Lee Pike

Email: leepike@gmail.com
Phone: +1 971.255.3601
Webpage: http://www.cs.indiana.edu/~lepike
Open-source software: https://github.com/leepike

6715 NE Rodney Ave.
Portland, Oregon 97211
USA

Experience

- Software Lead — Aug 2017 - Dec 2018
  Groq, Inc.
  Led the software divisions (compiler, system software, and software verification), with approx. 15 direct and indirect reports in the first year. Responsible for all aspects of strategic planning and delivery. Approx. 50% individual contribution to the compiler, a TensorFlow to high-performance custom ASIC.
- Cyber-Physical Systems Lead — Nov 2006 - Aug 2017
  Galois, Inc.
  Built and led Galois' R&D divison in cyber-physical systems, managing 5-10 engineers at a time and multiple subcontractors and external collaborators. Principal Investigator on over $10M in research funding from NASA, DARPA, DOT, and Fortune 100 companies. R&D work focused on programming language design and implementation, security, and embedded systems.
- Research Engineer — Aug 2005 - Nov 2006
  Galois, Inc.
  Responsible for software development and publishing research results in programming languages, formal verification, and systems engineering.
- Research Scientist — Sept 2003 - Aug 2005
  NASA Langley Research Center Formal Methods Group (Civil Service)
  Researched formal verification technologies for safety-critical systems, especially real-time fault-tolerant embedded systems.

Education

- Ph.D, Computer Science — May 2006
  Indiana University, Bloomington
  Dissertation: Formal Verification of Time-Triggered Systems.
- M.S., Computer Science — May 2003
  Indiana University, Bloomington
- B.A., Philosophy; Minor, Mathematics — May 2000
  University of Idaho

Representative Publications

(Publications are available at my website or Google Scholar.)

- Georges-Axel Jaloyan and **Lee Pike**. Lock Optimization for Hoare Monitors in Real-Time Systems, *The 17th International Conference on Application of Concurrency to System Design (ACSD)*, 2017.
- Patrick C. Hickey, **Lee Pike**, Trevor Elliott, James Bielman, John Launchbury. Building embedded systems with embedded DSLs (experience report), *Intl. Conference on Functional Programming*, 2014.

- **Lee Pike**, Patrick C. Hickey, James Bielman, Trevor Elliott, Thomas DuBuisson, John Launchbury. Programming languages for high-assurance autonomous vehicles (extended abstract), *Programming Languages meets Programming Verification*, 2014 (**invited paper**).
- **Lee Pike**, Nis Wegmann, Sebastian Niller, Alwyn Goodloe. Copilot: monitoring embedded systems, *Innovations in Systems and Software Engineering, Special Issue on Software Health Management*, 2013.
- **Lee Pike**, Nis Wegmann, Sebastian Niller, Alwyn Goodloe. Experience Report: a Do-It-Yourself High-Assurance Compiler, *International Conference on Functional Programming*, 2012 (**SIGPLAN Comm. of the ACM "Research Highlights" nominated paper**).
- **Lee Pike**. Modeling time-triggered protocols and verifying their real-time schedules, *Formal Methods in Computer Aided Design*, 2007 (**best paper award**).
- **Lee Pike**, Mark Shields, and John Matthews. A verifying core for a cryptographic language compiler, *Sixth International Workshop on the ACL2 Theorem Prover and its Applications*, 2006.
- **Lee Pike**, Jeffery Maddalon, Paul Miner, and Alfons Geser. Abstractions for Fault-Tolerant Distributed System Verification, *Theorem Proving in Higher Order Logics, Springer*, 2004.

Press

- Work on DARPA HACMS highlighted in *60 Minutes*.
- Featured or quoted in *Security Now!* podcast, *NextGov*, *Government Computing News*, and *Flight International*.
- Research featured in *Aerospace America* "Year in Review" in 2014 and 2011.

Representative Keynotes

(Full talk list available at my website.)

- **Keynote**: Programming Languages for High-Assurance Autonomous Vehicles. *Conference on Verified Software: Theories, Tools, and Experiments (VSTTE)*, 2015.
- **Keynote**: Building a High-Assurance Unpiloted Air Vehicle. *Intl. Conference on Formal Methods and Models for Codesign (MEMOCODE)*, 2013.
- **Keynote**: A Do-It-Yourself High-Assurance Compiler. *Systems Software Verification Conference*, 2012.

Notable Open-Source Software

(All software noted is on GitHub.)

- **Ivory**: memory-safe embedded domain-specific language.
- **SMACCMPilot**: high-assurance UAV autopilot.
- **Copilot**: hard real-time runtime monitoring software.
- **SmartCheck**: automatic and efficient counterexample reduction and generalization.

Honors and Awards

- DARPA Demo Day (at Pentagon) invitee — 2016, 2014
- SIGPLAN nominated paper — 2012
- Best Paper Award at FMCAD (single-author paper) — 2007
- NASA Superior Accomplishment Award — 2004