Hang Trung Dinh

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Indiana University South Bend
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Education

Ph.D. in Computer Science & Engineering — Conferred August 2010
University of Connecticut — Storrs, CT
Dissertation: Rigorous Bounds for Fundamental Heuristic Search.
Advisor: Prof. Alexander Russell

M.S. in Computer Science — December 2002
Asian Institute of Technology — Pathumthani, Thailand
Thesis: A Logic Programming-Based Formalism for Local Closed World Reasoning in Planning.
Advisor: Prof. Phan Minh Dũng

B.S. in Computer Science — June 2000
Vietnam National University, Hanoi — Hanoi, Vietnam
High honor, ranked 4^{th} of 120 students.

Employment

Associate Professor — July 2016-present
Indiana University South Bend — South Bend, IN
Department of Computer & Information Sciences

Assistant Professor — August 2010-June 2016
Indiana University South Bend — South Bend, IN
Department of Computer & Information Sciences

Research and Teaching Assistant — August 2003-July 2010
University of Connecticut — Storrs, CT
Department of Computer Science & Engineering

Teaching Assistant — Fall 2000- Spring 2001
Vietnam National University, Hanoi — Hanoi, Vietnam
Faculty of Information Technology, College of Technology

Software Development Intern — Spring 2000
VASC Software and Media Company — Hanoi, Vietnam
A state-owned company that provides IT solutions in Vietnam.

Grants, Awards, and Honors

- Best Paper Award — December 2015
  In the Conference on Computing, Management and Educational Tech (ComManTel 2015)
- Faculty Research Grant — Summer 2013
  Indiana University South Bend
  Awarded $8,500 for the project "Quantum Algorithms for Post-quantum Cryptography"

- Faculty Research Grant — Summer 2011
  Indiana University South Bend
  Awarded $8,500 for the project "Empirical Analysis of A* Search for Hard Problems"
- Oversea Conference Fund Grant — January 2011
  Indiana University
  Awarded $700 to support my traveling to present a paper at the 14th Workshop on Quantum Information Processing (QIP 2011)
- Taylor L. Booth Memorial Scholarship — 2008-2009
  University of Connecticut
- Doctoral Fellowship — 2008
  University of Connecticut
- Graduate PreDoctoral Fellowship — 2007
  University of Connecticut
- AAAI Student Travel Award — 2007
  Association for the Advancement of Artificial Intelligence
- Vietnamese Government Fellowship — 2002
  Covered full tuition and stipend for my study at the Asian Institute of Technology
- Canadian Government Scholarship — 2000
  Honorably awarded $500 for being an outstanding Vietnamese woman in Information Technology
- Japanese Yamada Scholarship — 1997
  Honorably awarded $250 for academic excellence
- Bronze Medal — 1997
  in the Vietnam National Informatics Olympiad for undergraduate students
- Merit-based Full-tuition Scholarship — 1996-2000
  Vietnam National University, Hanoi
- Second Prize — 1996
  in the Mathematics Contest held by the Vietnamese Journal of Youth and Mathematics
- Second Prize — 1993
  in the Vietnam National Mathematics Competition

Publications and Preprints

Peer-reviewed Journal Articles

1. Michael R. Scheessele, **Hang Dinh**, and Mahesh Ananth. On adding a critical thinking module to a discrete structures course. *Journal of Computing Sciences in Colleges*, 30(6):97–103, June 2015.
2. **Hang Dinh**, Alexander Russell, and Cristopher Moore. Limitations of single coset states and quantum algorithms for Code Equivalence. *Quantum Information & Computation*, 15(3 & 4):0260–0294, March 2015.
3. **Hang Dinh**, Hieu Dinh, Laurent Michel, and Alexander Russell. The time complexity of A* with approximate heuristics on multiple-solution search spaces. *Journal of Artificial Intelligence Research*, 45:685–729, December 2012.
4. **Hang Dinh** and Alexander Russell. Quantum and randomized lower bounds for local search on vertex-transitive graphs. *Quantum Information and Computation*, 10(7):0636–0652, July 2010.
5. Eugene Santos, Jr. and **Hang T. Dinh**. On automatic knowledge validation for Bayesian knowledge bases. *Data & Knowledge Engineering*, 64(1):218–241, January 2008.

Papers in Peer-reviewed Conference Proceedings

1. Duc-Anh Le, Hung Vu, Nghi H Tran, **Hang Dinh**, and Tutku Karacolak. Capacity-Achieving signals of Non-Coherent rayleigh fading channels with additive gaussian mixture noise. In *Conference on Computing, Management and Educational Tech (ComManTel 2015)*, Da Nang, Vietnam, December 2015.
2. **Hang Dinh**. Inconsistency versus accuracy of heuristics. In *Proceedings of the 27th Canadian Conference on Artificial Intelligence (AI 2014)*, volume 8436 of *Lecture Notes in Artificial Intelligence*, pages 71–82, Montréal, Québec, Canada, May 2014. Springer.
3. Tuyen X. Tran, Nghi H. Tran, Hamid Reza Bahrami, **Hang Dinh**, and Shivakumar Sastry. On achievable rate and ergodic capacity of OAF multiple-relay networks with CSI. In *Proceedings of the IEEE 77th Vehicular Technology Conference (VTC2013-Spring)*, Dresden, Germany, June 2013.
4. **Hang Dinh**, Cristopher Moore, and Alexander Russell. McEliece and Niederreiter cryptosystems that resist quantum Fourier sampling attacks. In *Advances in Cryptology - CRYPTO 2011: 31st Annual Cryptology Conference, Santa Barbara, CA, USA, August 2011 Proceedings*, volume 6841 of *Lecture Notes in Computer Science*, pages 761–779. Springer, August 2011.
5. **Hang Dinh** and Alexander Russell. Quantum and randomized lower bounds for local search on vertex-transitive graphs. In *Proceedings of the 12th International Workshop on Randomization and Computation (RANDOM)*, Lecture Notes in Computer Science LNCS 5171, pages 385–401. Springer-Verlag, 2008.
6. **Hang Dinh**, Alexander Russell, and Yuan Su. On the value of good advice: The complexity of A^* with accurate heuristics. In *Proceedings of the Twenty-Second Conference on Artificial Intelligence (AAAI-07)*, pages 1140–1145, July 2007.
7. Eugene Santos Jr. and **Hang T. Dinh**. Consistency of test cases in validation of Bayesian knowledge-bases. In *Proceedings of the 16th IEEE International Conference on Tools with Artificial Intelligence*, ICTAI '04, pages 468–475, Washington DC, USA, 2004. IEEE Computer Society.

Online Technical Reports

1. **Hang Dinh**, Cristopher Moore, and Alexander Russell. Quantum Fourier sampling, Code Equivalence, and the quantum security of the McEliece and Sidelnikov cryptosystems, November 2011. Presented as a short talk at the Code-based Cryptography Workshop (CBC 2012). URL `http://arxiv.org/abs/1111.4382`
2. **Hang Dinh**, Cristopher Moore, and Alexander Russell. The McEliece cryptosystem resists quantum Fourier sampling attacks, 2010. Accepted to *QIP 2011* as a contributed talk. URL `http://arxiv.org/abs/1008.2390`

Presentations

Invited Talks and Contributed Talks

- Inconsistency versus Accuracy of Heuristics. *The 27th Canadian Conference on Artificial Intelligence (AI 2014)*, Montreal, Quebec, Canada, May 2014. Paper presentation.
- The Hardness of Code Equivalence for Shor-like Quantum Algorithms and its Application to Post-quantum Cryptography. *AMS Fall Southeastern Sectional Meeting, Special Session on Algebraic Cryptography*, Louisville, Kentucky, October 2013.
- Noisy Ciphertext Cryptanalysis of Code-based Cryptosystems. *The third International Workshop on Cryptography, Robustness, and Provably Secure Schemes for Female Young Researchers (CrossFyre)*, Leuven, Belgium, June 2013.

- Code Equivalence is Hard for Shor-like Quantum Algorithms. *Code-based Cryptography Workshop (CBC 2012)*, Lyngby, Denmark , May 2012.
- Code Equivalence is Hard for Shor-like Quantum Algorithms. *Webinar on Symbolic Computations and Post-Quantum Cryptography*, Stevens Institute of Technology. May 2012. Invited talk.
- McEliece and Niederreiter Cryptosystems That Resist Quantum Fourier Sampling Attacks. *The 31st Annual International Conference on Cryptology (CRYPTO 2011)*, Santa Barbara, CA, August 2011. Paper presentation.
- The McEliece Cryptosystem Resists Quantum Fourier Sampling Attacks. *The 14th Workshop on Quantum Information Processing (QIP 2011)*, Singapore, January 2011. Peer-reviewed Presentation.
- Quantum and Randomized Lower Bounds for Local Search on Vertex-Transitive Graphs. *The 12th International Workshop on Randomization and Computation (RANDOM)*, Cambridge, MA, August 2008. Paper presentation.
- Time Complexity of A* Search with Approximate Heuristics. *Google Research*, New York, NY, October 2008. Invited talk.
- On the Value of Good Advice: The Complexity of A* Search with Accurate Heuristics. *The Twenty-Second Conference on Artificial Intelligence (AAAI-07)*, Vancouver, Canada, July 2007. Paper presentation.
- Consistency of Test Cases in Validation of Bayesian Knowledge-Bases. *The 16th IEEE Conference on Tools with Artificial Intelligence (ICTAI 2004)*, Boca Raton, FL, November 2004. Paper presentation.

Posters Presented at Conferences

- Hang Dinh, Cristopher Moore, and Alexander Russell. Toward the Kempe–Shalev Conjecture. *The 13th Workshop on Quantum Information Processing (QIP 2010)*, Zurich, Switzerland, January 2010.
- Hang Dinh and Alexander Russell. Quantum and Randomized Lower Bounds for Local Search on Vertex-Transitive Graphs. *The 12th Workshop on Quantum Information Processing (QIP 2009)*, Santa Fe, New Mexico, January 2009.
- Hang Dinh. New Insights into Performance of A* Search. *The 3rd North East Student Colloquium on Artificial Intelligence (NESCAI'08)*, Cornell University, Ithaca, NY, May 2008.

Teaching and Course Development

Courses Taught: since Fall 2010

Indiana University South Bend

- CSCI-A106 Introduction to Computing (Course for non-majors. Lecture and lab.)
- CSCI-C101 Computer Programming I (Core course for majors. Lecture and lab.)
- CSCI-C201 Computer Programming II (Core course for majors. Lecture.)
- CSCI-C251 Foundations of Digital Computing (Core course for majors until Spring 2014. Lecture.)
- CSCI-C250 Discrete Structures (Core course for majors since Spring 2014. Lecture.)
- CSCI-B401 Fundamentals of Computing Theory (Core course for majors since Fall 2014. Lecture.)
- CSCI-B451 Security in Computing (Elective course for majors. Lecture.)
- CSCI-C455 Analysis of Algorithms I (Core course for majors. Lecture)

Course Development Fall 2015
Indiana University South Bend
Develop a new graduate course, CSCI-B539 Applied Cryptography

Course Development Fall 2010-Fall 2013
Indiana University South Bend

- Involved in redesigning CSCI-C251 into two new courses: CSCI-C250 and CSCI-B401
- Co-developed the critical thinking module for the CSCI-C250 course
- Developed CSCI-B401, a new course to IU South Bend. I submitted the proposal for this course in Fall 2011. It was offered for the first time at IU South Bend in Fall 2014.

Teaching Assistant Fall 2006-Spring 2009
University of Connecticut
Taught lab sessions for

- CSE 123C/1100 Introduction to Computing (Programming with C++)
- CSE 133/1102 Object-Oriented Design & Programming (Java).

Guest Lecture
University of Connecticut

- CSE 237/3502 Theory of Computation Fall 2009
- CSE 5095 Advanced Algorithms (graduate course) April 2009

Teaching Assistant Fall 2000- Spring 2001
Vietnam National University, Hanoi

- Taught lab sessions for courses in Computer Networking and Assembly Language.

Student Advising

Undergraduate Research Supervisor Summer 2014
Indiana University South Bend
Supervise one undergraduate student on the research project "Analyzing the inconsistency of heuristics with A* search"
Student name: Hannah Sienicki

Academic Advising Volunteer Summer 2014
Indiana University South Bend
Advised new Computer Science majors at a New Student Orientation

Academic Advisor since Summer 2011
Indiana University South Bend
Advise assigned Computer Science and Informatics majors.

Professional Development

Workshops Attended for Research Development

- Quantum Cryptanalysis Seminar. Schloss Dagstuhl – Leibniz Center for Informatics, Wadern, Germany, September 2015.
- *NSF CAREER Proposal Writing Workshop (Webinar).* Indiana University, April 2013.
- *Research Computing Workshop.* Indiana University UITS, South Bend, IN, April 2013.
- *Post Quantum Cryptography and Quantum Algorithms Workshop.* Leiden, Netherlands, November 2012.
- *NSF CISE CAREER Proposal Writing Workshop.* Tempe, Arizona, May 2012.

- *The 15th International Workshop on Quantum Information Processing (QIP 2012).* Montreal, Quebec, Canada, Dec 2011.
- *Federated Computing Research Conference (FCRC 2011).* San Jose, CA, June 2011.

Workshops Attended for Teaching Development

- *UCET 9-week Seminar for Online Course Development.* Indiana University South Bend, Summer 2016.
- *Online Teaching Workshop*, Sponsored by Leighton School of Business and Economics, Indiana University South Bend, April 2016.
- *UCET Workshop: Introduction to Canvas.* Indiana University South Bend, September 2014.
- *UCET Workshop: High-Impact Practices in Education.* Indiana University South Bend, February 2014.
- *The 14th Annual Midwest Conference on the Scholarship of Teaching and Learning (SoTL).* South Bend, IN, April 2013.
- *UCET Workshop: Teaching with Technology Fair.* Indiana University South Bend, April 2013.
- *UCET Workshop:Using E-Learning Principles to Create Effective Learning Environments.* Indiana University South Bend, June 2012.
- *UCET Workshop:Developing Instructional Strategies.* Indiana University South Bend, June 2012.
- *UCET Workshop: TEACH: Assessing Learner Performance.* Indiana University South Bend, June 2011.

Service Activities

Service to the University

Elected Committee Member Fall 2014 - Spring 2016
Indiana University South Bend
CLAS Curriculum Committee, College of Liberal Arts and Sciences.

Committee Chair Fall 2013-Fall 2015
Indiana University South Bend
Cognitive Science Committee, College of Liberal Arts and Sciences.

Appointed Committee Member
Indiana University South Bend

- Research and Development Committee — Fall 2016 - Spring 2018
  Academic Senate.
- Information Technology Committee — Fall 2014 - Spring 2016
  Academic Senate.
- AMCS Graduate Committee — since Fall 2014
  Master program in Applied Mathematics and Computer Science.
- Informatics Scholarship Committee — Spring 2014
  Department of Computer & Information Sciences.
- Knight-Russo Scholarship Committee — Spring 2013 - Spring 2014
  Department of Computer & Information Sciences.
- Cognitive Science Committee — since Fall 2012
  College of Liberal Arts and Sciences.

- CLAS Academic Advising Committee — since Fall 2012
  College of Liberal Arts and Sciences.
- Computer Literacy Committee — Spring 2012
  Department of Computer & Information Sciences.
- Advising and Admissions Committee — Fall 2011-Spring 2014
  Academic Senate.
- East Asian Studies Committee — Fall 2011-Spring 2012
  College of Liberal Arts and Sciences.
- Lab Manager Search Committee — Fall 2011
  Department of Computer & Information Sciences.
- Bioinformatics Committee — since Fall 2010
  College of Liberal Arts and Sciences.
- CS Curriculum Committee — since Fall 2010
  Department of Computer & Information Sciences.

Co-chair — Spring 2010
University of Connecticut
Weekly Graduate Students Seminar Series, Department of Computer Science & Engineering.

Service to the Profession

Paper Reviewer
- Mathematical Reviews — since Fall 2016
- 2016 IEEE Wireless Communications and Networking Conference (WCNC) - Track 3 - Mobile and Wireless Networks — 2015
- Journal of Mathematical Cryptology — 2014
- Journal of Symbolic Computation — 2013
  Special Issue: Mathematical and Computer Algebra Techniques in Cryptology
- Journal of Mathematical Physics — 2012
- Information Processing Letters — 2010
- The 18th International Conference of the Florida Artificial Intelligence Research Society (FLAIRS 2005) — 2005

Conference Presentation Reviewer — 2009
The 12th Workshop on Quantum Information Processing (QIP 2009)

Conference Organizing Volunteer
- The Twenty-Second Conference on Artificial Intelligence (AAAI 2007) — 2007
- 2003 IEEE International Conference on Systems, Man and Cybernetics (IEEE SMC 2003) — 2003

Service to the Community

Speaker — November 2010
IUSB Ignite Event
Gave a short talk entitled "*How Powerful Are Quantum Computers?*" to the general public.

Professional Membership

- ACM SIGACT since 2011
  ACM Special Interest Group on Algorithms and Computation Theory
- Upsilon Pi Epsilon Beta-chapter of Connecticut since 2010
  The honor society for the computing and information disciplines at the University of Connecticut