Hans Walter Behrens

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Summary

I am a third-year Ph.D. student and Dean's Fellow at Arizona State University. My research focus is on adversarially-resilient distributed systems, as well as techniques for privacy preservation and decentralized autonomous decision-making. I've worked in and managed teams, taught classes, and have highly polished communication skills, paired with years of experience conveying complex topics to non-expert audiences.

Education

- **Arizona State University** — Tempe, AZ
  Doctor in Philosophy (Ph.D.), Computer Science (GPA: 4.00/4.00) — *2016 – 2021 (Expected)*
  Advised by Professor K. Selçuk Candan
- **Arizona State University** — Tempe, AZ
  Master of Computer Science — *2019 (Expected)*
- **University of California, Irvine** — Irvine, CA
  Bachelor of Science, Information & Computer Science — *2004 – 2007*

Peer-Reviewed Publications

- **Velocity: Scalability Improvements in Block Propagation Through Rateless Erasure Coding**
  N Chawla, **HW Behrens**, D Tapp, D Boscovic, and KS Candan
  *IEEE International Conference on Blockchain and Cryptocurrency (**ICBC**) 2019*
  Research Track
- **Load-Adaptive Continuous Coupled-Simulation Ensembles with DataStorm and Chameleon**
  HW Behrens, ML Li, A Gadkari, Y Garg, X Chen, S Liu, and KS Candan
  *Chameleon User Meeting (**CHUM**) 2019*
  Demonstration Track
- **Adversarially-Resistant On-Demand Topic Channels for Wireless Sensor Networks**
  HW Behrens and KS Candan
  *IEEE International Symposium on Reliable Distributed Systems (**SRDS**) 2018*
  Research Track
- **DataStorm-FE: A Data- and Decision-Flow and Coordination Engine for Coupled Simulation Ensembles**
  HW Behrens, KS Candan, X Chen, A Gadkari, Y Garg, ML Li, *et al.*
  *International Conference on Very Large Data Bases (**VLDB**) 2018*
  Demonstration Track
- **Lightweight Authentication of Fault-Tolerant Topic-Channel Queries in Distributed Systems**
  HW Behrens and KS Candan
  *ACM International Symposium on High-Performance Parallel and Distributed Computing (**HPDC**) 2018*
  Consortium Track

Academic Service

- **Conference Volunteer:** *(2017)* CODASPY; *(2018)* HPDC; *(2019)* PLDI
- **Conference Reviewer:** *(2017)* ASONAM, TKDE; *(2018)* DASFAA, EDBT, EUROPAR, SIGKDD, TKDE; *(2019)* DASFAA, ICDE, TKDE
- **Student Program Committee:** *(2019)* S&P
- **ASU Committees:** University Hearing Board, Teaching Excellence Award Committee, Family Resources Advisory Board

Professional Experience

- **Arizona State University** — Tempe, AZ
  Dean's Fellow, Graduate Research Assistant, & Graduate Teaching Assistant — *Aug 2016 - Present*
  - Awarded the prestigious Dean's Fellowship, a four-year paid fellowship reserved for the most promising Ph.D. students from each incoming class.
  - Sole instructor for an introductory engineering course (ASU 101), responsible for curriculum design, lecture delivery, and grade evaluation of 130 undergraduate students.
  - Designed and conducted a personal research agenda, under the Center for Assured and SCAlable Data Engineering (CASCADE), to explore novel ideas in the intersection of scalability and security.
  - Successfully managed a team of graduate and undergraduate students in achieving our ambitious research goals, and leading to a successful top-tier publication of our complex distributed system.

- **Canela Software, Inc.** — Temecula, CA
  Chief Technical Officer — *Nov 2015 – Jul 2016*
  - Coordinated a major business pivot, requiring reallocation of approximately 85% of development resources. This pivot successfully produced a well-received prototype, and generated significant new client interest.
  - Proposed, designed, and executed a complete overhaul of developmental process company-wide; proposals influenced release deployment, change management, issue tracking, code review, regression testing, and more.
  - Organized a widespread shift to more well-defined agile methodologies, especially Scrum, to increase team flexibility to customer-driven changes; this flexibility proved a critical enabling factor for the success of our pivot.

- *Principal Software Engineer* — *Jul 2011 – Nov 2015*
  - Designed and implemented enhancements to the software licensing system, enabling SaaS deployments, increasing enterprise penetration, and converting 5% of gross revenue to recurring revenue.
  - Created an in-app store and purchasing system, increasing adoption of add-on products by 40%.
  - Architected, designed, and rolled out a completely custom cloud database, opening up completely new markets and reducing cloud development overhead by almost 75%.

- *Senior Software Engineer* — *Mar 2009 – Jul 2011*
  - Built a new online software licensing system, reducing accounting workload by 4 hours per day, decreasing software piracy by over 95%, and increasing revenue by 14% year over year.
  - Created an automatic update architecture to deploy incremental updates to over 10,000 client systems, reducing support requests by 12% and permitting the rapid release of new features.

- *Software Engineer* — *Jan 2008 – Mar 2009*
  - Designed a new calibration algorithm to increase rendering precision, which reduced measurement error below 0.01 mm and increased diagnosis accuracy by 4%.
  - Implemented a serial-to-USB interface for a new control method, increasing margins in regional markets by $125/unit.
  - Added multi-monitor support to a diagnostic product, a feature which is now used by 10% of all installations.

- **Sendio** — Irvine, CA
  Student Intern — *Spring 2007*
  - Designed and implemented a daemon to filter email attachments against a list of known harmful files as they were received by a mail server.
  - Introduced to, learned, and successfully integrated several disparate technologies into an existing product in under three months.

- **Princeps Software** — Irvine, CA
  Founder & President — *Feb 2007 – Apr 2012*
  - Balanced the demands of running a business against the requirements of school, and later, full-time employment.
  - Donated copies of educational software to local schools in need, helping tailor assignments to curriculum and improving teacher-parent communication.

Honors & Awards

- **Upsilon Pi Epsilon (UPE),** ACM Computing Honors Society, Founding President *(Alpha Chapter of AZ)*
- **Phi Kappa Phi ($\Phi K\Phi$),** Graduate Honors Society, Member.
- **Eta Kappa Nu (HKN),** IEEE Honors Society, Member.
- **Nora J. Folkenflik Memorial Essay Prize,** for outstanding written communication.
- **Travel Grant Awardee:** *2019*: NDSS, CHUM

Relevant Coursework

- **Applied Cryptography:** Using cryptography to secure communication protocols over networked systems, including signatures, certificates, timestamps, elections, digital cash, and other multiparty coordination.
- **Artificial Intelligence:** Definitions of intelligence, computer problem solving, game playing, pattern recognition, theorem proving, and semantic information processing; evolutionary systems; heuristic programming.
- **Bio-Inspired Computing:** Discussing computational methods derived from biological processes and models including: evolution, immunology, social insects, metabolic scaling, and epidemiology.
- **Cloud Computing:** Virtualization, cloud computing, programmable networking, performance evaluation, information assurance, distributed and parallel computing, and cloud computing-based applications.
- **Data Visualization:** Covers techniques and algorithms for creating effective visualizations based on principles from graphic design, visual art, perceptual psychology and cognitive science to enhance the understanding of complex data.
- **Distributed & Multiprocessor Operating Systems:** Distributed systems architecture, remote file access, message-based systems, object-based systems, client/server paradigms, distributed algorithms, replication and consistency, and multiprocessor operating systems.
- **Distributed Database Systems:** Distributed database design, query processing, and transaction processing; distributed database architectures and interoperability; emerging technologies.
- **Foundations of Algorithms:** Advanced topics in formal algorithm design and analysis, including advanced shortest-paths algorithms, amortized analysis, network flows, NP-completeness and selected topics in computational geometry, distributed/parallel, randomized, and approximation algorithms.
- **Multimedia and Web Databases:** Data models for high-dimensional and graph data; query processing and optimization for inexact retrieval; advanced indexing, clustering, and search techniques in high-dimensional spaces.
- **Statistical Machine Learning:** Spectral clustering, regression, classification, semi-supervised learning, feature reduction, manifold learning, ranking, kernel learning and multitask learning.