

# Curriculum Vitae

**Philip W. L. Fong**

Department of Computer Science

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## Research Interests

Software security.

## Citizenship

Canadian.

## Education

- Ph.D., 2004, Computer Science, Simon Fraser University, Burnaby, BC, Canada. Dissertation: *Proof Linking: A Modular Verification Architecture for Mobile Code Systems*. Supervisor: Robert D. Cameron.
- M.Math., 1995, Computer Science, University of Waterloo, Waterloo, Ontario, Canada. Thesis: *A Quantitative Study of Hypothesis Selection*. Supervisor: Qiang Yang.
- B.Math. (Honors Coop), 1993, Double Honours in Computer Science and Combinatorics & Optimization, University of Waterloo, Waterloo, Ontario, Canada. Dean's Honours List. Graduated with distinction.

## Positions Held

- Jul 2007 – Present      *Associate Professor*, Department of Computer Science, University of Regina, Regina, Saskatchewan, Canada. Tenured appointment.
- Feb 2004 – Jun 2007      *Assistant Professor*, Department of Computer Science, University of Regina, Regina, Saskatchewan, Canada.
- May 2003 – Jan 2004      *Lecturer*, Department of Computer Science, University of Regina, Regina, Saskatchewan, Canada.
- Jan – Apr, 2001          *Sessional Instructor*, School of Computing Science, Simon Fraser University, Burnaby, BC, Canada
- May – Aug, 1997          *Summer Intern*, Software & Systems Research Laboratory, AT&T Research, Murray Hill, NJ, USA. *Supervisor*: Premkumar T. Devanbu. *Project*: Remote certification of mobile programs using trusted hardware.
- May – Aug, 1996          *Summer Intern*, Software & Systems Research Laboratory, AT&T Research, Murray Hill, NJ, USA. *Supervisor*: Premkumar T. Devanbu. *Project*: Knowledge-based discovery of design patterns from legacy C++ code.
- Sept – Dec, 1992          *Research Assistant*, Pattern Analysis and Machine Intelligence Lab, University of Waterloo, Waterloo, Ontario, Canada. *Supervisor*: Andrew K. C. Wong. *Project*: Pattern discovery in text corpus.
- Jan – Apr, 1992          *Research Assistant*, Logic Programming and Artificial Intelligence Lab, University of Waterloo, Waterloo, Ontario, Canada. *Supervisor*: Qiang Yang. *Project*: Solving partial constraint satisfaction problems using local search and abstraction.

## Software

- Lead Developer. *The Aegis VM Project*. <http://aegisvm.sourceforge.net>.

## Publications

### Refereed Journal Publications

- [J1] Philip W. L. Fong. Discretionary Capability Confinement. *International Journal of Information Security*, 7(2):137–154, April 2008.
- [J2] Philip W. L. Fong. Reasoning about Safety Properties in a JVM-Like Environment. *Science of Computer Programming*, 67(2–3):278–300, July 2007. Elsevier.

**Remarks:** CiteSeer CS Impact Factor: 1.22 (top 15.15% - ranked 185 of 1221).

- [J3] Philip W. L. Fong and Robert D. Cameron. Proof Linking: Modular verification of mobile programs in the presence of lazy, dynamic linking. *ACM Transactions on Software Engineering and Methodology (TOSEM)*, 9(4):379–409, October 2000.

**Remarks:** CiteSeer CS Impact Factor: 1.99 (top 2.62% - ranked 32 of 1221).

## Refereed Conference Publications

- [C1] Boting Yang and Philip W. L. Fong. Two NP-Complete Problems in Software Security. In *Proceedings of the International Conference on Relations, Orders and Graphs: Interaction with Computer Science (ROGICS'08)*, Mahdia, Tunisia, May 12–17, 2008.

- [C2] Philip W. L. Fong and Simon Orr. A Module System for Isolating Untrusted Software Extensions. In *Proceedings of the 22nd Annual Computer Security Applications Conference (ACSAC'06)*, pages 203–212, Miami Beach, Florida, USA, December 11–15, 2006.

**Remarks:** Acceptance rate:  $40/132 = 30\%$ . CiteSeer CS Impact Factor: 0.63 (top 42.66% - ranked 521 of 1221).

- [C3] Philip W. L. Fong. Discretionary Capability Confinement. In *Proceedings of the 11th European Symposium On Research In Computer Security (ESORICS'06)*, volume 4189 of *Lecture Notes in Computer Science*, pages 127–144, Hamburg, Germany, September 18–20, 2006. Springer.

**Remarks:** Acceptance rate:  $32/160 = 21\%$ . CiteSeer CS Impact Factor: 1.25 (top 14.16% - ranked 173 of 1221).

- [C4] Philip W. L. Fong. Link-Time Enforcement of Confined Types for JVM Bytecode. In *Proceedings of the Third Annual Conference on Privacy, Security and Trust (PST'05)*, pages 191–202, St. Andrews, New Brunswick, Canada, October 12–14, 2005.

**Remarks:** Acceptance rate:  $19/50 = 38\%$ .

- [C5] Philip W. L. Fong. Pluggable verification modules: An extensible protection mechanism for the JVM. In *Proceedings of the 19th ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA'04)*, pages 404–418, Vancouver, BC, Canada, October 24–28, 2004.

**Remarks:** Acceptance rate:  $27/173 = 16\%$ . CiteSeer CS Impact Factor: 2.05 (top 2.29% - rank 28 of 1221).

- [C6] Philip W. L. Fong. Access control by tracking shallow execution history. In *Proceedings of the 2004 IEEE Symposium on Security and Privacy (S&P'04)*, pages 43–55, Berkeley, California, USA, May 9–12, 2004.

**Remarks:** Acceptance rate:  $19/186 = 10\%$ . CiteSeer CS Impact Factor: 1.39 (top 10.97% - ranked 134 of 1221).

- [C7] Philip W. L. Fong and Robert D. Cameron. Proof Linking: Distributed verification of Java classfiles in the presence of multiple classloaders. In *Proceedings of the USENIX Java Virtual*

*Machine Research and Technology Symposium (JVM'01)*, pages 53–66, Monterey, California, USA, April 23–24, 2001.

**Remarks:** Acceptance rate:  $18/50 = 36\%$ .

- [C8] Philip W. L. Fong and Robert D. Cameron. Proof Linking: An architecture for modular verification of dynamically-linked mobile code. In *Proceedings of the ACM SIGSOFT Sixth International Symposium on the Foundations of Software Engineering (FSE'98)*, pages 222–230, Orlando, Florida, USA, November 3–5, 1998.

**Remarks:** Acceptance rate:  $29/141 = 21\%$ . CiteSeer CS Impact Factor: 1.88 (top 3.43% - rank 42 of 1221).

- [C9] Premkumar T. Devanbu, Philip W. L. Fong, and Stuart G. Stubblebine. Techniques for trusted software engineering. In *Proceedings of the 20th International Conference on Software Engineering (ICSE'98)*, pages 126–135, Kyoto, Japan, April 19–25, 1998.

**Remarks:** Acceptance rate:  $41/209 = 20\%$ . CiteSeer CS Impact Factor: 0.90 (top 27.92% - rank 341 of 1221).

- [C10] M.-A. D. Storey, K. Wong, P. Fong, D. Hooper, K. Hopkins, H. A. Müller. On designing an experiment to evaluate a reverse engineering tool. In *Proceedings of the 3rd Working Conference on Reverse Engineering (WCRE'96)*, Monterey, California, USA, pages 31–40, November 1996.

- [C11] Philip W. L. Fong. A quantitative study of hypothesis selection. In *Proceedings of the Twelfth International Conference on Machine Learning (ICML'95)*, pages 226–234, Tahoe City, California, USA, July 9–12, 1995.

**Remarks:** Acceptance rate:  $68/213 = 32\%$ . CiteSeer CS Impact Factor: 2.12 (top 1.88% - rank 23 of 1221).

- [C12] Qiang Yang and Philip W. L. Fong. Constraint relaxation using local search and abstraction. In *Proceedings of the Third International Conference for Young Computer Scientists (ICYCS'93)*, pages 2118–2121, Beijing, China, 1993. Sponsoring Societies: ICYCS, ACM.

## Refereed Workshop Publications

- [W1] Qiang Yang, Philip Fong and Edward Kim. Design Patterns for Planning Systems. In *Proceedings of the 1998 AIPS Workshop on Knowledge Engineering and Acquisition for Planning: Bridging Theory and Practice*, Pittsburg, pages 104–112, July 1998. Also available as AAAI Technical Report WS-98-03.
- [W2] Qiang Yang and Philip W. L. Fong. Situated control rules as approximate plans: a PAC-based theory. In *Proceedings of the Third European Workshop on Planning (EWSP'95)*, Assisi, Italy, 1995. Also available in *New Direction in AI Planning*, Volume 31 of *Frontiers in Artificial Intelligence and Applications*, edited by M. Ghallab and A. Milani, January 1996, pp 327–339.

## Professional Activities

1. Program Committee. *The 2008 IEEE International Workshop on Cyberspace Safety and Security (CSS'08)*, Sydney, Australia, December 12, 2008.
2. Reviewer. *The 11th International Symposium on Recent Advances in Intrusion Detection (RAID'08)*, Cambridge, Massachusetts, USA, September 15–17, 2008.
3. Program Committee. *The 24th Annual Computer Security Applications Conference (ACSAC'08)*, Anaheim, California, USA, December 8–12, 2008.
4. Program Committee. *The Sixth Annual Conference on Privacy, Security and Trust (PST'08)*, Delta Fredericton, Fredericton, New Brunswick, Canada, October 1–3, 2008.
5. Program Committee. *The Third IEEE International Workshop on Security, Trust, and Privacy For Software Applications (STPSA'08)*, in conjunction with COMPSAC'08, Turku, Finland, July 28 – August 1, 2008.
6. Reviewer. *IEEE Software*, 2007.
7. Program Committee. *The 23rd Annual Computer Security Applications Conference (ACSAC'07)*, Miami Beach, Florida, December 10–14, 2007.
8. Program Committee. *The First International Workshop on Run Time Enforcement for Mobile and Distributed Systems (REM'07)*, Dresden, Germany, September 26–27, 2007. In conjunction with *The 12th European Symposium On Research In Computer Security (ESORICS'07)*.
9. Program Committee. *The Second IEEE International Workshop on Security, Trust, and Privacy for Software Applications (STPSA'07)*. In conjunction with *The 31st Annual International Computer Software and Applications Conference (COMPSAC'07)*, Beijing, China, July 24–27, 2007.
10. Reviewer. *IEEE Transactions on Software Engineering*, 2007.
11. Reviewer. *Journal of Computer Security — Special Issue on Privacy, Security and Trust Technologies: Evolution and Challenges (PST'06)*, 2007.
12. Reviewer. *IEEE Intelligent Systems*, 2007.
13. Reviewer. *22nd Annual Computer Security Applications Conference (ACSAC'06)*, Miami Beach, Florida, USA, December 11–15, 2006.
14. Program Committee. *Fourth Annual Conference on Privacy, Security and Trust (PST'06)*, Os-hawa, Ontario, Canada, October 31 – November 1, 2006.
15. Reviewer. *IEEE International Conference on Communications (ICC'06)*, Istanbul, Turkey, June 11–15, 2006.

16. Reviewer. *28th International Conference on Software Engineering (ICSE'06)*, Shanghai, China, May 20–28, 2006.
17. Reviewer. *Journal of Systems and Software*, 2005.
18. Reviewer. *Fifth International Conference on Quality Software (QSIC'05)*, Melbourne, Australia, September 19–21, 2005.
19. Reviewer. *IEEE Transactions on Dependable and Secure Computing (TDSC)*, 2004.
20. Reviewer. *IEEE Transactions on Software Engineering (TSE)*, 2004.
21. Reviewer. *ACM Transactions on Programming Languages and Systems (TOPLAS)*, 2004.
22. Program Committee. *The 8th International Conference on Software Reuse (ICSR'04)*, Madrid, Spain, July 5–9, 2004.
23. Reviewer. *The Computer Journal*, Oxford University Press, 2003.

## Invited Talks and Visits

1. Invited talk. *Discretionary Capability Confinement*. iCORE Information Security Laboratory, Department of Computer Science, University of Calgary, Calgary, Alberta, Canada, April 25, 2008.
2. Invited talk. *ISOMOD: A Module System for Isolating Untrusted Software Extensions*. MITACS Digital Security Seminar Series. Carleton University, Ottawa, Ontario, Canada, March 14, 2006.
3. Invited talk. *Capability Type Systems for Secure Cooperation*, Department of Computing, The Hong Kong Polytechnic University, June 21, 2005.
4. Invited talk. *Viewer Discretion: Language-based Protection Mechanisms for Dynamically Extensible Systems*, Department of Computing, The Hong Kong Polytechnic University, June 14, 2005.
5. Visiting scholar. Department of Computing, Hong Kong Polytechnic University, Hong Kong, June 2005.
6. Invited talk. *Open Licensing and Academic Technologies*, Centre for Academic Technologies, University of Regina, Regina, Saskatchewan, Canada, March 18, 2004.
7. Invited talk. *Proof Linking: A Modular Verification Architecture for Mobile Code Systems*, Department of Computing Science, University of Alberta, Edmonton, Alberta, Canada, January 15, 2004.

## Funding

1. \$93,290 (per annum, 2 years), PI, *Protection Technologies for the Facebook Generation*. Strategic Project Grant – Supplemental Competition (SPG), Natural Sciences and Engineering Research Council of Canada, 2008–2010. With Howard Hamilton and Xue-Dong Yang.
2. \$1,000,000 (per annum, 5 years), *The Internetworked Systems Security Network (ISSNet)*. Strategic Network Grant (SNG), Natural Sciences and Engineering Research Council of Canada, 2007–2012. With Paul Van Oorschot (Leader), and 13 others.
3. \$120,000 (profiled evenly over 4 years), PI, *Programming Abstractions for Access Control: Capability, Delegation, Obligation*, Discovery Accelerator Supplement, Natural Sciences and Engineering Research Council of Canada, 2007–2011.
4. \$25,700 (per annum, 5 years), PI, *Programming Abstractions for Access Control: Capability, Delegation, Obligation*, Discovery Grant - Individual, Natural Sciences and Engineering Research Council of Canada, 2007-2012.
5. \$66,352, *Grid Computing Laboratory*, Innovation and Science Fund, Province of Saskatchewan, 2005. With Terence Chan (PI) and Mauricio Barbi.
6. \$66,352, *Grid Computing Laboratory*, New Opportunities Fund, Canada Foundation for Innovation, 2005. With Terence Chan (PI) and Mauricio Barbi.
7. \$15,200, PI, *CS 170: Collaborative Authoring of Tutorial Resources Using an Open Source Development Model*. TEL Projects, Sask Learning, 2005.
8. \$2,000, *Creating Information Commons: Responses to Commercialization and Globalization*. Transdisciplinary Project - Competition B, University of Regina, 2005. With Daryl Hepting (PI), Patricia Elliott, David Gerhard, Roger Petry and Clair Polster.
9. \$20,700 (per annum, 3 years), PI, *Trusted Software Engineering: Secure deployment of dynamic software extensions*, Discovery Grant - Individual, Natural Sciences and Engineering Research Council of Canada, 2004-2007.
10. \$60,000, *Open Systems Lab*, Institution Grant, Western Economic Diversification Canada. 2004. Plus \$6,000 top-up from Faculty of Science, University of Regina, Regina, Saskatchewan, Canada. With Daryl Hepting (PI).
11. \$2,500, PI, *Open Source Seminar Series: Ideals, Politics, Business Models, and Technical Challenges*, Transdisciplinary Project 2003–04 (Category B), President’s Office, University of Regina, Regina, Saskatchewan, Canada. 2004. With Daryl Hepting, David Elliott, Roger Petry and Robert Anderson.
12. \$28,000, PI, Start-up Grant, Faculty of Science, University of Regina, Regina, Saskatchewan, Canada. 2003.

13. \$12,000, PI, Start-up Grant, Department of Computer Science, University of Regina, Regina, Saskatchewan, Canada. 2003–2004.
14. \$2,500, PI, VP (Research & International) Matching Start-up Grant, Office of Research Services, University of Regina, Regina, Saskatchewan, Canada. 2003.

## Awards

1. Postgraduate Scholarship B, Natural Sciences and Engineering Research Council of Canada, 1995.
2. Postgraduate Scholarship A, Natural Sciences and Engineering Research Council of Canada, 1993.
3. University Undergraduate Student Research Award, Natural Science and Engineering Research Council of Canada, 1992.

## Student Supervision

### Graduate Student Supervision (In Progress)

- Cheng Xu, MSc (since 2008, thesis).
- Xiao Hai Guo, MSc (since 2008, thesis).
- Pan Liu, MSc (since 2006, thesis).
- Hongya Sun, MSc (since 2006, thesis).
- Fei Yan, MSc (since 2006, thesis).
- Zhen Zhao, MSc (since 2006, thesis).
- Huan Long Zhang, MSc (since 2004, project).
- James Ranson, MSc (since 2004, thesis, co-supervised with H. Hamilton).

### Graduate Student Supervision (Completed)

- Simon Orr. MSc (2004–2006). Thesis: *A Module System for Isolating Untrusted Software Extensions*.

**Graduate Thesis/Project Examination Committee**

- Ken Konkel. *Modern Bayesian Network Implementation*. MSc Thesis. Department of Computer Science, University of Regina, 2007.
- Jia Chen. *Performance Evaluation of Peer-to-peer Networks*. MSc Thesis. Department of Computer Science, University of Regina, 2007.
- Peter Kort. *The Use of Hough Transform in Shape-From-Shading*. MSc Thesis. Department of Computer Science, University of Regina, 2007.
- Paul Stephen Schmiedge. *Water Surface Construction Using Molecular Rotation Dynamics For Computer Animation*. MSc Thesis. Department of Computer Science, University of Regina, 2007.
- Waqar Ahsan. *Online Integrated Solution to Submission of Compliance Data Using Data Wrappers*. MSc Project. Department of Computer Science, University of Regina, 2006.
- Chitsutha Soomlek. *Agent-Based Framework for Network Intrusion Detection Systems*. MSc Thesis. Department of Electronic Systems Engineering, University of Regina, 2006.
- Shannon Blyth. *APE: An Environment for Integrating Animation and Planning*. MSc Thesis. Department of Computer Science, University of Regina, 2006.
- Yashu Bither. *The Matchbox Algorithm for Cleaning Contact Lists That Include Nicknames and Spouses*. MSc Thesis. Department of Computer Science, University of Regina, 2005.
- Mahesh Man Shrestha. *Detecting Different Categories of Peculiar Data*. MSc Thesis. Department of Computer Science, University of Regina, 2004.
- Honglan Zhong. *An Integrated Approach for Database Security and Fault Tolerance*. MSc Thesis. Department of Computer Science, University of Regina, 2004.
- Pengzhou Yin. *Component Generalization and Instantiation*. MSc Thesis. Department of Computer Science, University of Regina, 2004.
- Bo Chen. *Formal Methods: Theory and Practice*. MSc Thesis. Department of Computer Science, University of Regina, 2004.
- Fulian Shang. *Application of Hierarchy-Structured Decision Tables in Automated Vehicle Control Algorithms*. MSc Thesis. Department of Computer Science, University of Regina, 2004.

**Undergraduate Honours Oral Examination Committee**

- Tim Oleskiw. *Programming Languages*. Department of Computer Science, University of Regina, 2007.

- Xiao Guo. *Programming Languages*. Department of Computer Science, University of Regina, 2006.
- David Thue. *Software Engineering*. Department of Computer Science, University of Regina, 2005.
- Jared Gabruch. *Software Engineering*. Department of Computer Science, University of Regina, 2005.
- Steven Deobald. *Software Engineering*. Department of Computer Science, University of Regina, 2004.
- Danielle Sauer. *Software Engineering*. Department of Computer Science, University of Regina, 2003.

## Teaching

### Courses Taught at University of Regina

800-level courses are graduate courses, which do not have student evaluation.

Course	Title	Semester	Class Size	Student Evaluation (Scale 1–4)
CS 215	Web Oriented Programming	Winter 2008	14	Not yet published
CS 115	Object-Oriented Design	Winter 2008	39	Not yet published
CS 350	Programming Language Concepts	Fall 2007	15	2.92
CS 834	Software Security	Winter 2007	8	N/A
CS 410	Introduction to Compiler Design	Winter 2007	12	3.34
CS 350	Programming Language Concepts	Fall 2006	23	3.45
CS 350	Programming Language Concepts	Winter 2006	16	3.56
CS 350	Programming Language Concepts	Fall 2005	17	3.37
CS 170	Fundamentals of Comp Sci I	Fall 2005	75	3.30
CS 834	Software Security	Winter 2005	10	N/A
CS 372	Software Engineering Methodology	Fall 2004	20	3.12
CS 170	Fundamentals of Comp Sci I	Winter 2004	43	3.08

### Courses Taught at Simon Fraser University

- *CMPT 310: Artificial Intelligence Survey*, Jan–Apr, 2001.

## Services

**Department Services:** Curriculum Committee (2007–2008). Web Site Coordination (2007–2008). Graduate Committee (2006–2007). Planning Committee (Chair 2005-2007, Member 2004–2005), Library Representative (2005-2006), Software Engineering Coordinator (2003-2005), Seminar Committee (2003-2004).

**Faculty Services:** Faculty of Science Admissions and Studies Committee (2007–2008). Faculty of Science Scholarship Committee (2005–2006).

**University Services:** Faculty of Graduate Studies and Research PhD Committee (2007–2008). Elected member of Executive of Council (2004–2006).