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RESEARCH INTERESTS

- Algorithms: security, evolutionary computing, genetic algorithm/programming, and agent-based optimization algorithms.
- High Performance computing: parallel programming and distributed computing.

EDUCATION

University of New Mexico 2007 — Present
Computer Science, Ph.D. student (Albuquerque, NM), GPA: 3.96/4.00.

The Pennsylvania State University
Computer Science, M.S. (2006, Middletown, PA) and B.S. (2003, University Park, PA).

EXPERIENCE

University of New Mexico, Albuquerque, NM 2007 — Present
Research Assistant

- Researched on software quality: using Evolutionary Computing techniques (e.g., Genetic Programming) to produce repairs/patches for programs.
- Worked on anomaly detection in desktop computing environment.

Lockheed Martin, Advanced Technology Laboratories, Cherry Hill, NJ Feb 2007 — August 2007
Graduate Intern

- Studied and surveyed reconfigurable architectures for object/image recognition and chromosome linkage structure in Genetic Algorithms.

The Pennsylvania State University, Middletown, PA 2005 — 2007
Graduate Research / Linux Administer / Course Grader

- Implemented agent-based algorithms to solve \mathcal{NP} -hard graph-based problems.
- Experimented with the shared and distributed memory parallel architectures for ant algorithms.

Naval Research Laboratory, Washington, DC Jul 2004 — Dec 2004, Jan 2006 — Jun 2006
Graduate Co-op

- Researched on various areas of Evolutionary Computing, Genetic Algorithm/Programming.
- Developed and optimized algorithms for Unmanned Aerial Vehicles' missions planning.

HONORS / AWARDS

Scholarships/Prizes

- Space Grant Fellowship from NASA, 2008 — 2009.
- Walter Karplus Research Grant from the IEEE Computational Intelligence Society (CIS), Summer 2009.
- Navy Incentive Award from the Naval Research Laboratory, 2005.
- *Hummies* Competition Winner, prize: \$5000 (Gold), 2009. <http://www.genetic-programming.org/hc2009/cfe2009.html>.
- Manfred Paul Award for Excellence in Software: Theory and Practice, prize: \$1024, ICSE '09.

Research

- Best Paper, GECCO Ant Colony Optimization & Swarm Intelligence track, 2009.

- Best Paper, GECCO Genetic Programming track, 2009.
- Best Paper and Best Presentation, SBST, 2009
- Distinguished Paper, ICSE '09.
- Outstanding Submission, HPEC, 2007.
- Best Paper, ICINCO, 2006.
- Travel Grant: UNM '09, GECCO '09, ICSE '09, GECCO '06.

Others

- Nominated for the Penn State Co-op Student of the Year Award, 2006.
- Hall Foundation Excellence Scholarship, 1999 — 2000.
- Computer Science Knowledge Award (3rd place) at the Harrisburg Community College Regional Competition, 1999.

COMPUTER SKILLS

- Programming Languages: C++, Matlab, Java, C, Objective Caml, Perl, and Shell scripts.
- Parallel Computing: MPI (message passing, distributed memory) and OpenMP (multi processing, shared memory).
- Platforms: Linux (Debian-based, RedHat-based), Mac OS (X), and Windows (NT-based, 9x).

EXTRACURRICULAR ACTIVITIES

- System administrator for the Adaptive Computation Lab at UNM (2009) and the Cluster room at PSU Harrisburg (2005 — 2006).
- Judge for Middle School Science fairs in Albuquerque, NM.
- Mentor (minority) students at Penn State, 1999 — 2000.
- Member of ACM and IEEE.
- Founding member of Badminton clubs at Penn State York, 2000 and University of New Mexico, 2009 (Position held: Treasurer and Webmaster '09).
- Sports: Swimming, Badminton (Penn State Intramural Champion, 2009), and Tennis (Penn State Varsity, 1999 — 2000).

PERSONAL

- U.S Citizen with active Department of Defense (DoD) Secret clearance.
- Fluent in the Vietnamese language.

REFERENCES

1. Dr. Thang N. Bui, tbui@psu.edu, 717-948-6088
Department Chair, Math and Computer Science, The Pennsylvania State University, Middletown, PA.
2. Dr. Sukmoon Chang, sukmoon@psu.edu, 717-948-6121
Professor, Math and Computer Science, The Pennsylvania State University, Middletown, PA.
3. Dr. Stephanie Forrest, forrest@cs.unm.edu, 505-277-3122
Department Chair, Computer Science, University of New Mexico, Albuquerque, NM.
4. Dr. James F. Smith III, jim.smith@nrl.navy.mil, 202-767-5358
Physicist, Tactical Electronic Warfare Division (TEW), Naval Research Laboratory, Washington, DC.

PUBLICATIONS

Journals

1. Bui, T., T. Nguyen, C. Patel, and K. Phan, “An Ant-Based Algorithm for Coloring Graphs”, *Discrete Applied Mathematics*, Vol. 156(2), 2008, pp. 190 — 200.
2. Smith, J and T. Nguyen, “Automating UAV Cooperative Behavior and Assignments through Fuzzy Logic”, *Integrated Computer-Aided Engineering*, Vol. 14(2), 2007, pp. 141 — 159.

Conferences

1. Bui, T., T. Nguyen, and J. Rizzo, “Parallel Shared Memory Strategies for Ant-Based Optimization Algorithms”, *Genetic and Evolutionary Computation Conference (GECCO)*, 2009.
Best Paper in the Ant Colony Optimization & Swarm Intelligence track
2. Forrest, S., W. Weimer, T. Nguyen, and C. Le Goues, “A Genetic Programming Approach to Automated Software Repair”, *Genetic and Evolutionary Computation Conference (GECCO)*, 2009.
Best Paper in the Genetic Programming track
3. Weimer, W., T. Nguyen, C. Le Goues, and S. Forrest, “Automatically Finding Patches Using Genetic Programming”, *International Conference on Software Engineering (ICSE)*, 2009.
ACM SIGSOFT Distinguished Paper and Manfred Paul Award for Excellence in Software: Theory and Practice
4. Smith, J and T. Nguyen, “Fuzzy decision trees for planning and autonomous control of a coordinated team of UAVs”, *Proc. International Society for Optical Engineering (SPIE)*, 6567, 2007.
5. Smith, J and T. Nguyen, “Genetic program based data mining of fuzzy decision trees and methods of improving convergence and reducing bloat”, *Proc. International Society for Optical Engineering (SPIE)*, 6570, 2007.
6. Smith, J and T. Nguyen, “Guiding Genetic Program Based Data Mining Using Fuzzy Rules”, *Proc. 7th International Conference for Intelligent Data Engineering and Automated Learning (IDEAL)*, 4224, 2006, pp. 1337 — 1345.
7. Smith, J and T. Nguyen, “Evolutionary Data Mining Approach to Create Digital Logic”, *Proc. 3rd International Conference on Informatics in Control, Automation and Robotics (ICINCO)*, 2006, pp. 107 — 113.
8. Smith, J and T. Nguyen, “Fuzzy Logic Based UAV Allocation and Coordination”, *Proc. 3rd International Conference on Informatics in Control, Automation and Robotics (ICINCO)*, 2006, pp. 9 — 18.
Best Paper
Also appears in: *Lecture Notes in Electrical Engineering, Informatics in Control Automation and Robotics*, Vol. 15(2), 2008, pp. 81 — 94.
9. Bui, T and T. Nguyen, “An Agent-Based Algorithm for Generalized Graph Colorings”, *Genetic and Evolutionary Computation Conference (GECCO)*, 2006, pp. 19 — 26.
10. Smith, J and T. Nguyen, “Fuzzy Logic Based Resource Manager for a Team of UAVs”, *Proc. 25th International Conference of the North American Fuzzy Information Processing Society (NAFIPS)*, 2006.
11. Smith, J and T. Nguyen, “Creating Fuzzy Decision Algorithms Using Genetic Program Based Data Mining”, *Proc. 25th International Conference of the North American Fuzzy Information Processing Society (NAFIPS)*, 2006.
12. Smith, J and T. Nguyen, “Resource Manager for an Autonomous Coordinated Team of UAVs”, *Proc. International Society for Optical Engineering (SPIE)*, 6235, 2006, pp. 118 — 129.

13. Smith, J and T. Nguyen, “Genetic Program Based Data Mining to Reverse Engineer Digital Logic”, Proc. International Society for Optical Engineering (SPIE), 6241, 2006, pp. 24 — 35.
14. Smith, J and T. Nguyen, “Distributed Autonomous Systems: Resource Management, Planning, and Control Algorithms”, Proc. International Society for Optical Engineering (SPIE), 5809, 2005, pp. 65 — 76.
15. Smith, J and T. Nguyen, “Data-Mining-Based Automated Reverse Engineering and Defect Discovery”, Proc. International Society for Optical Engineering (SPIE), 5812, 2005, pp. 232 — 242.

Workshops

1. Nguyen, T., W. Weimer, C. Le Goues, and S. Forrest, Extended Abstract: “Using Execution Paths to Evolve Software Patches”, Search-Based Software Testing Workshop (SBST), 2009.
Best Short Paper and Best Presentation
2. Viamontes, G., M. Amduka, J. Russo, M. Craven, and T. Nguyen, Poster: “Efficient Memoization Strategies for Object Recognition with a Multi-Core Architecture”, Proc. 11th Annual High Performance Embedded Computing Workshop (HPEC), 2007.
Outstanding Submission
Also appears in: Lockheed Martin, Advanced Technology Laboratories, Technical Reports, 2007

Others

1. Nguyen, T., W. Weimer, C. Le Goues, and S. Forrest, “Fixing Real Software Bugs using Evolutionary Computing”, Computer Science University of New Mexico Student Conference (CSUSC), 2009.
2. Nguyen, T., W. Weimer, C. Le Goues, and S. Forrest, Poster: “Evolving Software Repairs Using Genetic Programming”, Darwin’s Legacy Symposium, University of New Mexico, 2009.
3. Bezerra, G and T. Nguyen, “Modeling the Spread of Infection Diseases using an Agent-based Spatial Network”, Computer Science University of New Mexico (CSUSC), 2008.
4. T. Nguyen, “Graphs Coloring with Ants”, Penn State Graduate Research Exhibition, 2006.
5. T. Nguyen, Poster: “Planning and Control Phases for Cooperative Teams of Unmanned Aerial Vehicles”, Penn State Graduate Research Exhibition, 2006.
6. T. Nguyen, Poster: “Reverse Engineering and Exploiting Radars through Evolutionary Computing”, Penn State Graduate Research Exhibition, 2006.
7. Nguyen, T and T. Bui, “DIMACS benchmarks repository: collections of benchmark instances for \mathcal{NP} -hard problems such as Clique, Graph Coloring, Vertex Cover”,
Website: <http://www.cs.hbg.psu.edu/benchmarks/>.
8. T. Nguyen, M.S. Thesis: “On the Graph Coloring Problem and Its Generalizations”, The Pennsylvania State University, 2006.