

# Aditya Parameswaran

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## Employment

- ◇ **University of Illinois at Urbana-Champaign**, Urbana, IL.  
Assistant Professor, Department of Computer Science. August 2014—  
Affiliate Faculty, Illinois Informatics Institute. October 2017—  
Affiliate Faculty, Institute for Genomic Biology (IGB). July 2016—  
Affiliate Faculty, Beckman Interdisciplinary Institute for Advanced Science and Tech. July 2016—
- ◇ **Massachusetts Institute of Technology**, Cambridge, MA.  
Postdoctoral Researcher, Computer Science and Artificial Intelligence Lab. September 2013—August 2014.
- ◇ **Microsoft Research New England**, Cambridge, MA.  
Consulting Researcher. September 2013—January 2014.

## Education

- ◇ **Stanford University**, Stanford, CA, USA  
Ph.D. in Computer Science. September 2007—September 2013  
Advisor: Hector Garcia-Molina; Title: *Human-Powered Data Management*  
Winner: **ACM SIGMOD Jim Gray Dissertation Award**  
Winner: **ACM SIGKDD Dissertation Award Runner Up**  
Winner: **Stanford's Arthur Samuels Dissertation Award**
- ◇ **IIT Bombay**, Mumbai, India  
B.Tech in Computer Science. August 2003—August 2007

## Broad Interests

Visual and Interactive Data Analytics, Information Management, Crowdsourcing, Information Extraction

## Honors and Awards

- ◇ Army Research Office **Young Investigator Program (ARO YIP) Award**, 2018
- ◇ Dean's Award for **Excellence in Research**, from the College of Engineering at the University of Illinois, 2018
- ◇ C.W. Gear **Outstanding Junior Faculty Award**, from the Department of Computer Science at the University of Illinois, 2017
- ◇ **IEEE TCDE Early Career Award**, from the Technical Committee on Data Engineering, for my contributions to the field of databases, award citation: "*For developing new interactive tools and techniques that expand the reach of data analytics, enabling powerful data-driven discoveries by experts and non-experts alike.*", 2017
- ◇ **NSF CAREER** Award, 2017
- ◇ Listed in "**Instructors rated as Excellent by students @ Illinois**", 2017, 2015
- ◇ Selections for **best papers** of the following conferences (awarded to ~5 papers per conference):
  - **AISTATS'17**, for my paper, titled "On the Interpretability of Conditional Probability Estimates in the Agnostic Setting"
  - **ICDE'16**, for my paper, titled "Interactive Data Exploration with Smart Drill-Down"
  - **ICDE'14**, for my paper, titled "Crowd-Powered Find Algorithms"
  - **KDD'12**, for my paper, titled "Active Sampling for Entity Matching"
  - **VLDB'10**, for my paper, titled "Towards the Web of Concepts: Extracting Concepts from Large Datasets"
- ◇ Google **Faculty Research Award**, 2015, and **Focused Research Award**, 2017
- ◇ Awards for the dissertation "Human-Powered Data Management", including:
  - **ACM SIGMOD Jim Gray Dissertation Award**, 2014
  - **ACM SIGKDD Dissertation Award Runner Up**, 2014
  - **Stanford's Arthur Samuels Best Dissertation Award in Computer Science**, 2014
- ◇ Best Demo Honorable Mention at **SIGMOD'17** for "OrpheusDB: A Light-weight Approach to Relational Dataset Versioning".

- ◊ Selected as a **ACM Heidelberg Laureate**, 2013
- ◊ **Yahoo! Key Scientific Challenges Award**, 2010, for my proposal, “Information-Powered Recommendations”

*Relevant Expertise*

My work centers on the design of *interactive or human-in-the-loop data analytics systems* by synthesizing techniques from multiple fields: **databases**, **data mining**, and **human computation**. I’ve published over **75 papers** in the top-tier venues of these fields with an **h-index of 25+**, an **i-10 index of 45+**, and over **2000** citations. My research begins with a thorough exploration of the foundational principles, followed by the design of practical, scalable, and usable systems and algorithms.

*Research Themes*

- ◊ **Visual Analytics [VA]**: Scalable visualization generation and recommendation on large datasets
- ◊ **Interactive Analytics [IA]**: Interactively analyzing large volumes of data
- ◊ **Optimized Human Computation [OC]**: Optimizing crowdsourcing for large-scale data processing
- ◊ **Simplified Information Extraction [IE]**: Reducing human involvement in web information extraction
- ◊ **Enhanced Recommendation Systems [RS]**: Using context to improve recommender systems
- ◊ **Miscellaneous [MS]**

*Publications*

- ◊ **Refereed Conference Papers** (Students I advise or co-advise are marked using a \*.)
  1. [IA, VA] S. Macke\*, Y. Zhang\*, S. Huang\*, **A. Parameswaran**. Adaptive Sampling for Rapidly Matching Histograms. *VLDB’18: 44th Int’l Conf. on Very Large Data Bases*, Rio De Janeiro, Brazil, 2018.
  2. [IA, IE] Y. Gao\*, S. Huang\*, **A. Parameswaran**. Navigating the Data Lake with Datamaran: Automatically Extracting Structure from Log Datasets. *SIGMOD ’18: ACM SIGMOD Int’l Conf. on Management of Data*, Houston, USA, 2018. Acceptance Rate: ~20%.
  3. [IA] M. Bendre\*, V. Venkataraman\*, X. Zhou\*, K. Chang, **A. Parameswaran**. Towards a Holistic Integration of Spreadsheets with Databases: A Scalable Storage Engine for Presentational Data Management. *ICDE ’18: 34th Int’l Conf. on Data Engineering*, Paris, France, 2018.
  4. [IA] K. Mack\*, J. Lee\*, K. Chang, K. Karahalios, **A. Parameswaran**. Characterizing Scalability Issues in Spreadsheet Software using Online Forums (Case Study). *CHI ’18: Int’l Conf. on Human Factors in Computing Systems*, Montreal, Canada, 2018.
  5. [IA] S. Rahman\*, M. Aliakbarpour, H. Kong\*, E. Blais, K. Karahalios, **A. Parameswaran**, and R. Rubinfeld. I’ve Seen Enough: Incrementally Improving Visualizations to Support Rapid Decision Making. *VLDB ’17: 43rd Int’l Conf. on Very Large Data Bases*, Munich, Germany, 2017. Acceptance Rate: ~20%.
  6. [IA] S. Huang\*, L. Xu\*, J. Liu\*, A. Elmore, **A. Parameswaran**. OrpheusDB: Bolt-on Versioning for Relational Databases. *VLDB ’17: 43rd Int’l Conf. on Very Large Data Bases*, Munich, Germany, 2017. Acceptance Rate: ~20%.
  7. [OC] A. Jain\*, A. Das Sarma\*, **A. Parameswaran**, and J. Widom. Understanding Workers, Developing Effective Tasks, and Enhancing Marketplace Dynamics: A Study of a Large Crowdsourcing Marketplace. *VLDB ’17: 43rd Int’l Conf. on Very Large Data Bases*, Munich, Germany, 2017. Acceptance Rate: ~20%.
  8. [VA] T. Siddiqui\*, A. Kim\*, J. Lee\*, K. Karahalios, and **A. Parameswaran**. Effortless Visual Data Exploration with Zenvisage: An Expressive and Interactive Visual Analytics System. *VLDB ’17: 43rd Int’l Conf. on Very Large Data Bases*, Munich, Germany, 2017. Acceptance Rate: ~20%.
  9. [IE] T. Rekatsinas, M. Joglekar\*, H. Garcia-Molina, **A. Parameswaran**, and C. Re. SLIMFast: Guaranteed Results for Data Fusion and Source Reliability *SIGMOD ’17: ACM SIGMOD Int’l Conf. on Management of Data*, Raleigh, USA, 2017. Acceptance Rate: ~20%.
  10. [MS] Y. Gao\*, **A. Parameswaran**, and J. Peng. On the Interpretability of Conditional Probability Estimates in the Agnostic Setting (Oral Presentation). *AISTATS ’17: Conf on Artificial Intelligence and Statistics*, Ft. Lauderdale, USA, 2017. Acceptance Rate: ~30%. Invited to **Special Issue of EJS for AISTATS 2017 Best Papers**.
  11. [VA] T. Siddiqui\*, J. Lee\*, A. Kim\*, E. Xue\*, X. Yu\*, S. Zou\*, L. Guo\*, C. Liu\*, C. Wang\*, K. Karahalios, and **A. Parameswaran**. Fast-forwarding to Desired Visualizations with Zenvisage. *CIDR ’17: Conf. on Innovative Data Management (CIDR)*, Chaminade, USA, 2017.
  12. [IE] T. Siddiqui\*, X. Ren, **A. Parameswaran**, and Jiawei Han. FacetGist: Collective Extraction of Document Facets in Large Technical Corpora, *CIKM ’16: 25th Int’l Conf. on Information and Knowledge Management*, Indianapolis, USA, 2016. Acceptance Rate: 23%.

13. [IA] M. Maddox, D. Goehring, A. Elmore, S. Madden, **A. Parameswaran**, and A. Deshpande. Decibel: The Relational Dataset Branching System. *VLDB '16: 42nd Int'l Conf on Very Large Data Bases*, New Delhi, India, 2016. Acceptance Rate: ~20%.
14. [VA] M. Vartak\*, S. Rahman\*, S. Madden, **A. Parameswaran**, and N. Polyzotis. SeeDB: Efficient Data-Driven Recommendations to Support Visual Analytics. *VLDB '16: 42nd Int'l Conf on Very Large Data Bases*, New Delhi, India, 2016. Acceptance Rate: ~20%.
15. [IA] Y. Gao\* and **A. Parameswaran**. Squish: Near-optimal Compression for Archival of Relational Datasets. *KDD '16: 22nd ACM SIGKDD Int'l Conf. on Knowledge Discovery and Data Mining*, San Francisco, USA, 2016. Acceptance Rate: 6%.
16. [OC] A. Das Sarma\*, **A. Parameswaran**, and J. Widom. Towards Globally Optimal Crowdsourcing Quality Management. *SIGMOD '16: ACM SIGMOD Int'l Conf. on Management of Data*, San Francisco, USA, 2016. Acceptance Rate: 19%.
17. [IA] M. Joglekar\*, H. Garcia-Molina, and **A. Parameswaran**. Interactive Data Exploration with Smart Drill-down. *ICDE '16: 32nd Int'l Conf on Data Engineering*, Helsinki, Finland, 2016. Acceptance Rate: 25%. Invited to **Special Issue of TKDE for ICDE 2016 Best Papers**.
18. [OC] A. Das Sarma\*, A. Jain\*, A. Nandi, **A. Parameswaran**, and J. Widom. Surpassing Humans and Computers with JellyBean: Crowd-Vision-Hybrid Counting Algorithms. *HCOMP '15: 3rd AAAI Int'l Conf. on Human Computation and Crowdsourcing*, San Diego, USA, 2015.
19. [VA] M. Vartak\*, S. Huang\*, T. Siddiqui\*, S. Madden, and **A. Parameswaran**. Towards Visualization Recommendation Systems, *DSIA '15: Workshop on Interactive Analysis*, Chicago, 2015.
20. [IA] S. Bhattacharjee, A. Chavan, S. Huang\*, A. Deshpande, and **A. Parameswaran**. Principles of Dataset Versioning: Exploring the Recreation/Storage Tradeoff. *VLDB '15: 41st Int'l Conf on Very Large Data Bases*, Hawaii, USA, 2015. Acceptance Rate: 21%.
21. [VA] A. Kim\*, E. Blais, **A. Parameswaran**, P. Indyk, S. Madden, and R. Rubinfeld. Rapid Sampling for Visualizations with Ordering Guarantees. *VLDB '15: 41st Int'l Conf on Very Large Data Bases*, Hawaii, USA, 2015. Acceptance Rate: 21%.
22. [OC] Y. Gao\* and **A. Parameswaran**. Finish Them!: Pricing Algorithms for Human Computation, *VLDB '15: 41st Int'l Conf on Very Large Data Bases*, Hawaii, USA, 2015. Acceptance Rate: 21%.
23. [OC] H. Zhuang\*, **A. Parameswaran**, D. Roth, and J. Han. Debiasing Crowdsourced Batches, *KDD '15: 21st ACM SIGKDD Int'l Conf. on Knowledge Discovery and Data Mining*, Sydney, Australia, 2015. Acceptance Rate: 20%.
24. [IA] A. Chavan, S. Huang\*, A. Deshpande, A. Elmore, S. Madden, and **A. Parameswaran**. Towards a Unified Query Language for Provenance and Versioning, *TAPP'15: 7th Int'l Conf. on Theory and Practice of Provenance*, Edinburgh, Scotland, 2015.
25. [IA] M. Joglekar\*, H. Garcia-Molina, **A. Parameswaran**, and C. Re. Exploiting Correlations for Expensive Predicate Evaluation, *SIGMOD '15: ACM SIGMOD Int'l Conf. on Management of Data*, Melbourne, Australia, 2015. Acceptance Rate: 26%.
26. [OC] M. Joglekar\*, H. Garcia-Molina, and **A. Parameswaran**. Comprehensive and Reliable Crowd Assessment Algorithms, *ICDE '15: 31st Int'l Conf on Data Engineering*, Seoul, Korea, 2015. Acceptance Rate: 25%.
27. [IA] A. Bhardwaj, S. Bhattacharjee, A. Chavan, A. Deshpande, A.J. Elmore, S. Madden, and **A. Parameswaran**. DataHub: Collaborative Data Science & Dataset Version Management at Scale, *CIDR '15: Conf. on Innovative Data Management (CIDR)*, Asilomar, USA, 2015.
28. [OC] **A. Parameswaran**, S. Boyd, H. Garcia-Molina, A. Gupta, N. Polyzotis, and J. Widom. Optimal Crowd-Powered Rating and Filtering Algorithms, *VLDB '14: 40th Int'l Conf on Very Large Data Bases*, Hangzhou, China, 2014. Acceptance Rate: ~20%.
29. [OC] A. Das Sarma, **A. Parameswaran**, H. Garcia-Molina, and A. Halevy. Crowd-Powered Find Algorithms, *ICDE '14: 30th Int'l Conf on Data Engineering*, Chicago, USA, April 2014. Acceptance Rate: 20%. Invited to **Special Issue of TKDE for ICDE 2014 Best Papers**.
30. [OC] **A. Parameswaran**, M. H. Teh, H. Garcia-Molina, and J. Widom. DataSift: An Expressive and Accurate Crowd-Powered Search Toolkit, *HCOMP '13: 1st AAAI Int'l Conf. on Human Computation and Crowdsourcing*, Palm Springs, USA, 2013. Acceptance Rate: 30%.

31. [IE] **A. Parameswaran**, R. Kaushik, and A. Arasu. Efficient Parsing-based Search over Databases, *CIKM '13: 22nd Int'l Conf on Information and Knowledge Management*, Burlingame, USA, 2013. Acceptance Rate: 16.8%.
32. [OC] M. Joglekar, H. Garcia-Molina, and **A. Parameswaran**. Evaluating the Crowd with Confidence, *KDD '13: 19th ACM SIGKDD Int'l Conf. on Knowledge Discovery and Data Mining*, Chicago, USA, 2013. Acceptance Rate: 17%.
33. [OC, IE] N. Dalvi, **A. Parameswaran**, and V. Rastogi. Minimizing Uncertainty in Pipelines, *NIPS '12: 25th Int'l Conf on Neural Information Processing Systems*, Tahoe, Nevada, USA, 2012.
34. [OC] **A. Parameswaran**, H. Park, H. Garcia-Molina, N. Polyzotis, and J. Widom. Deco: Declarative Crowdsourcing, *CIKM '12: 21st Int'l Conf on Information and Knowledge Management*, Maui, USA, 2012. Acceptance Rate: 13.4%.
35. [OC, IE] K. Bellare, S. Iyengar, **A. Parameswaran**, and V. Rastogi. Active Sampling for Entity Matching, *KDD '12: 18th ACM SIGKDD Int'l Conf. on Knowledge Discovery and Data Mining*, Beijing, China, 2012. Acceptance Rate: 18%. Invited to **Special Issue of TKDD for KDD 2012 Best Papers**.
36. [OC] S. Guo, **A. Parameswaran**, and H. Garcia-Molina. So Who Won? Dynamic Max Discovery with the Crowd, *SIGMOD '12: ACM SIGMOD Int'l Conf. on the Management of Data*, Scottsdale, USA, 2012. Acceptance Rate: 17%.
37. [OC] **A. Parameswaran**, H. Garcia-Molina, H. Park, N. Polyzotis, A. Ramesh, and J. Widom. CrowdScreen: Algorithms for Filtering Data with Humans *SIGMOD '12: ACM SIGMOD Int'l Conf. on the Management of Data*, Scottsdale, USA, 2012. Acceptance Rate: 17%.
38. [MS] F. Afrati, A. Das Sarma, D. Menestrina, **A. Parameswaran**, and J. D. Ullman. Fuzzy joins using MapReduce, *ICDE '12: 28th Int'l Conf. on Data Engineering*, Washington DC, USA, 2012. Acceptance Rate: 24%.
39. [IE] **A. Parameswaran**, N. Dalvi, H. Garcia-Molina, and R. Rastogi. Optimal Schemes for Robust Web Extraction, *VLDB '11: 37th Int'l Conf. on Very Large Data Bases*, Seattle, USA, 2011. Acceptance Rate: 18.1%.
40. [OC, IE] **A. Parameswaran**, A. Das Sarma, H. Garcia-Molina, N. Polyzotis, and J. Widom. Human-assisted Graph Search: It's Okay to Ask Questions, *VLDB '11: 37th Int'l Conf. on Very Large Data Bases*, Seattle, USA, 2011. Acceptance Rate: 18.1%.
41. [OC] **A. Parameswaran** and N. Polyzotis. Answering Queries using Databases, Humans, and Algorithms, *CIDR '11: Conf. on Innovative Data Management (CIDR)*, Asilomar, USA, 2011.
42. [RS] **A. Parameswaran**, H. Garcia-Molina, and J. D. Ullman. Evaluating, Combining, and Generalizing Recommendations with Prerequisites, *CIKM '10: 19th Int'l Conf. on Information and Knowledge Management*, Toronto, Canada, 2010. Acceptance Rate: 13%.
43. [IE] **A. Parameswaran**, H. Garcia-Molina, and A. Rajaraman. Towards the Web of Concepts: Extracting Concepts from Large Datasets, *VLDB '10: 36th Int'l Conf. on Very Large Data Bases*, Singapore, 2010. Acceptance Rate: 18.4%. Invited to **Special Issue of VLDB Journal for VLDB 2010 Best Papers**.
44. [RS] **A. Parameswaran**, G. Koutrika, B. Berkovitz, and H. Garcia-Molina. Recsplorer: Recommendation Algorithms Based on Precedence Mining, *SIGMOD '10: ACM SIGMOD Int'l Conf. on the Management of Data*, Indianapolis, USA, 2010. Acceptance Rate: 21%.
45. [IE] A. Das Sarma, **A. Parameswaran**, H. Garcia-Molina, and J. Widom. Synthesizing View Definitions from Data, *ICDT '10: 13th Int'l Conf. on Database Theory*, Lausanne, Switzerland, 2010. Acceptance Rate: 36%.
46. [RS] **A. Parameswaran** and H. Garcia-Molina. Recommendations with Prerequisites (Short Paper) *RecSys '09: 3rd ACM Conf. on Recommender Systems*, New York, USA, 2009. Acceptance Rate: 43%.
47. [MS] E. Sadikov, **A. Parameswaran**, and P. Venetis. Blogs as Predictors of Movie Success, *ICWSM '09: AAAI Conf. on Weblogs and Social Media*, San Jose, USA, 2009.
48. [MS] F. Cazals, **A. Parameswaran**, and S. Pion. Robust Construction of the Three-dimensional Flow Complex, *SOCG '08: ACM Symposium on Computational Geometry*, Maryland, USA, 2008. Acceptance Rate: 32%.

◊ **Refereed Journal Papers**

49. [MS] Y. Gao\*, **A. Parameswaran**, J. Peng. On the interpretability of conditional probability estimates in the agnostic setting *Electronic Journal of Statistics*, Volume 11, Number 2, January 2018.

50. [IA] M. Joglekar<sup>\*</sup>, H. Garcia-Molina, and **A. Parameswaran**. Interactive Data Exploration with Smart Drill-down (Extended Version). *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, March 2017.
51. [VA] M. Vartak<sup>\*</sup>, S. Huang<sup>\*</sup>, T. Siddiqui<sup>\*</sup>, S. Madden, and **A. Parameswaran**. Towards Visualization Recommendation Systems, *SIGMOD Record*, December 2016.
52. [OC] **A. Parameswaran**, A. Das Sarma<sup>\*</sup>, and V. Venkataraman<sup>\*</sup>. Optimizing Open-Ended Crowdsourcing: The Next Frontier in Crowdsourced Data Management. *IEEE Data Engineering Bulletin*, December 2016
53. [OC] H. Garcia-Molina, M. Joglekar<sup>\*</sup>, A. Marcus, **A. Parameswaran**, and V. Verios. Challenges in Data Crowdsourcing. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, January 2016
54. [OC,IE] K. Bellare, S. Iyengar, **A. Parameswaran**, and V. Rastogi. Active Sampling for Entity Matching with Guarantees, *ACM Transactions on Knowledge Discovery from Data*, Volume 7(3), September 2013.
55. [OC] H. Park, R. Pang, **A. Parameswaran**, H. Garcia-Molina, N. Polyzotis, and J. Widom. An Overview of the Deco System: Data Model and Query Language; Query Processing and Optimization, *SIGMOD Record*, Volume 41, December 2012.
56. [RS] G. Koutrika, H. Garcia-Molina, and **A. Parameswaran**. Information Seeking: Convergence of Search, Recommendations, and Advertising, *Communications of the ACM (CACM)*, November 2011.
57. [RS] **A. Parameswaran**, P. Venetis, and H. Garcia-Molina. Recommendation Systems with Complex Constraints: A Course Recommendation Perspective, *ACM Transactions on Information Systems (TOIS)*, Volume 29(4), November 2011.
58. [RS] B. Berkovitz, F. Kaliszán, G. Koutrika, H. Liou, **A. Parameswaran**, P. Venetis, Z. Zadeh, and H. Garcia-Molina. Social Sites Research Through CourseRank, *SIGMOD Record*, Volume 38, December 2009.

◊ **Books**

59. [OC] A. Marcus and **A. Parameswaran**. Crowdsourced Data Management: Industry and Academic Perspectives. *Foundations and Trends in Databases Series*, Vol. 6: No. 1-2, pp 1-161, Now Publishers, December 2015

◊ **Refereed Demo, Vision, and Workshop Papers**

60. [IA] D. Xin<sup>\*</sup>, L. Ma<sup>\*</sup>, J. Liu<sup>\*</sup>, S. Macke<sup>\*</sup>, S. Song<sup>\*</sup>, **A. Parameswaran**, Helix: Accelerating Human-in-the-loop Machine Learning (Demo). *VLDB'18: 44th Int'l Conf on Very Large Data Bases*, Rio De Janeiro, Brazil, 2018.
61. [VA] T. Siddiqui<sup>\*</sup>, P. Luh<sup>\*</sup>, Z. Wang<sup>\*</sup>, K. Karahalios, **A. Parameswaran** ShapeSearch: Flexible Pattern-based Querying of Trend Line Visualizations (Demo). *VLDB'18: 44th Int'l Conf on Very Large Data Bases*, Rio De Janeiro, Brazil, 2018.
62. [IA] D. Xin<sup>\*</sup>, L. Ma<sup>\*</sup>, S. Song<sup>\*</sup>, **A. Parameswaran**. How Developers Iterate on Machine Learning Workflows — A Survey of the Applied Machine Learning Literature (Short Paper). *IDEA'18: Workshop on Interactive Data Exploration and Analysis* at the 24th KDD Int'l Conf. on Knowledge Discovery and Data Mining, London, UK, 2018.
63. [OC] Doris Lee<sup>\*</sup>, Akash Das Sarma<sup>\*</sup>, **A. Parameswaran**. Quality Evaluation Methods for Crowdsourced Image Segmentation (Short Paper). *HCOMP'18: 6th Int'l Conf. on Human Computation and Crowdsourcing*, Zurich, Switzerland, 2018.
64. [IA] G. Su Yilmaz, T. Wattanawaroon<sup>\*</sup>, L. Xu<sup>\*</sup>, A. Nigam<sup>\*</sup>, A. Elmore, **A. Parameswaran**. DataDiff: User-Interpretable Data Transformation Summaries for Collaborative Data Analysis (Demo). *SIGMOD '18: ACM SIGMOD Int'l Conf. on Management of Data*, Houston, USA, 2018.
65. [IA] A. Kim<sup>\*</sup>, L. Xu<sup>\*</sup>, T. Siddiqui<sup>\*</sup>, S. Huang<sup>\*</sup>, S. Madden, **A. Parameswaran**. Optimally Leveraging Density and Locality For Exploratory Browsing and Sampling (Short Paper). *HILDA '18: Workshop on Human-in-the-Loop Data Analytics* at the ACM SIGMOD Int'l Conf. on Management of Data, Houston, USA, 2018.
66. [IA] L. Xu<sup>\*</sup>, S. Huang<sup>\*</sup>, S. Hui<sup>\*</sup>, A. Elmore, **A. Parameswaran**. OrpheusDB: A Light-weight Approach to Relational Dataset Versioning (Demo). *SIGMOD '17: ACM SIGMOD Int'l Conf. on Management of Data*, Raleigh, USA, 2017 **Best Demo Honorable Mention**.

67. [IA] M. Bendre\*, B. Sun\*, X. Zhou\*, D. Zhang\*, S. Lin\*, K. Chang, and **A. Parameswaran**. Data-Spread: Unifying Databases and Spreadsheets (Demo). *VLDB '15: 41st Int'l Conf on Very Large Data Bases*, Hawaii, USA, 2015.
68. [IA] M. Joglekar\*, H. Garcia-Molina, and **A. Parameswaran**. Smart Drill-down: A New Data Exploration Operator (Demo). *VLDB '15: 41st Int'l Conf on Very Large Data Bases*, Hawaii, USA, 2015.
69. [IA] A. Bhardwaj, A. Deshpande, A. Elmore, D. Karger, S. Madden, **A. Parameswaran**, H. Subramanyam, E. Wu, and R. Zhang. Collaborative Data Analytics with Datahub (Demo). *VLDB '15: 41st Int'l Conf on Very Large Data Bases*, Hawaii, USA, 2015.
70. [MS] S. Koltani, S. Wang, **A. Parameswaran**. GeoHashViz: Interactive Analytics for Mapping Spatiotemporal Diffusion of Twitter Hashtags (Poster). *XSEDE '15*, USA, 2015.
71. [OC] A. Das Sarma\*, **A. Parameswaran**, and J. Widom. Optimal Worker Quality and Answer Estimates in Crowd-Powered Filtering and Rating (Short Paper). *HCOMP '14: 2nd Int' Conf. on Human Computation and Crowdsourcing*, Pittsburgh, USA, 2014.
72. [VA] **A. Parameswaran**, N. Polyzotis, and H. Garcia-Molina. SeeDB: Visualizing Database Queries Efficiently (Vision), *VLDB '14: 40th Int'l Conf on Very Large Data Bases*, Hangzhou, China, 2014.
73. [VA] M. Vartak\*, S. Madden, **A. Parameswaran**, and N. Polyzotis. SeeDB: Automatically Generating Query Visualizations (Demo), *VLDB '14: 40th Int'l Conf on Very Large Data Bases*, Hangzhou, China, 2014.
74. [OC] **A. Parameswaran**, M. H. Teh, H. Garcia-Molina, and J. Widom. DataSift: A Crowd-Powered Search Toolkit (Demo), *SIGMOD '14: ACM SIGMOD Int'l Conf. on the Management of Data*, Snowbird, USA, 2014.
75. [OC] H. Park, R. Pang, **A. Parameswaran**, H. Garcia-Molina, N. Polyzotis, and J. Widom. Deco: A System for Declarative Crowdsourcing (Demo), *VLDB '12: 38th Int'l Conf on Very Large Data Bases*, Istanbul, Turkey, 2012.
76. [OC] S. Guo, **A. Parameswaran**, and H. Garcia-Molina. So Who Won? Dynamic Max Discovery with the Crowd (Poster), *CrowdConf '11: 2nd Crowdsourcing Conference*, San Francisco, USA, 2011.

#### ◊ Preprints

77. [IA, VA] M. Bendre\*, K. Mack\*, S. Rahman\*, T. Wattanawaroon\*, Y. Liu, Y. Lu, P. Yang, S. Zhou\*, X. Zhou\*, K. Chang, K. Karahalios, **A. Parameswaran**. Towards Scalable, Navigable, and Expressive Spreadsheets: DataSpread to the Rescue! Technical Report. February 2018.
78. [IA] T. Wattanawaroon\*, S. Macke\*, **A. Parameswaran**. Towards a Theory of Data-Diff: Optimal Synthesis of Succinct Data Modification Scripts. Technical Report. December 2017
79. [VA] D. Lee\*, J. Lee\*, T. Siddiqui\*, J. Kim\*, K. Karahalios, **A. Parameswaran**. Accelerating Scientific Data Exploration via Visual Query Systems. Technical Report. September 2017
80. [OC] A. Jain\*, K. Goel\*, J. Young Seo\*, A. Kuznetsov\*, **A. Parameswaran**, H. Sundaram. It's a Matter of Perspective(s): Crowd-Powered Consensus Organization of Corpora. Technical Report. November 2016
81. [OC] T. Rekatsinas, A. Deshpande, and **A. Parameswaran**. CrowdGather: Entity Extraction over Structured Domains. Technical Report. November 2014
82. [IA] L. Battle, T. Benson, **A. Parameswaran**, and E. Wu. Indexing Cost-Sensitive Prediction. Technical Report. August 2014

#### ◊ Other Writings

83. [MS] **A. Parameswaran**. Visual Data Exploration: A Fertile Ground for Data Management Research. *SIGMOD Blog*, June 2018.
84. [MS] D. Lee\*, T. Siddiqui\*, K. Karahalios, **A. Parameswaran**. Effortless Exploration with Zenvisage 0.2, *Medium*, November 2017.
85. [MS] **A. Parameswaran**. Enabling Data Science for the Majority, *O'Reilly Blog*, October 2017.
86. [MS] A. Das Sarma\*, **A. Parameswaran**. Crowdsourcing in Practice: Our Findings, *Medium*, September 2017.

87. [MS] S. Huang\*, L. Xu\*, A. Elmore, **A. Parameswaran**. Painless Data Versioning for Collaborative Data Science, *Medium*, September 2017.
88. [MS] S. Rahman\* and **A. Parameswaran**. Draw Conclusions Early with Incvisage, *Medium*, September 2017.
89. [MS] T. Siddiqui\* and **A. Parameswaran**. Towards Automating Insight, *Medium*, September 2017.
90. [MS] **A. Parameswaran**. Three Tools for Human-in-the-loop Data Analytics, *Medium*, January 2017.
91. [MS] M. Vartak\* and **A. Parameswaran**. Instantly Visualizing What's Different, *Medium*, September 2016.
92. [MS] Y. Gao\* and **A. Parameswaran**. On Optimally Squishing Large Datasets, *Medium*, August 2016.
93. [MS] A. Das Sarma\* and **A. Parameswaran**. Revisiting Quality Management for Crowdsourcing: A Fresh Take, *Medium*, July 2016.
94. [MS] **A. Parameswaran**. Data Scavengers, not Research Parasites, *Medium*, January 2016.
95. [MS] A. Marcus, **A. Parameswaran**. The Fourth Industrial Revolution, *Medium*, January 2016.

*Major Software Releases*

- ◇ **DataSpread**: A Spreadsheet-Database Hybrid. DataSpread has a spreadsheet frontend, and a database backend. DataSpread inherits the flexibility and ease-of-use of spreadsheets, as well as the scalability and power of databases, and scales to billions of cells seamlessly. 2016. URL: <http://dataspread.github.io>
- ◇ **OrpheusDB**: A relational dataset versioning system. OrpheusDB is built on top of standard relational databases, thus it inherits much of the same benefits of relational databases, while also compactly storing, tracking, and recreating versions on demand, all very efficiently. 2016. URL: <http://orpheus-db.github.io>
- ◇ **Zenvisage**: An 'effortless' data visualization tool. Zenvisage can automatically identify and recommend visualizations that match desired user patterns. The user can specify at a high level what they are looking for either via interactions or via a query language (ZQL), and the system will perform the necessary computation to identify these visualizations. 2016. URL: <http://zenvisage.github.io>
- ◇ **Squish**: A near-optimal structured data compression system. Squish identifies correlations between attributes to compress relational datasets both vertically as well as horizontally. 2016. URL: <https://github.com/Preparation-Publication-BD2K/db.compress>
- ◇ **Populace**: Software releases of optimized implementations of various crowdsourced data processing algorithms and systems. 2015. URL: <http://populace-org.github.io>

*Funding*

*I have been part of teams that have brought in a total of over 13M in grant funding into Illinois; and over 3.7M as PI or Co-PI from a variety of federal and industry funding sources.*

- ◇ Principal Investigator, **Army Research Office Young Investigator Program Award**, 2018–2021.
- ◇ Principal Investigator, Toyota Research Institute **Accelerated Materials Design and Discovery Grant**, Jointly Awarded to Carnegie Mellon University and Illinois, 2018–2019.
- ◇ Principal Investigator, **Google Focused Research Award**, titled “Holistic Optimization for Accelerating Iterative Machine Learning”, 2017.
- ◇ Principal Investigator, **NSF AITF Award** titled “Fast, Accurate, and Practical: Adaptive Sublinear Algorithms for Scalable Visualization”, Jointly awarded to MIT, USC, and Illinois, 2017–2020.
- ◇ Amazon Web Services **Research Credits**, 2017.
- ◇ Adobe Research **Faculty Research Gift**, 2016.
- ◇ Principal Investigator, **NSF CAREER Award** titled “Advancing Open-Ended Crowdsourcing: The Next Frontier in Crowdsourced Data Management”, 2017–2021.
- ◇ Co-Principal Investigator, **NSF BIGDATA Award** titled “Bringing Interactive Data Management to Scientists, Analysts, and the Masses: A Holistic Unification of Spreadsheets and Databases”, 2016–2020.
- ◇ Principal Investigator, **Siebel Energy Institute Seed Grant**, “Data-driven Discovery of Resilient Energy Storage for Grid Applications”, Jointly awarded to Carnegie Mellon University and Illinois, 2016–17.

- ◇ Principal Investigator, **NIH BD2K** (Big Data to Knowledge) Supplementary Grant, “Piloting a Data Publication Service for the BD2K Commons”, Jointly awarded to U Chicago and Illinois, 2015–16.
- ◇ Principal Investigator, **NSF IIS Medium Award** titled “DataHub: Collaborative Dataset Management for Data Science”, Jointly awarded to Illinois, Maryland, and MIT, 2015–2018.
- ◇ Google **Faculty Research Award**, 2015.
- ◇ Investigator, **NIH BD2K** (Big Data to Knowledge) Centers of Excellence titled “KnowEng, a Scalable Knowledge Engine for Large Scale Genomic Data”, Jointly awarded to Illinois and Mayo Clinic, 2014–2018.
- ◇ Google Cloud Credit Award, 2014.
- ◇ **Industry Internships**
  - ◇ **Yahoo! Research**, Web Information Management Group, Santa Clara, CA Summer 2011
  - ◇ **Microsoft Research**, Data Management, Mining and Exploration Group, Redmond, WA Summer 2010
  - ◇ **Yahoo! Research**, Information Extraction Group, Bangalore, India Winter 2009
  - ◇ **Kosmix**, Mountain View, CA Summer 2008
  - ◇ **INRIA**, Geometric Algorithms Group, Sophia-Antipolis, France Summer 2006
  - ◇ **Microsoft Research**, Formal Methods Group, Bangalore, India Winter 2005
- ◇ **Mentorship**
  - ◇ PhD Students (Completed)
    - Stanford: Akash Das Sarma,  
Title: “*Advancing the use of crowdsourcing for data-intensive tasks*”,  
2012–2017 (Co-advisor: Jennifer Widom, First employment: Research Scientist at Facebook)
  - ◇ PhD Students (Current Advising or Co-advising)
    - Illinois: Doris Lee, 2017–;
    - Illinois: Doris Xin, 2016– (Winner: **NSF GRFP**, SIGMOD Travel Award 2018, 2017);
    - Illinois: Tarique Siddiqui, 2016– (Winner: **Siebel Scholarship**, VLDB Travel Award 2018);
    - Illinois: Liqi Xu, 2015–;
    - Illinois: Stephen Macke, 2015– (Winner: **NSF GRFP**);
    - Illinois: Tana Wattanawaroon, 2015– (Winner: **Outstanding TA Award**, SIGMOD Travel Award 2017);
    - Illinois: Mangesh Bendre, 2015– (Co-advisor: Kevin Chang);
    - Illinois: Sajjadur Rahman, 2014–;
    - Illinois: Silu Huang, 2014– (Winner: **3M Fellowship**, Winner: **MSR Fellowship 2017**—the first Illinois student winner in 7 years.);
    - Illinois: Yihan Gao, 2013– (Winner: **Richard T. Cheng Fellowship**);
  - ◇ MS Thesis Students (Completed)
    - Illinois: Zesheng Wang,  
Title: “*Efficient Pattern-based Querying of Trendline Visualizations*”,  
2016–18
    - Illinois: Edward Xue,  
Title: “*Towards a Scripting Language for Visual Data Exploration*”,  
2015–18 (First employment: Facebook);
    - Illinois: Litian Ma,  
Title: “*Towards Understanding and Simplifying Human-in-the-loop Machine Learning*”,  
2016–18 (First employment: Amazon);
    - Illinois: Vipul Venkataraman,  
Title: “*DataSpread: scaling spreadsheets using relational databases*”,  
2015–17 (Winner: **Siebel Scholarship**, **Outstanding TA Award**, First employment: Google);
    - Illinois: Tarique Siddiqui,  
Title: “*Effortless data exploration with Zenvisage*”,  
2014–16 (Winner: **Siebel Scholarship**, First employment: PhD student at Illinois);
    - Illinois: Sili Hui,  
Title: “*OrpheusDB: an attempt at dataset version control within a relational database*”,  
2014–16 (First employment: Medallia);



- Illinois: Ayush Jain,  
Title: “Towards open-ended crowd-powered data processing: a case study of clustering and counting”,  
2014–16 (Winner: **Muroga Fellowship**, First employment: Google);
- ◇ PhD/MS Students (Informal or Past advising)
  - Illinois: Chaoran Wang, 2015–18 (First employment: Uber); Shreya Rajpal, 2016–18 (First employment: Drive.ai); Himel Dev, 2015–16;
  - MIT: Albert Kim, 2013–16; Manasi Vartak, 2013–15;
  - Stanford: Manas Joglekar, 2012–16 (First employment: Google); Ming Han Teh, 2012–14 (Winner: **Stanford’s MS Thesis Award**, First employment: Microsoft); Aditya Ramesh, 2011–12 (First employment: LinkedIn);
- ◇ Undergraduate Students
  - Illinois: Jaywoo Kim, 2017–18 (First employment: Graduate student at Illinois); Paul Luh, 2016–18 (First employment: Graduate student at UWisconsin); Kelly Mack, 2015– (Winner: **Snap Research Scholarship**—awarded to 8 undergraduate/masters students in 2017, **CRA Undergraduate Research Award** Honorable mention); Andrew Kuznetsov, 2014–18 (Winner: **Illinois SURF Research Award**, 3<sup>rd</sup> place at the **Engineering Open House**; First employment: Graduate Student at CMU); Bangqi Wang, 2016–17 (First employment: NVidia); Abhishek Nigam, 2016–17 (First employment: Jump); Gary Luo, 2015–16 (First employment: Yahoo!); Joon Seo, 2014–16 (First employment: Google); Yulun Du, 2014–15 (First employment: Graduate student at CMU); Ding Zhang, 2014–16 (First employment: Graduate student at CMU); Xinyan Zhou, 2014–16 (First employment: Graduate student at Illinois); Anurag Choudhury, 2015–16 (First employment: Microsoft)

*External Service  
Activities*

- ◇ **Steering Committees:**
  - Human-in-the-Loop Data Analytics (HILDA) Workshop Steering Committee at the ACM SIGMOD Int’l Conference on Management of Data, 2016–
  - Data Systems for Interactive Analysis (IDEA) Workshop Steering Committee at the IEEE VIS Int’l Conference on Visualization, 2018–
- ◇ **Editorships:**
  - Associate Editor, SIGMOD Record, December 2014–  
In charge of “Vision” articles, targeting visionary ideas and projects.
  - Guest Editor, ACM XRDS Magazine (Issue on “Big Data”), with 15 invited articles from experts, 2012
- ◇ **Conference Chair Positions:**
  - Co-Chair, Human-in-the-loop Data Analytics Workshop (HILDA) at SIGMOD, 2017.
  - Co-Chair, SIGMOD Undergraduate Research Competition, 2016.
  - Area Chair, SIGMOD 2017
  - Chair, Workshops and Tutorials, 1st HCOMP (Human Computation Conference) 2013
- ◇ **Tutorials:**
  - Invited 3-hour Tutorial at the HCOMP (Human Computation and Crowdsourcing) Conference 2016, titled “Crowdsourced Data Management: Industry and Academic Perspectives”, with Adam Marcus, 2016.
- ◇ **Working Groups:**
  - NIH BD2K Commons Working Group, 2015–
  - NIH BD2K Machine Learning Working Group, 2016–
- ◇ **Award Committees:**
  - SIGMOD Jim Gray Dissertation Award Committee, 2015
  - SIGMOD Best Demo Award Committee, 2014
  - PURE Undergraduate Research Award Committee, 2014
- ◇ **Panel Participation:**

- Plenary Panel “DB meets AI” at the Alibaba Workshop@SIGMOD, 2018
- Plenary Panel “DB meets Vis” at HILDA@SIGMOD, 2018
- Plenary Panel “Will AI Eat Us All?” at VLDB, 2016
- Enterprise Intelligence Workshop Panel at KDD, 2016

◇ **Review Panels:**

- NSF IIS-III Databases Panel, April 2017
- NSF IIS-III Databases Panel, April 2016
- NSF IIS-III Data Mining Panel, June 2015

◇ **Program Committee Member:**

- ICDE Demo 2018
- SIGMOD Demo 2017
- HCOMP 2017, 2014, 2012
- VLDB 2016, 2015, 2014
- KDD 2015
- SIGMOD 2015, 2014
- SOCC 2014
- WSDM 2014
- ICDE 2014
- EDBT 2014
- WWW 2014

◇ **Workshop Program Committee:** HILDA 2018, 2016, IDEA 2015, SIGMOD ExploreDB 2015, COMAD 2014, CIKM CloudDB 2013, SIGMOD DBSocial 2013

◇ **Journal Reviewer:** VLDB J., 2015; J. of Data and Information Quality, 2014; SIGMOD Record, 2014; ACM TODS, 2014; Information Systems, 2014, 2013; CACM, 2013; SIAM J. of Computing, 2013; IEEE TKDE, 2016-15, 2010-13; ACM TOIS, 2012; J. of Web Semantics 2011

◇ **Workshop Participation:** BIRS-CMO Workshop on “Theory and Models of Crowds and Networks”, Oaxaca, Mexico, 2016

*Internal Service Activities*

- ◇ Big Research Initiatives Committee 2017-
- ◇ GEBI Chair Recruiting Committee 2017-
- ◇ Subcommittee for Review of New Courses 2017
- ◇ Undergraduate Study Committee 2016-17
- ◇ By Laws Committee 2015-17
- ◇ Faculty Recruiting Committee 2014-15

*Teaching*

- ◇ **Instructor for CS598:** Human-in-the-loop Data Management (Graduate Seminar), Fall 2014, 2015, 2017, Illinois Students Enrolled: 16 (2014), 18 (2015), 18 (2017)  
**List of Instructors Rated as “Excellent”** for Fall 2015, Fall 2017
- ◇ **Instructor for CS411:** Introduction to Database Systems, Spring 2016, 2017 Illinois Students Enrolled: 230 (2016), 230 (2017)
- ◇ **Instructor for CS511:** Advanced Data Management (Graduate Course), Spring 2015, Illinois Students Enrolled: 45

*Invited Talks*

- ◇ U Penn Distinguished Lecture: November 2017
- ◇ U Waterloo Distinguished Lecture: October 2017
- ◇ IBM TJ Watson Invited Lecture: December 2016
- ◇ Northwestern EECS Distinguished Lecture: November 2016
- ◇ Midwest BigData Workshop: October 2016
- ◇ U. Illinois BigData Day: October 2016
- ◇ BIRS-CMO Workshop on Theory of Crowds and Networks: August 2016

- ◇ SIGKDD EI (Enterprise Intelligence) Workshop Keynote: August 2016
- ◇ National Center for Supercomputing Applications: August 2016
- ◇ University of Texas-Austin: November 2015
- ◇ University of Michigan: October 2015
- ◇ NIH Center Meeting: August 2015
- ◇ Google Mountain View Invited Talk: September 2014
- ◇ SIGKDD Dissertation Award Talk: August 2014
- ◇ SIGKDD IDEA (Interactive Data Exploration and Analysis) Workshop Invited Keynote: August 2014
- ◇ SIGMOD Jim Gray Award Keynote: June 2014
- ◇ UMass Amherst Invited Talk: April 2014
- ◇ MIT Data Analytics Workshop: April 2014
- ◇ INFORMS Conference Invited Talk: October 2013
- ◇ LinkedIn Data Science: August 2013
- ◇ UMichigan CS Colloquium: April 2013
- ◇ USC CS Colloquium: April 2013
- ◇ CMU SCS Colloquium: March 2013
- ◇ Illinois CS Colloquium: March 2013
- ◇ UC San Diego CS Colloquium: March 2013
- ◇ Princeton CS Colloquium: March 2013
- ◇ Harvard CS Colloquium: March 2013
- ◇ Georgia Tech CS Colloquium: March 2013
- ◇ University of Maryland CS Colloquium: February 2013
- ◇ University of Chicago CS Colloquium: February 2013
- ◇ Columbia University CS Colloquium: February 2013
- ◇ UC Santa Cruz Database Group Invited Talk: February 2013
- ◇ Duke University Invited Talk: January 2013
- ◇ Crowd-Crowd Workshop, Stanford: January 2013
- ◇ Amazon Machine Learning Group Invited Talk, Bangalore, India: September 2012
- ◇ IBM Research Invited Talk (HCI Group), Almaden, USA: July 2012
- ◇ MIT EECS Colloquium: April 2012
- ◇ Univ. of Washington CS Colloquium: February 2012
- ◇ IBM Research Invited Talk, Almaden, USA: March 2011
- ◇ Crowd-Crowd Workshop, UC Berkeley: June 2011
- ◇ Microsoft Research DMX Group, Redmond, USA: August 2010
- ◇ Yahoo! Research Invited Talk, Bangalore, India: September 2009
- ◇ UC Berkeley, Database Group Lunch Talk: March 2009
- ◇ Kosmix Corporation, Mountain View, USA: August 2008