and systems design

EDUCATION

MS in Computer Science, 1st year Expected 2018
Ecole Polytechnique Federale de Lausanne, Switzerland
Current GPA: 5.6/6 (equivalent to 3.68/4)

BT in Electrical Eng with major in Computer Science and Eng 2011 - 2016
Indian Institute of Technology Kanpur, India
GPA: 9.1/10 (equivalent to 3.64/4)

RESEARCH

MS Research Scholar Sept 2016 - August 2017
Parallel Systems Architecture Lab, EPFL, Switzerland
Worked with **Prof. Babak Falsafi** on various projects.

- Investigated the impact of speculative store retirement on scale-out workloads and, therefore, extended the memory-ordering capabilities of a full-system cycle-accurate simulator (Flexus).
- Designed a network-on-chip(NOC) for practical Scale-out-processors and investigated other aspects of the design to enable sharing on-chip resources.

MITACS Globalinks Research Intern May 2015 - July 2015
University of Alberta, Edmonton, Canada
Worked with **Prof. Duncan Elliott** on the development of the ExAlta-1, the experimental cube satellite project of the University of Alberta, including design of the open-source CubeSat framework.

- Implemented the software framework for the primary scientific payloads: multi-Needle Langmuir Probe (mNLP) and Digital Fluxgate Magnetometer(DFGM).
- Developed the physical-layer I2C, UART drivers for LPC1769 for use with Cubesat Space Protocol(CSP), a small network layer protocol.

EXPERIENCE

Research Assistant August 2017 - Present
Oracle Labs, Zurich, Switzerland
Developing a DPDK-based multi-process capable userspace-networking framework capable of saturating 10Gbit/s interfaces with a single core to provide the benefits of kernel networking: isolation, flexibility and ease of use.

- Integrated the framework with a network-processing bound DDoS detection pipeline to increase its maximum throughput by around 15x.

UnnaTI Embedded Software Intern May 2014 - July 2014
Texas Instruments, Bangalore, India
Developed a profiler to show cycle-wise timing of C/assembly level instruction execution on an embedded platform to enable rapid profiling and benchmarking to:

- Augment and verify manual benchmarking results in less than 20% of the time.
- Benchmark and optimize TIs low-power MCU software framework and FreeRTOS on Cortex-M0+ processor. Achieved more than 50% improvement for certain OS benchmarks.

COURSE PROJECTS

- Advanced Computer Architecture: Implemented an AES accelerator in VHDL achieving a 74x speedup over a software-accelerated version.
- Embedded Systems: Implemented a DMA-enabled controller in VHDL for the TRDB-D5M 5 megapixel camera on an FPGA.
- Real Time Embedded Systems: Implemented an audio capturing and real-time streaming pipeline using an FPGA/Linux.
- Computer Networks: Implemented reliable transport using UDP in Linux.
- Compiler Design: Developed a D to MIPS compiler using Lex/Yacc.
- Computer Architecture: Implemented pipelining in a MIPS simulator in C++.
- Digital VLSI Design: Implemented the layout of a 8-bit bidirectional logarithmic bit-shifter using Mentor Graphics

SKILLS

Programming Languages: C/C++, Java, VHDL, Python, Scala, Matlab, \LaTeX Shell(BASH), MySQL, Assembly(ARMv6)
Hardware: Arduino, Atmel Atmega, DE0-Nano/DE1 FPGAs
Simulators: SimFlex

PUBLICATIONS

Open Source Cube Satellite Software and Hardware Subsystems, Stefan E. Damkjar et al., 7th European CubeSat Symposium

RELEVANT COURSEWORK

<i>Graduate Courses:</i>	<i>Undergraduate Courses:</i>
Principles of Computer Systems	Computer Systems Security
Topics in Datacenter Design	Operating Systems
Real-Time Embedded Systems	Compiler Design
Advanced Computer Architecture	VLSI System Design
Database Systems	Organic Electronics

ACHIEVEMENTS AND AWARDS

2016		MS Research Scholarship, EPFL
2016	340/340 score	Graduate Record Examinations(GRE)
2014		Exchange student at the University of Waterloo, Fall semester
2014	2 nd	UnnaTI intern design contest, Texas Instruments
2014	3 rd	Annontrix, Techkriti, IIT Kanpur
2013	2 nd	Embedded, Techkriti, IIT Kanpur
2012	2 nd	Electromania, Techkriti, IIT Kanpur
2012	University level	Academic Excellence Award for 2011-2012
2011	National level	Indian National Mathematics Olympiad(INMO)
2011	National level	Offered the Kishore Vaigyanik Protsahan Yojana(KVPY) scholarship(less than 1% qualification rate)
2011	National Level	Winner of the Udhbhav Poddar trophy for full marks in Mathematics in ICSE(national board exam for HS)