

# Brent Lagesse, Ph.D.

Computing and Software Systems

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## Curriculum Vitae

### Summary

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I am an associate professor at the University of Washington Bothell. My research focus is security and privacy in pervasive computing systems such as crowd sensing and internet of things. My teaching focus is undergraduate and graduate computer security and networking.

### Education

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- **University of Texas at Arlington** **Aug 2006 – Aug 2009**  
**Degree:** Ph.D., Computer Science  
**Thesis Topic:** Autonomic Trust Management in Dynamic Systems  
**Advisors:** Matthew Wright and Mohan Kumar
- **University of Texas at Arlington** **Aug 2004 – May 2006**  
**Degree:** M.S., Computer Science  
**Specialization:** Networking  
**Thesis Topic:** Dynamic Formation of Software Agent Communities  
**Advisor:** Mohan Kumar
- **Illinois Institute of Technology** **Aug 2000 – May 2004**  
**Degree:** B.S., Computer Engineering with Honors

### Academic Appointments

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- **University of Washington at Bothell** **Sept 2013 – Present**  
*Associate Professor* **Sept 2018 – Present**  
*Assistant Professor* **Sept 2013 – Sept 2018**  
Performed research, teaching, and service focused on security in emerging environments. Current research projects include adversarial machine learning, secure crowd sensing, privacy in cyber-physical systems, distributed trust in pervasive systems, and cyber security education.
- **University of Cambridge** **April 2018 – Sept 2018**  
*Fulbright Cyber Security Scholar*

Research in security and privacy of crowd sensing systems. Research focuses on identifying strategically injected malicious data from users infected with malware.

- **University of Maryland University College** **Sept 2010 – May 2011**  
*Adjunct Professor*  
Taught distance-learning courses in cyber security in the Graduate School of Management and Technology.
- **University of Texas at Arlington** **June 2008 – Aug 2009**  
*Research Assistant*  
Research for Pervasively Secure Infrastructures and Collaborative Virtual Observation projects. Research involved using game-theoretic approaches to securely and reliably access resources and dynamically compose services in hostile, mobile, and open environments.
- **University of Texas at Arlington** **Aug 2006 – May 2008**  
*Assistant Instructor*  
Taught Introduction to C in the Computer Science Engineering department 4 times for both non-majors and computer science majors.

## **Employment**

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- **BBN Technologies** **June 2011 – May 2013**  
*Research Scientist*  
Performed experiments in dynamic and static analysis techniques to instrument binary code. Led research team in Internet voting. Performed research in Internet situational awareness. Conducted research in model checking for security properties. Conducted additional classified research not mentioned above.
- **Oak Ridge National Laboratory** **Sept 2009 – May 2011**  
*Cyber Security Research Scientist*  
Research focused on providing secure and reliable access to critical information on systems with intermittent connectivity and untrusted nodes. Recent research topics include Advanced Metering Infrastructure, privacy for wireless medical systems, key distribution, and forensics in cyber-physical systems.
- **Lawrence Livermore National Laboratory** **May 2006 – May 2009**  
*Student Scholar*  
Research and development for the ACATS and ACATS3D simulation, control, and visualization projects. Researched and developed methods of representing uncertain information in 3D environments. Using Qt, DI-Guy, AI-Implant, and Delta3D to create interaction between the user and simulation information.
- **Lockheed Martin Missiles & Fire Control** **June 2005 – May 2006**  
*Engineering Intern*

Software development for the TOPSCENE project including the TS48 3D Visualization System and TOPCOP Control System. Integrated DIS, CIGI, and HLA simulation feeds into a 3D environment. Used OneSAF and JSAF to validate visualization functionality.

## Publications

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- **Refereed Publications**

1. **Brent Lagesse**, Kevin Wu, Jaynie Shorb, and Zealous Zhu. *Detecting Spies in IoT Systems using Cyber-Physical Correlation*. IEEE Workshop on Mobile and Pervasive Internet of Things, 2018.
2. **Brent Lagesse**, Kevin Wu, Jaynie Shorb, and Zealous Zhu. *Automated Hidden Sensor Detection in Sensor-Rich Spaces*. IEEE Pervasive Computing and Communications Demo Session, 2018.
3. Ajay Palleri Kesavan, Neil Prakasam, Ambika Hegde, and **Brent Lagesse**. *Enabling Crowd Sensing for Non-Experts*. IEEE Pervasive Computing and Communications Demo Session, 2018.
4. Aboubakr Benabbas, Golnaz Elmamooz, **Brent Lagesse**, Daniela Nicklas, and Ute Schmid. *Living Lab Bamberg: An infrastructure to explore smart city research challenges in the wild*. Künstliche Intelligenz, 2017.
5. Cody Burkard and **Brent Lagesse**. *Analysis of Causative attacks against SVMs Learning from Data Streams*. International Workshop on Security and Privacy Analytics, 2017.
6. Ruth Ogunnaiké and **Brent Lagesse**. *Toward Consumer-Friendly Security in Smart Environments*. IEEE Workshop on Security, Privacy, and Trust in the Internet of Things (SPT-IOT), 2017.
7. Gautam Kumar and **Brent Lagesse**. *Limited Use Cryptographic Tokens in Securing Ephemeral Cloud Servers*. International Conference on Information Systems Security and Privacy (ICISSP), 2017.
8. **Brent Lagesse**, Cody Burkard, and Julio Perez. *Securing Pervasive Systems Against Adversarial Machine Learning*. IEEE Pervasive Computing and Communications Conference Work in Progress, 2016.
9. Steve Morgan and **Brent Lagesse**. *Dynamically Generated Virtual Systems for Cyber Security Education*. International Conference on Cloud Security and Management, 2015.
10. **Brent Lagesse**. *Analytical Evaluation of P2P Reputation Mechanisms*. International Journal of Communication Networks and Distributed Systems, 2012.
11. Nathanael Paul, **Brent Lagesse**. *Mitigating Solutions in Insulin Pump System Security*. Journal of Diabetes Science and Technology, 5(2):A128. March 2011.
12. James Horey and **Brent Lagesse**. *Latency Minimizing Tasking for Information Processing Systems*. International Workshop on Knowledge Discovery Using Cloud and Distributed Computing Platforms, 2011.
13. Craig Shue and **Brent Lagesse**. *Embracing the Cloud for Better Cyber Security*. Middleware Support for Pervasive Computing Workshop, 2011.

14. **Brent Lagesse**. *Privacy Challenges for Wireless Medical Devices*. USENIX Workshop on Health, Security, and Privacy, 2010.
  15. **Brent Lagesse**, Mohan Kumar, Mihai Lazarescu, Svetha Venkatesh. *Augmenting Trust Mechanisms with Social Networks*. ACM Cyber Security and Information Intelligence Workshop, 2010.
  16. **Brent Lagesse**, Mohan Kumar, Matthew Wright. *ReSCo: A Middleware Component for Reliable Service Composition in Pervasive Systems*. Middleware Support for Pervasive Computing Workshop, 2010.
  17. **Brent Lagesse**, Mohan Kumar, Justin Mazzola Paluska, Matthew Wright. *DTT: A Distributed Trust Toolkit for Pervasive Systems*. IEEE Pervasive Computing and Communications Conference, 2009.
  18. **Brent Lagesse**. *Trust and Security in Dynamic Systems*. IEEE Pervasive Computing and Communications Conference, PhD Forum, 2009.
  19. **Brent Lagesse**, Mohan Kumar, Matthew Wright. *AREX: An Adaptive System for Secure Resource Access in Mobile P2P Systems*. IEEE Peer to Peer Computing Conference, 2008.
  20. **Brent Lagesse**, Mohan Kumar. *A Novel Utility and Game-Theoretic Based Model for Mobile P2P Systems*. Mobile Peer to Peer Workshop, 2008.
  21. **Brent Lagesse**, Mohan Kumar. *UBCA: Utility-Based Clustering Architecture for Peer-to-Peer Systems*. International Conference on Distributed Computing Systems: Workshop on Mobile and Distributed Computing, 2007.
  22. **Brent Lagesse**. *A Game-Theoretical Model for Task Assignment in Project Management*. IEEE International Conference on Management of Innovation and Technology, 2006.
- **Invited Papers**
    1. Eleonora Borgia, Danielo G. Gomes, **Brent Lagesse**, Rodger Lea, Daniele Puccinelli. *Internet of Things: Research challenges and Solutions*. Computer Communications Special Issue on the Internet of Things, 2016.
    2. **Brent Lagesse**. *Challenges in Securing the Interface Between the Cloud and Mobile Systems*. Pervasive Communities and Service Clouds, 2011.
  - **Non-Refereed Abstracts, Demos and Poster Sessions**
    1. **Brent Lagesse**. *Dynamic Virtual Laboratories*. Secure and Trustworthy Computing PI Workshop, 2015.
    2. **Brent Lagesse**, Matthew Wright, Mohan Kumar. *Utilizing Resources in Hostile Environments*. DIMACS/DyDAn Workshop: Mathematical & Computational Methods for Information Security, 2007.
    3. Swaroop Kalasapur, Kumarvel Senthivel, **Brent Lagesse**, Mohan Kumar. *Just-in-time Service Composition in Pervasive Environments*, IEEE Pervasive Computing and Communications Conference, 2006.
  - **Invited Talks**
    1. *Hidden Camera Detection Using Cyber-Physical Correlation*. Nokia Bell Labs, July 2018.

2. *Hidden Camera Detection Using Cyber-Physical Correlation*. Cyber Physical Systems Seminars, University of Oxford, July 2018.
3. *Detecting Spies in Sensor-Rich Environments using Cyber-Physical Correlation*. Computer Laboratory Security Seminar, University of Cambridge, May 2018
4. *Detecting Spies in Sensor-Rich Environments using Cyber-Physical Correlation*. CS/CE/Feinberg Seminar, Northwestern University, April 2018
5. *Current and Emerging Trends in Computer Security*. Washington Defense Trial Lawyers Annual Insurance Law Update, April 2016.
6. *On-Demand Generation of Virtual Laboratories for Cyber Security Education*. Research-In-Progress Speaker Series. University of Washington Bothell, May 2015.
7. *Careers in Cyber Security*. CSS Speaker Series. University of Washington Bothell, November 2014.
8. *Distributed Trust in Pervasive Systems*. PLSE Research Seminar. University of Washington, February 2014.
9. *Security in Emerging Environments*. CSS Speaker Series. University of Washington Bothell, February 2014.
10. *Challenges in Securing Pervasive Systems*. ECE Research Seminar. Illinois Institute of Technology, November 2010.

## Research Funding

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- **External – Total: \$608,034**
  1. Department of Homeland Security (DHS). Design Patterns and Compensating Controls for Securing Financial Sessions, Co-PI, \$99,000 (responsible for **\$11,155**), 06/2018
  2. T-Mobile. *Integrated Business Internships for Cyber Security Education*, Consultant, **\$4,000**, 2/2017
  3. National Aeronautics and Space Administration (NASA). Data Poisoning in Open Machine Learning Systems, PI, **\$5000**, 5/2016
  4. National Security Agency (NSA). *Active Security Against Adversarial Machine Learning*, PI, **\$292,921**, 9/2015.
  5. National Aeronautics and Space Administration (NASA). *Secure Machine Learning*, PI, **\$1000**, 5/2015.
  6. National Aeronautics and Space Administration (NASA). *Mobile Application Permissions*, PI, **\$1000**, 5/2015.
  7. National Science Foundation (NSF). *Enhancing Cybersecurity Education for Native Students Using Virtual Laboratories*, PI, **\$292,958**, 9/2014
- **Internal – Total: \$141,464**
  1. UWB CSS, *Secure Data Analysis in Crowd Sensing Systems*, PI, **\$57,900**, 6/2017
  2. UWB CSS, *Defending Against Adversarial Machine Learning in Dynamic Systems*, PI, **\$57,900**, 6/2016
  3. UWB CSS, *Internet Scale Tracking of Email Transactions*, PI, **\$4,300**, 4/2015

4. UWB CSS, *Host Based Detection of Malicious Cell Phone Towers*, PI, \$5,515, 1/2014
5. BBN, *DARPA Cyber Fast Track (Classified)*, PI, \$4,961, 9/2012
6. BBN, *Internet Voting*, PI, \$10,888, 5/2012

## Clearances

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- **Department of Defense Top Secret** **June 2011 – June 2016**
- **Department of Energy ‘Q’** **Oct 2008 – May 2011**

## Teaching Experiences

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- **University of Washington Bothell** **Sept 2013 – Present**  
**Position:** Assistant Professor  
**Classes Taught:** Cryptography, Malware Reverse Engineering, Secure Software Development, Security and Privacy in Emerging Environments, Network Design, Secure Systems, Adversarial Machine Learning
- **University of Maryland University College** **Sept 2010 – May 2011**  
**Position:** Adjunct Professor  
**Responsibilities:** Teach distance-learning graduate courses in cyber security.  
**Classes Taught:** Cyberspace and Cybersecurity (2 semesters)
- **Trinity River Mission** **Jan 2008 – May 2009**  
**Position:** Volunteer  
**Responsibilities:** Create and teach classes designed to promote interest and education in computer science amongst underprivileged 6-12 graders  
**Classes Taught:** Programming with Alice, Introduction to Java, Introduction to PHP
- **University of Texas at Arlington** **Aug 2006 – June 2008**  
**Position:** Assistant Instructor  
**Responsibilities:** Organize and teach courses  
**Classes Taught:** Introduction to Programming in C
- **University of Texas at Arlington** **Aug 2004 – June 2005**  
**Position:** Teaching Assistant  
**Responsibilities:** Instruct, write, and grade labs  
**Classes Taught:** Introduction to Programming in C, Introduction to Engineering, Computer Literacy

## Select Honors and Awards

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- Fulbright Cyber Security Award, 2017
- Chancellor’s Distinguished Undergraduate Research and Creative Practice Mentor Award, 2016

- John S. Schuchman Outstanding Doctoral Student Award, 2007-2008
- University Scholar (top 1% of UT Arlington), 2006-2007
- National Physical Science Consortium Fellow, 2006-2008
- Verizon Outstanding Master's Thesis, 2005-2006
- Camras/NEXT Full Scholarship for study at Illinois Institute of Technology, 2000

## Service Activities

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- **Internal**
  1. **Chaired Department Committees:** Tenure Track Faculty Search Committee, Microcredits Committee, Cybersecurity Engineering Oversight and 5-Year Review Committee
  2. **Department Committees:** Undergraduate Curriculum Committee, Graduate Curriculum Committee, Infrastructure Committee, Public Communications, Merit Review for Part-time Faculty, Undergraduate Admissions Committee, Part-time Hiring Committee, CIAC/Cybersecurity Committee, Petition Committee
  3. **Organizational Advisor:** Gray Hats Hacking Club
  4. **Campus and University:** Faculty Tri-Campus Policy Committee, Program Review Subcommittee, UWB Founders Fellow Reviewer, Chancellor's Distinguished Undergraduate Research and Creative Practice Reviewer
- **External**
  1. **Program Chair:** ACM CCS Workshop on Insider Threats, International Workshop on Advances in Pervasive Computing, Mini-track on Cloud Computing Security and Emerging Environments at ICCSM
  2. **TPC Vice-Chair:** IEEE Pervasive Computing and Communications
  3. **Guest Editor:** ComCom SI on Internet of Things
  4. **Publicity Chair:** IEEE Pervasive Computing and Communications
  5. **Demo/Poster Chair:** IEEE Internet of People
  6. **Research Area Chair:** MOBILITY (Context-aware, media, and pervasive computing)
  7. **Current and Previous Technical Program Committees:** Digital Forensics Research Conference, IEEE Pervasive Computing and Communications Conference, IEEE Middleware Support for Pervasive Computing Workshop, IEEE Hot Topics in Pervasive Computing, IEEE/IFIP Embedded and Ubiquitous Computing Conference (Mobile and Context-aware Computing & Middleware for Embedded and Ubiquitous Computing tracks), MOBILITY, MultiStream, IEEE/FTRA Multimedia and Ubiquitous Engineering, PerMoby, ICDCN, SUSTAINIT