

# Chunhao Wang

University of Waterloo

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## Education

- 2013–Present **Ph.D. (in progress)**, *University of Waterloo*, Waterloo, Canada.
- 2009–2011 **M.Sc.**, *Simon Fraser University*, Vancouver, Canada, 4.26/4.0.
- 2005–2009 **B.Eng.**, *Zhejiang University*, Hangzhou, China, 3.74/4.0.
- 2007–2008 **Exchange Student**, *Simon Fraser University*, Vancouver, Canada.

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## Master's Thesis

- Title *Computational study on bidimensionality theory based algorithms*
- Supervisor Dr. Qianping Gu
- Description Study, implement and design algorithms for solving hard problems in planar graphs.

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## Experience

### Work Experience

- Nov. 2011 – Apr. 2013 **Software Engineer**, *Fortinet Inc.*, Burnaby, BC.  
Working on developing security solutions by detecting and analyzing vulnerabilities in operating systems, softwares, and applications.
- Jul. 2011 – Oct. 2011 **Research Engineer**, *WebTech Wireless Inc.*, Burnaby, BC.  
Internship sponsored by Mitacs-Accelerate Program. Worked on solving vehicle routing problem with time windows and skill matching heuristically with Google CP Solver.

### Research Assistant

- 2013–Present **Research Assistant**, *Institute of Quantum Computing, University of Waterloo*.  
Research focuses on quantum algorithms and quantum computation.
- 2009–2011 **Research Assistant**, *Network Modelling Lab, Simon Fraser University*.  
Research focused on algorithmic graph theory, specifically on bidimensionality theory based algorithms for solving hard problems.
- 2008–2009 **Undergraduate RA**, *Hardware/Software Co-design Lab, Zhejiang University*.  
Participated in research on Cache/Register Optimizing in multi-core architecture.

### Teaching Assistant

- Sprint 2013 **Teaching Assistant**, *University of Waterloo*.  
CS 245 Logic and Computation

- Summer 2010 **Teaching Assistant**, *Simon Fraser University*.  
CMPT 307 Data Structures
- Fall 2009 **Teaching Assistant**, *Simon Fraser University*.  
CMPT 120 Introduction to Computing Science and Programming I

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## Highlighted Projects

Multiple sequence aligner

- 2013 **Course Project**, *University of Waterloo*.

A program that aligns multiple sequences of proteins, implemented in Python, using dynamic programming, approximation and heuristic algorithms. This work achieves similar SP-scores with ClustalW.

Vehicle routing with time windows and skill matching

- 2011 **Research project**, *Simon Fraser University & WebTech Wireless Inc.*.

Worked on the constraint programming (CP) model for vehicle routing problem with time windows and skill matching. More constraints such as vehicle-dependent average speed and vehicle-dependent service time are handled. Implemented a routing engine with Google CP Solver, which could solve (heuristically) this vehicle routing problem with up to 300 jobs and 100 vehicles in a practical time.

Dynamic programming for planar longest path

- 2011 **Research project**, *Simon Fraser University*.

Research focused on computational study on Planar Longest Path Problem, which is NP-complete. The Algorithm uses branch-decomposition to do dynamic programming. Time complexity is exponential to branch-width. Program is implemented in C++ with LEDA library.

Parallel text aligner

- 2010 **Course project**, *Simon Fraser University*.

Pure lexicon based sentence aligner for parallel corpora, implemented in Python. The alignment accuracy achieves 95%.

Global register alias table

- 2009 **Research project**, *Zhejiang University*.

Research on chip multiprocessor (CMP) architecture. Simulator is build based on SESC and implemented in C++. Conference and journal papers have been published.

Decaf compiler

- 2007 **Course project**, *Simon Fraser University*.

A compiler that translates Decaf Language into MIPS Assembly Language, implemented in C++ with Flex/Yacc.

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## Computer Skills

Programming C/C++, Java, Python, Lisp

I am Vim+gcc developer, Python lover,  
Linux Shell player,  $\LaTeX$  writer,  
quick learner

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## Honors and Awards

- 2013 GO-Bell Scholarship, University of Waterloo
- 2013 UW Graduate Entrance Scholarship (Declined), University of Waterloo
- 2011 Mitacs-Accelerate Internship Grant, Mitacs
- 2010 Graduate Fellowship, Simon Fraser University
- 2009 Outstanding Thesis Award, Zhejiang University
- 2008 Excellence Award in the 10th Zhejiang University Student Research Training Program
- 2007 Second Class Academic Scholarship, Zhejiang University
- 2007 Third Prize Award in Province, National Mathematical Modeling Competition
- 2006 Third Class Academic Scholarship, Zhejiang University
- 2006 Outstanding Student Leader Award, Zhejiang University

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## Publications

### Journal Papers

Jianliang Ma, Chunhao Wang, Baozhong Yu, and Tianzhou Chen. Global register alias table: Boosting sequential program on multi-core. *Future Generation Computer Systems*, in press, 2011.

### Conference Papers

Chunhao Wang and Qianping Gu. Computational study on bidimensionality theory based algorithm for longest path problem. To appear in Proc. of the 22nd International Symposium on Algorithms and Computation (ISAAC '11), Yokohama, Japan, December 5-8, 2011.

Chunhao Wang, Lihan Ju, Di Wu, Lingxiang Xiang, Wei Hu, and Tianzhou Chen. Global register alias table: executing sequential program on multi-core. In *Proc. of the 10th International Conference on Computer and Information Technology (CIT '10)*, pages 1818–1824. IEEE Computer Society, 2010.