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RESEARCH INTERESTS

- Cloud Computing, Distributed Systems, Performance Analysis and Modeling, Operating Systems

EDUCATION

PhD in Computer Science, Stony Brook University, USA **Aug. 2014-Jun. 2019**

- Advisor: Dr. Anshul Gandhi
- Thesis title: Analytical Approaches for Dynamic Scheduling in Cloud Environments

MSc in Software Engineering, Sharif University of Technology, Iran **Sep. 2010-Sep. 2012**

- Advisor: Prof. Rasool Jalili
- Thesis title: Analysis of Non-monotonic Property in Access Control for Pervasive Computing Environments

BSc in Software Engineering, Ferdowsi University of Mashhad, Iran **Sep. 2006-Jul. 2010**

TECHNICAL AND RESEARCH EXPERIENCE

- **Postdoctoral Researcher, University of Cambridge**, CompAcctSys, July 2019-present
  - **Current research:** I am currently working on audit logging challenges in the Internet of Things, online social platforms, and cloud computing environments. The goal is to propose novel audit logging and distributed log analysis approaches that preserve users' personal data privacy. These techniques can be leveraged to audit applications accessing users' personal data at run-time and their access pattern as well as to detect malicious usages of online social platforms and machine learning as services, just to name a few.
- **Research Assistant, Stony Brook University**, PACE Lab, January 2018-June 2019
  - **Resource-adaptive Batch Workload Management in Cloud Environments**: Resource under-utilization is common in cloud data centers. To improve server utilization, batch workloads can be run in the background to leverage idle resources. However, customer Virtual Machines' (VMs) performance can be degraded because of resource contention. We have been working on Scavenger, a batch workload manager that opportunistically runs containerized batch jobs next to the customer VMs to improve utilization without impacting the VMs' performance. The full study has been accepted to be presented in ACM SOCC'19 conference and it will be appeared in the proceeding.
- **Research Intern, MSR Redmond**, September 2017-December 2017, Mentor: Sameh Elnikety, Ricardo Bianchini
  - **Azure Benchmark Suite**: We collected highly running workloads of Azure Compute and packed them into an easy-to-use and representative benchmark suite. We implemented AzureBench using PowerShell and C#. AzureBench can be used for many purposes, such as performance analysis as well as power and resource provisioning.
- **Systems and Infrastructure Intern, LinkdeIn**, June 2017-September 2017, Mentor: Jean-Francois Im, Ravi Aringunram
  - **Implementation of HAVING Clause for Pinot Query Language**: Pinot is an open source OLAP data store that is being developed and used at Linkedin. During this project, I wrote about 5K lines of Java codes (including unit and integration tests) to implement HAVING clause (https://github.com/sajavadi/pinot).
  - **Design and Implementation of a Load-aware Segment Assignment Strategy for Pinot**: As of my second and main project I was working on how data segments should be distributed among Pinot servers to get lower latency and balanced server utilization. I implemented a generic load-aware segment assignment strategy, and we have extended this work by proposing EASY in the ICDCS'18 conference.
- **Research Assistant, Stony Brook University**, PACE Lab, June 2015-May 2017
  - **Dynamic, Interference-aware Load Balancing for Cloud-deployed Applications**: Performance interference is one of the main challenges in multi-tenant clouds especially for online applications that have stringent performance requirements. We have implemented and published DIAL (ICAC'17), a novel load balancer that automatically detects interference and re-balance incoming requests in an interference-aware manner.
  - **User-centric Detection and Estimation of Performance Interference**: We designed a performance model (UIE, IC2E'16), based on queuing theory and machine learning, to detect and estimate the amount of interference in multi-tenant clouds. The model allows users to estimate the true resources allocated to their application at any given time, without any assistance from the cloud provider or hypervisor.
- **R&D Employee, Sharif University of Technology**, Sharif Cert, April 2011 - August 2013
  - Design and implementation of transparent data encryption for PostgreSQL
  - Design and implementation of a label based access control model for PostgreSQL

PUBLICATIONS

- **Scavenger: A Black-box Batch Workload Resource Manager for Improving Utilization in Cloud Environments**
  S.A. Javadi, A.Suresh, M. Wajahat, A. Gandhi, ACM SOCC 2019 [to be appeared].
- **User-Centric Interference-Aware Load Balancing for Cloud-Deployed Applications**
  S.A. Javadi, A. Gandhi, IEEE Transactions on Cloud Computing, 2019 [to be appeared].
- **Application-agnostic Batch Workload Management in Cloud Environments**
  S.A. Javadi, S. Bhaskara, R. Doshi, P. Soundarapandian, M. Wajahat, A. Gandhi, Poster @ SOCC 2018.
- **EASY: Efficient Segment Assignment Strategy for Reducing Tail Latencies in Pinot**
  S.A. Javadi, H. Gupta, R. Manhas, S. Sahu, A. Gandhi, ICDCS 2018.
- **Improving Server Utilization via Resource-adaptive Batch VMs**
  S.A. Javadi, P. S. Banginwar, V. Chanana, R. Narvekar, M. K. Savita, A. Gandhi, Poster @ Middleware 2017.
- **Modeling and Analysis of Performance under Interference in the Cloud**
  S. Votke, *S.A. Javadi*, A. Gandhi, MASCOTS 2017
- **DIAL: Reducing Tail Latencies for Cloud Applications via Dynamic Interference-aware Load Balancing**
  S.A. Javadi, A. Gandhi, ICAC 2017
- **Dynamic Interference-Aware Load Balancing**
  S.A. Javadi, Himanshu Rajput, A. Gandhi, Poster @ SOCC 2016.
- **UIE: User-centric Interference Estimation for Cloud Applications**
  S.A. Javadi, S. Mehra, B. Reddy, A. Gandhi, IC2E 2016.
- **A Semantic-Aware Role-Based Access Control Model for Pervasive Computing Environments**
  S.A. Javadi, M. Amini. ISeCure Journal, Vol. 5, No. 2, pp. 119-140, July 2013.
- **Missing a Trusted Reference Monitor: How to Enforce Confidential and Dynamic Access Policies?**
  L. Karimi, *S.A. Javadi*, M. A. Hadavi, R. Jalili. CNDS 2013.
- **Non-monotonicity in OrBAC through Default and Exception Policy Rules**
  S.A. Javadi, M. Amini, R. Jalili. ISCISC 2012.
- **Policy Specification and Enforcement in Online Social Networks Using MKNF$^+$**
  M. Alizadeh, *S.A. Javadi*, M. Amini, R. Jalili, ISCISC 2012.

COMPUTER SKILLS

- **Languages**: C/C++ (proficient), Java (proficient), Shell Script (expert), Matlab (proficient), PHP, C# (prior experience)
- **Database Technologies**: MySQL, SQL Server, PostgreSQL, OpenTSDB
- **Cloud Technologies**: OpenStack, Amazon AWS, KVM, Docker, Hyper-V, DDA
- **Big Data Frameworks**: Hadoop YARN, SPARK, HBase, Pinot
- **Benchmarking Tools**: CloudSuite, TailBench, Httperf, HiBench, Sysbench, RAMSpead, DiskSpd, SpecJbb, SparkBench
- **Operating System**: Linux (Ubuntu, CentOS), Windows

PHD COURSES PASSED AND PROJECTS

- Operating Systems: Implementation of the following 5 project assignments for JOS operating system: x86 assembly, boot loader; virtual memory; processes/environments; multiprogramming and fork; file system and shell.
- Principles of Database Systems: Implementation of a simple talent search system using Datalog (using Flora-2 system), object-oriented extension of SQL (using PostgreSQL DBMS), and XML (using eXist-db and XMLSpy).
- Network Security: Traffic monitoring with tcpdump and Libpcap, plugboard proxy, developing a packet injector.
- Fundamental of Computer Networks: Experimental analysis on finding server load using IPID filed in the IP header.
- Analysis of Algorithms: Algorithm design assignments.
- Machine Learning: Implementation of ML techniques using Matlap and PyTorch.

MSC COURSES PASSED

- Formal Specification and Verification of Programs, Software Testing, Advanced Operating Systems, Database Security, Advanced Database Systems, Decision Support Systems, Data Mining

HONORS AND AWARDS

- ACM Symposium on Cloud Computing (SOCC'18) Student Grant, 2018
- USENIX Annual Technical Conference (USENIX ATC '16) Student Grant, 2016
- Stony Brook CS Department Chair Fellowship, 2014
- Rank 47 in M.Sc. nationwide entrance exam of Iranian Universities with nearly 10,000 participants