PEDRAM GHODSNIA

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SUMMARY OF QUALIFICATIONS

- A quick learner, self-starter, result-oriented, and energetic entrepreneur, eager to explore unknown territories
- Over twelve years work experience in industry and ten years research experience in academia
- Expert in data management systems, data engineering technologies, and cloud services
- Experienced in full-stack software development, contributed to repositories with over a million lines of code
- Skilled at technical and administrative management and supervision
- Contributed to five startups, co-founded three of them, and grown one to +50 employees
- Two patents and twelve published research papers in refereed journals and conferences

INDUSTRIAL EXPERIENCE

- **CTO**   2017- Present
  Brite Health, Palo Alto, USA
  - ➢ Led all technical aspects of the company's products and services including architecture, design and development of iOS app, Android app, web apps, backend API, AI engine, data science projects, and data engineering pipelines
  - ➢ Designed, deployed, secured, and maintained the cloud infrastructure over Amazon AWS and migrated it to Google Cloud Platform
  - ➢ Contributed extensively to the process of preparing required documentations for HIPPA compliance of the company's products, especially in the areas such as privacy, security, code quality, audit trails, disaster recovery planning, and risk analysis

- *Co-Founder/VP of Engineering*   2016 –2017
  Suntxt Inc. (Sylresc Smart Tag), Toronto, Canada
  - ➢ Led all technical aspects of the software stack of the company, including architecture, design, development and maintenance of iOS app, Android app, web app, online store, and data analytics tools
  - ➢ Designed, deployed, secured and maintained the cloud infrastructure on Google Cloud Platform
  - ➢ Conducted R&D projects for improving the quality and functionality of the products

- *Co-Founder/ CTO*   2014-2016
  Quantaad Inc., Sunnyvale, USA
  - ➢ Architected, designed and developed an ad network for mobile platforms, including both publishers side and advertisers side
  - ➢ Architected and developed parts of a context-aware app recommendation engine
  - ➢ Built, configured, deployed and monitored the cloud infrastructure of the company over Microsoft Azure and migrated it to Google Cloud Platform
  - ➢ Developed a framework for monitoring, cleaning and processing the server logs for performance monitoring, diagnostics and data science purpose
  - ➢ Designed and developed parts of a framework for capturing mobile sensor data and real-time user interactions, and processing the captured data
  - ➢ Integrated the ad network with the internal app recommendation engine, third party ad providers, and publishing platforms such as Wordpress
  - ➢ Played an integral role in filing a patent for the company

- *Consultant/Architect/Developer*   2012-2014
  Citlan Inc., Waterloo, Canada
  - ➢ Improved performance and enhanced the ranking quality of an app search engine based on Solr/Lucene
  - ➢ Implemented a high performance auto-complete component for the search engine
  - ➢ Enhanced the database performance, the data processing pipelines, and web scraping tools

- ***Graduate Intern***   2013
  SAP, Waterloo, Canada
  - ➢ Investigated the impact of employing solid state drives (SSDs) in query processing and optimization
  - ➢ Proposed and implemented a production quality version of a feature for improving the query optimizer of the DB which resulted in up to 20X improvement in execution runtime of a class of database queries
  - ➢ Filed a U.S. patent and published a research paper in SIGMOD 2014 conference

- ***Graduate Intern***   2012
  SAP, Waterloo, Canada
  - ➢ Studied the possibility of utilizing new hardware (multi/many-core processors, large memory, SIMD instructions, solid state drives) to improve the performance of the database engine
  - ➢ Studied the impact of utilizing solid state drives in SAP SQL Anywhere database management system. Performed a comprehensive experimental study over a variety of database configurations and published the results as an internal white paper
  - ➢ Proposed and implemented a novel approach for exploiting SSD as a persistent second level buffer pool for database engine which resulted in more than 3X improvement in transactional throughput compared to competitors. Modified several modules of the DBMS engine including cache management, I/O management, checkpoint process and recovery
  - ➢ Filed a U.S. patent for the proposed approach

- ***Technical Consultant***   2010
  Career Development and Employment Centre, Ryerson University, Toronto
  - ➢ Proposed an innovative solution based on Selenium for crawling and automatic information extraction in a modern career search engine

- ***IT Consultant***   2007-2008
  University of Shahid Beheshti, Tehran, Iran
  - ➢ Reviewed and evaluated the feature set, architecture, performance and other technical aspects of more than forty Iranian ERP products, and prepared a comprehensive report in order to facilitate accurate decisions on how to invest in an affordable solution according to the University's requirements and constraints

- ***CEO/Chairman/CTO***   2002-2008
  Zero and One Information Technology, Tehran, Iran
  - ➢ Co-founded the company, designed and developed its IT infrastructure, hired, trained and supervised the engineering teams
  - ➢ Architected and led several enterprise software development projects for large government organizations as well as SMEs, including web content management system, e-commerce website, inventory management system, CRM, process automation, e-learning, etc.
  - ➢ Prepared several project proposals, performed several product presentations, closed over fifteen big contracts, and communicated effectively with the customer representatives during their project life-time
  - ➢ Supervised the R&D team and utilized the R&D results in providing innovative solutions for customers

- ***Freelance Developer***   2001-2002
  - ➢ Designed and developed an integrated shopping, inventory management and CRM solution for Sport Channel, a large shopping athletic equipment store in Tehran, Iran
  - ➢ Designed and developed an artistic full-flash website for presenting the products and services of Abnous Negar Co., an advertising company in Tehran, Iran
  - ➢ Designed and developed several interactive flash-based applications for animating the algorithmic concepts of the "Algorithms Design" course, part of an eLearning project at the University of Tehran

TEACHING EXPERIENCE

- **Teaching Assistant**   2009-Present
  University of Waterloo, Canada, http://cs.uwaterloo.ca

  Provided individual assistance for the students to help them understand course materials, produced sample solutions for assignments, wrote auto-testing scripts, marked assignments and exams for variety of undergraduate computer science courses including:
  - CS448 – Database Systems Implementation (Winter 2011)
  - CS116 - Introduction to Computer Science 2 (Winter 2009, Winter 2010)
  - CS348 - Introduction to Database Management (Spring 2009, Fall 2010, Spring 2011, Fall 2012, Winter 2013, Winter 2014, Spring 2014, Fall 2014, Spring 2015, Fall 2015, Winter 2016)
  - CS338 - Computer Applications In Business: Databases (Spring 2009, Spring 2010, Fall 2011, Winter 2015)
  - CS240 - Data Structures and Data Management (Fall 2009)

- **Lecturer**   2005-2006
  University of Applied Science and Technology, http://www.uast.ac.ir/

  Gave all lectures and wrote syllabus, homework assignments, and all exams for the following Computer Science undergraduate courses:
  - Introductory programming in Pascal
  - Advanced programming in C++
  - Data Structures
  - Operating Systems

EDUCATION

- **PhD in Computer Science**, *University of Waterloo, Canada*   2009-2018
  Title: Effective use of solid state drives in database systems
  Supervisor: Dr. Ken Salem
  GPA: A+

- **M.Sc. in Software Engineering**, *University of Tehran, Iran*   2005-2008
  Title: Performance improvement of search engines using analytical techniques of web graph
  Supervisor: Dr. Nasser Yazdani
  GPA: 18.58/20.00

- **B.Sc. in Computer Science**, *University of Tehran, Iran*   2000-2004
  Title: Robocup Soccer Simulation
  Supervisor: Dr. Haydeh Ahrabian
  GPA: 17.23/20.00 (top student)

GRADUATE LEVEL COURSES

- **Credit Courses**
  Database Applications of GPU Computing, Distributed Information Systems, Parallel Algorithms in Scientific Computing, Advanced Logic in Computer Science, Search Engines: From Design to Implementation, Advanced Software Engineering, Advanced Databases, Advanced Operating Systems, Principles of Computer Network Design, Theory of Computer Science, Performance Evaluation of Computer Systems, Information Technology Management, Customer Relationship Management

- **Audit Courses**
  Introduction to AI, Machine Learning, Non-Traditional Database Systems, Cloud Computing, Machine Learning for Information Retrieval

RESEARCH EXPERIENCE

- ***Research Assistant***   2009-Present
  University of Waterloo, Canada, http://cs.uwaterloo.ca
  Conducted research on a wide spectrum of topics, including
    - Effective use of SSDs in database systems
    - Query processing and optimization, caching, and external sorting
    - Parallel processing using GPUs
    - Cloud computing and MapReduce framework
    - Dynamic data allocation in replicated distributed systems
    - Search engine, information retrieval, and indexing methods

- ***Research Assistant***   2006-2008
  University of Tehran, Iran, http://ece.ut.ac.ir
  Conducted research on web information retrieval, with particular emphasis on
    - Ranking algorithms
    - Click streams and the explicit feedback of search engine users
    - Crawling algorithms

SKILLS

- **Languages/Tools/Frameworks/Platforms**: C/C++, CUDA C, Java, C#, Delphi/Pascal, Scheme, Python, Objective-C, Swift, R, Asp.net, PHP, Shell Script, MPI, Action Script, HTML5, CSS, Bootstrap, Java Script, JQuerry, Sass, Solr, Lucene, YII, Django, Laravel, AngularJS, Selenium, Wordpress, Joomla, DotNetNuke, Apache Drill, Hadoop, Spark, Kafka, Logstash, Elasticsearch, Kibana, Sketch, Celery, Jupyter Notebook, Scikit-learn, Pandas, Numpy, Matplotlib, GIT, Perforce, SVN, Slack, Trello, Amazon AWS, Mcrosoft Azure, Google Cloud Platform

- **Database Systems/Data Stores**: MS SQL Server, MySQL, PostgreSQL, Oracle, SAP SQL Anywhere, DB2, FoxPro, Access, MonetDB, SQLite, Redis, Cassandra, MemSQL

RESEARCH INTERESTS

- Big data science and engineering, especially the modern technologies for building big data processing pipelines

- Ad technologies and social media marketing

- Exploiting modern hardware (SSDs, GPUs, SIMD, multi-cores, big memory) in data processing

- Web information retrieval, search engines, indexing structures, web crawling, distributed processing, and distributed databases

AWARDS

- Top student in aggregated average among all of the Computer Science students (B.Sc.)

- Ranked 34th in Iranian nationwide Computer Science M.Sc. Entrance Exam among more than 7,000 participants (one in five people admitted to the program).

- Second Place in American Open 2004 2D Robocup Soccer Simulation competitions, New Orleans, USA, 2004

- Third Place in 8th RoboCup International 3D Soccer Simulation competitions, Lisbon, Portugal, 2004

- Fourth Place in German Open 2002 2D Robocup Soccer Simulation competitions, Paderborn, Germany, 2002

- Honorable Mention in 6th RoboCup International 2D Soccer Simulation competitions, Fukuoka, Japan, 2002

- Honorable Mention in 7th RoboCup International 2D Soccer Simulation competitions, Padova, Italy, 2003

- Exempted from a two-year compulsory military service because of outstanding results in international scientific competitions

- University of Waterloo International Doctoral Student Award (2009-2016)

- University of Waterloo Mathematics Graduate Experience Award (2009-2016)

- University of Waterloo Special Graduate Scholarship (Spring 2011)

- Best student paper award, 18th International Symposium on String Processing and Information Retrieval, 2011

- SIGMOD conference student travel award, Snowbird, Utah, USA, 2014

PUBLICATIONS

- ***Articles published in refereed journals***

    1. **Pedram Ghodsnia**, Kamran Tirdad., J. Iann Munro, and Alejandro López-Ortiz, "A Novel Approach for Leveraging Co-Occurrence to Improve the False Positive Error in Signature Files", *Journal of Discrete Algorithms*, Volume 18, January 2013, pp. 63-74.

    2. Ali Mohammad Zare Bidoki, **Pedram Ghodsnia**, Nasser Yazdani, "A3CRank, an Adaptive Ranking Method Based on Connectivity, Content and Click-through Data", *Information Processing and Management*, Volume 46, No. 2, March 2010, pp. 159-169.

    3. Ali Mohammad Zare Bidoki, Nasser Yazdani, **Pedram Ghodsnia,** "FICA: A Novel Crawling Algorithm Based on Reinforcement Learning", *International Journal of Web Intelligence and Agent Systems,* Vol. 7, No. 4, December 2009, pp. 363-373.

    4. **Pedram Ghodsnia**, Ali Mohammad Zare Bidoki, Nasser Yazdani, "WPR: A Weighted Approach to PageRank", *International review on Computers and Software (IRECOS),* Vol. 3, No. 1, January 2008, pp. 99-109.

- ***Articles published in refereed conferences***

    5. **Pedram Ghodsnia**, Ivan T. Bowman, Anisoara Nica, "Parallel I/O Aware Query Optimization", SIGMOD'14, Snowbird, Utah, USA, June 2014.

    6. **Pedram Ghodsnia**, "An In-GPU-Memory Column-Oriented Database for Processing Analytical Workloads", VLDB 2012 PhD Workshop, Istanbul, Turkey, August 2012.

    7. Kamran Tirdad, **Pedram Ghodsnia,** Alex Lopez-Ortiz, Ian Munro, "COCA Filters: Co-occurrence Aware Bloom Filters", SPIRE'11, Pisa, Italy, 2011 (**Best Student Paper Award**).

    8. Shahin Kamali, **Pedram Ghodsnia**, Khuzaima Daudjee, "Fragment Allocation with Replication in Distributed Systems", IPCCC'11, Orlando, Florida, 2011.

9. **Pedram Ghodsnia**, Ali Mohammad Zareh Bidoki, Naser Yazdani, "Statistical Evaluation of Effect of Some Persian Language Problems in Recall Factor of Search Engine Results", In Proceedings of CSICC'08, Kish Island, Persian Gulf, Iran, 2008.

10. Ali Mohammad Zareh Bidoki, Nasser Yazdani, **Pedram Ghodsnia**, "FICA: A Fast Intelligent Crawling Algorithm", In Proceedings of ACM/IEEE Web Inteligence'07, Silicon Valley, USA, 2007.

11. **Pedram Ghodsnia**, Ali Mohammad Zareh Bidoki, Nasser Yazdani, "A Punishment/Reward Based Approach to Ranking", In Proceedings of ACM InfoScale'07, Suzhou, China, 2007.

12. Ashkan Bayati, **Pedram Ghodsnia**, Reza Basseda, Maseud Rahgozar, "A Novel Way of Determining the Optimal Location of a Fragment in a DDBS: BGBR", In Proceedings of IEEE International Conference on Systems and Networks Communications, Tahiti, French Polynesia, 2006.

- *Theses*

13. **Pedram Ghodsnia**, "Effective use of solid state drives in database systems", Doctoral Thesis, University of Waterloo, 2018.

14. **Pedram Ghodsnia**, "Performance improvement of search engines using analytical techniques of web graph", Master's Thesis, University of Tehran, 2008.

15. **Pedram Ghodsnia**, "Robocup soccer simulation", Bachelor's Thesis, University of Tehran, 2004.

- *Selected non-refereed articles*

16. **Pedram Ghodsnia**, "A survey on TLA and TLA+", technical report, David Cheriton School of Computer Science, University of Waterloo, July 2009.

17. **Pedram Ghodsnia,** "Parallel Gaussian Elimination", project report, David Cheriton School of Computer Science, University of Waterloo, July 2009.

18. **Pedram Ghodsnia**, "A survey on Spatial Methods", Technical report, Database Research Group, School of Electrical and Computer Engineering, University of Tehran,2006.

19. Mostafa Hadian Dehkordi, Peyman Zarrineh, **Pedram Ghodsnia**, Farid AmirGhiasvand, Hesamaddin Torabi Dashti, "UTUtd 2004 Team Description", RoboCup 2004: The 8th RoboCup International Symposium, Lisbon, Portugal, 2004.

- *Patents*

20. **Pedram Ghodsnia,** Reza Sherkat, John C. Smirnios, Peter Bumbulis, and Anil K. Goel, "Solid State Drives As A Persistent Cache For Database Systems", No. us 9442858, Issues on Sept 13, 2016.

21. **Pedram Ghodsnia,** Ivan T. Bowman, "Estimation of Query I/O Cost in Database", No. us 14/301,160, Issued on March 14, 2017.

- Please see an up-to-date list of my refereed publications at http://bit.ly/pedram-publications

ACTIVITIES AND INTERESTS

- Hiking with friends, table tennis, swimming, biking and travelling

- Reading technology and entrepreneurship news, listening to software engineering and data engineering podcasts, digital arts, photography, graphics, and animation