

# Kenny Qili Zhu

Department of Computer Science & Engineering  
Shanghai Jiao Tong University  
800 Dongchuan Road, Shanghai 200240, China  
<http://www.cs.princeton.edu/~kzhu/>  
kzhu@cs.sjtu.edu.cn

Tel: +86-21-3420-7231 Mobile: +86-13918-272740 Fax: +86-21-34204728

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## CURRENT APPOINTMENT

**Professor & Distinguished Research Fellow**  
Department of Computer Science & Engineering  
Shanghai Jiao Tong University

## RESEARCH INTEREST

Languages and systems for data processing  
Concurrent and distributed systems  
Format inference and grammar induction  
Artificial intelligence and machine learning

## EDUCATION 1999-2005

**Ph.D in Computer Science**  
National University of Singapore,  
Department of Computer Science  
Thesis title: Open Constraint Programming System  
Advisors: Professor Joxan Jaffar and Associate Professor Roland H. C. Yap

## 1995-1999

**B.E. in Computer Engineering (Honors)**  
National University of Singapore,  
Department of Electrical engineering  
Thesis title: Heuristic Methods for Vehicle Routing Problems with Time Windows  
Advisors: Dr. Kay-Chen Tan and Dr. Loo-Hay Lee

## AWARDS AND HONORS

- 2004-2005 Deans Graduate Award, School of Computing, NUS.
- 2nd prize, Singapore Press Holdings AsiaOne Inter-school Homepage Design Contest, 2003.
- Represented Faculty of Engineering, National University of Singapore to the 1st Undergraduate Research Opportunity Program Conference in Singapore, 1996.
- Dr. Goh Keng Swee Scholarship, which admits only 3-4 scholars from Asia annually, 1995.
- Singapore Ministry of Education scholarship (tuition plus S\$6000 annual allowance), 1995.
- Admission to Shanghai Jiao Tong University exempted from entrance examination, with full fellowship plus 2,000 RMB annual allowance, 1994.
- Second prize in China's National Physics Olympiad Competition, 1993.
- Third prize in China's National Math Olympiad Competition, 1993.

## PUBLICATIONS

(Note: Author names preceding \* are in alphabetic order)

### Refereed Conference Publications

Kenny Q. Zhu, Kathleen Fisher, and David Walker. Incremental Learning of System Log Formats. *In the Proceedings of SOSP Workshop of Analysis of System Logs, WASL 2009 (to appear on ACM SIGOPS Operating Systems Review)*.

Kenny Q. Zhu, Daniel S. Dantas, Kathleen Fisher, Limin Jia, Yitzhak Mandelbaum, Vivek Pai and David Walker. Language Support for Processing Distributed Ad Hoc Data. *In the Proceedings of 11th International ACM SIGPLAN Symposium on Principles and Practice of Declarative Programming, PPDP 2009*.

Qian Xi, Kathleen Fisher, David Walker and Kenny Q. Zhu. Ad Hoc Data and the Token Ambiguity Problem. *In the Proceedings of 11th International Symposium on Practical Aspects of Declarative Languages, PADL 2009*.

Kathleen Fisher, David Walker and Kenny Q. Zhu\*. LearnPADS: Fully Automatic Tool Generation from Ad Hoc Data. *In the Proceedings of ACM SIGMOD 2008, pp.1299–1302*.

Kathleen Fisher, David Walker, Kenny Q. Zhu\* and Peter White. From Dirt to Shovels: Fully Automatic Tool Generation from Ad Hoc Data. *In Proceedings of the 35th Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages, POPL 2008, pp.421–434*.

David Burke, Kathleen Fisher, David Walker, Peter White and Kenny Q. Zhu\*. Towards 1-click Tool Generation with PADS. *ICML Workshop on Challenges and Applications of Grammar Induction, 2007*.

Joxan Jaffar, Roland H.C. Yap and Kenny Q. Zhu\*. Generalized Committed Choice. *In Proceedings of the 9th International Conference on Coordination Models and Languages, COORDINATION 2007, pp.191–210*.

Joxan Jaffar, Roland H.C. Yap and Kenny Q. Zhu\*. Indexing for Dynamic Abstract Regions. *In Proceedings of the 22nd International Conference on Data Engineering, ICDE 2006*.

Joxan Jaffar, Roland H.C. Yap and Kenny Q. Zhu\*. Coordinating Many Agents. *In Proceedings of the 21st International Conference on Logic Programming, ICLP 2005, pp. 98–112*.

Joxan Jaffar, Andrew E. Santosa, Roland H.C. Yap and Kenny Q. Zhu\*. Scalable Distributed Depth-First Search with Greedy Work Stealing. *In Proceedings of the 16th IEEE International Conference on Tools for Artificial Intelligence, ICTAI 2004, pp. 98–103*.

Kenny Q. Zhu and Ziwei Liu. Population Diversity in Permutation-Based Genetic Algorithm. *In Proceedings of European Conference on Machine Learning, ECML 2004, pp. 537–547*.

Kenny Q. Zhu and Ziwei Liu. Empirical Study of Population Diversity in Permutation-Based Genetic Algorithm. *In Proceedings of Genetic and Evolutionary Computation Conference, GECCO 2004, pp. 420–421*.

Kenny Q. Zhu. A Diversity-controlling Adaptive Genetic Algorithm for the Vehicle Routing Problem with Time Windows. *In Proceedings of 15th IEEE International Conference on Tools for Artificial Intelligence, ICTAI 2003, pp. 176–183*.

Kenny Q. Zhu and Andrew E. Santosa. A Web Meeting Scheduling System Based on Open Constraint Programming. *In Proceedings of International Conference of Advance Informations System Engineering, CAiSE'02, pp. 792–795*.

Kenny Q. Zhu, Wee-Yeh Tan, Andrew Santosa and Roland Yap. Reactive Web Agents with OCP. *In Proceedings of International Symposium of Autonomous Decentralized Systems, ISADS 2001, Dallas, Texas, pp. 251–254*.

Kenny Q. Zhu, Kar-Loon Ong, A Reactive Method for Real Time Dynamic Vehicle Routing Problems. *In Proceedings of the 12th IEEE International Conference on Tools for Artificial Intelligence, ICTAI 2000, Vancouver, Canada, pp. 176–180*.

K.C. Tan, L.H. Lee and Kenny Q. Zhu. Heuristics for VRPTW. *In Proceedings of 6th International Symposium on Artificial Intelligence and Mathematics, AMAI 2000.*

#### **Refereed Journal Articles**

Kenny Q. Zhu, Kathleen Fisher and David Walker. Incremental Learning of System Log Formats. *ACM SIGOPS Operating Systems Review. Volume 43, Issue 5, to appear.*

Kathleen Fisher, David Walker, Kenny Q. Zhu\* and Peter White. From Dirt to Shovels: Fully Automatic Tool Generation from Ad Hoc Data. *ACM SIGPLAN Notices. Volume 43, Issue 1, pp. 421–434.*

K. C. Tan, L. H. Lee, Q. L. Zhu and K. Ou. Heuristic methods for vehicle routing problem with time windows. *Artificial Intelligence in Engineering (2001) pp. 281–295.*

#### **Work in Progress**

Kenny Q. Zhu, Kathleen Fisher and David Walker. Incremental Learning of Formats for Large-Scale Ad Hoc Data. *Manuscript.*

Yibo Fan and Kenny Q. Zhu A SystemVerilog Extension for Rapid and Interactive IP Synthesis. *Manuscript.*

#### **Dissertations**

Kenny Q. Zhu. Open Constraint Programming. *Doctor of Philosophy Dissertation, 2005.*

URL: [http://www.cs.princeton.edu/~kzhu/papers/phd\\_thesis.pdf](http://www.cs.princeton.edu/~kzhu/papers/phd_thesis.pdf)

Kenny Q. Zhu. Heuristics Methods for Vehicle Routing Problem with time Windows. *Bachelor of Engineering Thesis, 1999.*

#### **PATENTS**

- US Patent No. 2007-1053 (Pending). “Format Inference for Ad Hoc Data”. Filed in August, 2008.
- US Patent No. 2009-0801 (Pending). “Incremental Learning of Format Descriptions”. Filed in November, 2009.

## TALKS AND PRESENTATIONS

- “From dirt to shovels: automatic tool generation from ad hoc data”, invited talk at Industrial Affiliates Day, Princeton University. 09/17/2008.
- “LearnPADS: Automatic format inference from ad-hoc data”, demo at SIGMOD 2008.
- “PADS: A Language and System for Processing Ad Hoc Data”, invited talk at PL/Compiler visit day, Princeton University. 03/08/2008.
- “From dirt to shovels: automatic tool generation from ad hoc data”, invited talk at IBM TJ Watson Research. 02/25/2008.
- “From dirt to shovels: automatic tool generation from ad hoc data”, POPL 2008, San Francisco, CA.
- “From dirt to shovels”, System lunch talk at Princeton CS department. 11/2007.
- “Generalized Committed Choice”, Coordination 2007.
- “Indexing of dynamic abstract regions”, ICDE 2006.
- “Open constraint programming”, invited talk at Singapore Management University.
- “Open constraint programming”, PhD. defense talk.
- “Coordination of many agents”, ICLP 2005.
- “Distributed DFS with greedy work stealing”, ICTAI 2004.
- “Population diversity in permutation-based genetic algorithm”, ECML 2004.
- “Empirical study of population diversity in permutation-based genetic algorithm”, GECCO 2004.
- “A Diversity-controlling Adaptive GA for the VRP with Time Windows”, ICTAI 2003.
- “A Meeting Scheduling System Based on Open Constraint Programming”, CAiSE 2002.
- “Reactive Web Agents with OCP”, the Fifth International Symposium on Autonomous Decentralized Systems (ISADS 2001).

## TEACHING EXPERIENCE

### **COS442 Programming Languages (Princeton)**

This course is about how to design and analyze programming languages and how to use them effectively. Topics covered include functional programming languages, object-oriented languages, type systems, abstraction mechanisms, operational semantics, safety and security guarantees. As a lecturer/TA, I gave some of the lectures, provided student consultation and graded assignments and exams.

### **CS5223 Distributed Systems (NUS)**

This graduate course leads to deepened knowledge in distributed systems and algorithms, including process communications, consistency and replication, fault tolerance and peer-to-peer systems. My duties in this course were student consultations, project supervision, and occasional relief teaching.

### **CS3211 Parallel and Concurrent Programming (NUS)**

The course covers the principles behind concurrent, parallel and distributed programming, as well as their practical aspects, including their implementation using concurrent programming languages, and software and hardware systems for distributed and parallel computing. My responsibility for this course involved tutorial classroom teaching, assignment grading and project supervision.

**CS3212 Programming Languages (NUS)**

This compulsory CS course provides the students with theoretical knowledge and practical skill in design and implementation of programming languages. It includes semantic aspects of fundamental programming paradigms (imperative, functional, logic, and object-oriented), and basic programming language concepts such as binding, scope, parameter-passing mechanisms, types, virtual machines and automatic memory management. I have taught this course for four semesters in tutorial-style lab sessions, which complement the large lectures.

**CS2271 Embedded Systems (NUS)**

This course aims to provide a broad overview of the techniques and challenges involved in designing embedded systems, with topics including FPGAs and programming with Handel-C, embedded microprocessors, real-time operating systems, etc. I have supervised the lab sessions and assisted students in designing and developing embedded system software.

**CS1305 Problem Solving for Computing (NUS)**

This course aims to introduce students to the basics of critical thinking and problem solving, particularly, in relation to the discipline of computing. I have given classroom tutorials in this interesting module and have received excellent teaching evaluation for my creative teaching styles and the motivation for the students to think. I have been nominated by students for the NUS teaching award for my work in this course.

**IT1001 Introduction to Computing (NUS)**

This introductory course aims to provide a basic knowledge of computer science to non-CS majors. I have given tutorial classes for two semesters in this course and received very good feedback from these students who have little or no computer science background at all. I have also received numerous nominations for the NUS teaching award for my work in this course.

**EMPLOYMENT HISTORY**

01/2007-08/2009	Postdoctoral Researcher and Lecturer Department of Computer Science, Princeton University Research on programming language and tools for ad hoc data processing. Taught advanced programming languages course. Supervisor: David Walker.
10/2005-01/2007	Software Design Engineer Identity Services, Microsoft Work on the design and development of the MSN Passport (also known as the Windows Live ID), a secure user credential and profile management system for all MSN and Windows Live users
07/2005-10/2005	Research Fellow Department of Computer Science, National University of Singapore Independent research on concurrent programming for knowledge bases
07/2001-06/2005	Teaching Assistant Department of Computer Science, National University of Singapore Taught in tutorials, labs, relief lectures and consultations
07/1999-06/2001	Research Assistant Department of Computer Science, National University of Singapore
01/1998-06/1998	Intern Hewlett Packard Singapore, Department of Physical Distribution and Supply Chain Worked on Vehicle Routing Problem for HP distribution

PROFESSIONAL  
SERVICES

**External Reviewer**

IEEE Transactions on Vehicular Technology  
Artificial Intelligence in Engineering  
International Conference on Principles and Practice of Constraints Programming, CP 2003, 2006,  
2007  
International Conference on Logic Programming, ICLP 2006

REFERENCES

**David Walker**

Associate Professor  
Department of Computer Science  
Princeton University  
Princeton, NJ 08540, USA  
Email: dpw@cs.princeton.edu  
URL: <http://www.cs.princeton.edu/~dpw>  
Tel: +1-609-258-7654 Fax: +1-609-258-1771

**Kathleen Fisher**

Principal Research Staff Member  
AT&T Labs Research  
1 River Oaks PL, San Jose, CA 95134, USA  
Email: kfisher@research.att.com  
URL: <http://www.research.att.com/info/kfisher>  
Tel: +1-973-610-2669 Fax: +1-650-967-3205

**Joxan Jaffar**

Professor  
Department of Computer Science  
National University of Singapore  
Republic of Singapore 117543  
Email: joxan@comp.nus.edu.sg  
URL: <http://www.comp.nus.edu.sg/~joxan>  
Tel: +65-6874-4782 Fax: +65-6775-7451

**Roland H. C. Yap**

Associate Professor  
Department of Computer Science  
National University of Singapore  
Republic of Singapore 117543  
Email: ryap@comp.nus.edu.sg  
URL: <http://www.comp.nus.edu.sg/~ryap>  
Tel: +65-6874-2972 Fax: +65-6779-4580

**Vivek Pai**

Associate Professor  
Department of Computer Science  
Princeton University  
Princeton, NJ 08540, USA  
Email: vivek@cs.princeton.edu  
URL: <http://www.cs.princeton.edu/~vivek>  
Tel: +1-609-258-2086 Fax: +1-609-258-1771