

**Associate Professor, Computer Science and Engineering, The Ohio State University**

**Associate Professor, Biomedical Informatics, The Ohio State University** (courtesy appointment)

- **Director, Interactive Data Systems Research Group:** manage a group of 10+ undergraduate, graduate, and postdoctoral students on a portfolio of research projects in interactive query interfaces, large-scale analytics, and human-in-the-loop data management funded through \$1.7M+ in federal and industry grants.
- **Co-founder & Director, OHI/O Program:** Created with the goal of fostering a tech culture at Ohio State, activities include running the University's annual Hackathon (2x growth/year, 770+ students from 25+ univs / 25+ industry partners in 2016.)
- **Co-founder & Director, STEAM Factory:** Platform for Collaborative Interdisciplinary Research & Outreach, comprising over 150 faculty and staff members at Ohio State, round-the-year activities, and a 3400sq ft. thinkerspace.

## EDUCATION

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**University of Michigan, Ann Arbor: Ph.D. Computer Science, 2011**

Advisor: **H.V. Jagadish** • Thesis Title: *Answering Imprecise Structured Search Queries*

**University of Delhi, India: Bachelors in Information Science, 2004** - First Class, with Distinction

## AWARDS AND GRANTS

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- **IEEE TCDE Early Career Award, 2016** "for contributions towards user-focused data interaction: building data analysis, exploration, and querying systems that allow highly interactive experiences for end-users"
- **Ohio State College of Engineering Lumley Research Award, 2016**
- **Best Paper Honorable Mention Award, IUI 2017**
- **CCC Best Paper Award, CIDR 2013 Vision Track**
- **Best Papers of WWW Web Science** (Journal Invitation), Journal of Web Science 2015
- **Best Papers of ICDE 2011** (Journal Invitation), TKDE 2012
- **Ohio State Tech Commercialization Office Accelerator Award, 2017** (100K)
- **NSF CAREER**, "Querying Beyond Keyboards: Gesture-driven Querying of Databases", 2015 (500K)
- **NSF Award (PI)**, "III: Towards Interactive Data Visualization Management Systems", 2015 (500K)
- **NSF Award (PI)**, "III: A User-centric Architecture for Ad-hoc Analytical Processing", 2014 (500K)
- **NetJets Research Award, 2015** (100K)
- **NEC Research Award, 2013, 2014** (80K)
- **Google Research Faculty Award, 2012** (50K)
- **Yahoo! STAR Hardware Grant, 2012**
- **Amazon EC2 Grant, 2012** (Education, Research), 2015 (Research)
- **Impact Grant, Ohio State Office of Outreach and Engagement** (for The STEAM Factory), 2013
- **BETHA: Battelle Engineering, Technology and Human Affairs Grant, 2013, 2014**
- **Yahoo! Research PhD Fellowship, 2008 – 2009**

## PRIOR EXPERIENCE

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**The Ohio State University**

*Assistant Professor, Computer Science & Engineering (Jan 2012 – June 2017. Promoted to Associate with Tenure)*

**University of Michigan, Ann Arbor** (Advisor: H.V. Jagadish)

*Graduate Student Research Assistant (Aug 2005 – Apr 2011. Submitted May 2011, Degree conferred Aug 2011)*

- Methods for usable searching and querying of structured / semi-structured data. <sup>[SIGMOD'07]</sup> <sup>[VLDB'07]</sup> <sup>[CIDR'09]</sup> <sup>[VLDB'11]</sup>

## EXPERIENCE *(continued)*

**Microsoft Research Search Labs, Mountain View** (Manager: Stelios Paparizos / Rakesh Agrawal)  
*Research Intern (June 2011 – September 2011)*

- Twitter content and social graph analysis and indexing system. [ICDE '13]

**Yahoo! Research, New York** (Manager: Cong Yu)

*Research Scientist – Student (Oct 2009 – Apr 2010), Research Intern, Web Info. Management Group (May 2009 – Aug 2009)*

- 1000+node-scale log data cube analysis project analysis based on Hadoop MapReduce. [VLDB '11]

**Microsoft Research, Redmond** (Manager: Phil Bernstein)

*Search Intern, Database Group (May 2008 – Sept 2008)*

- Schema / ontology mapping advisor for Live(now Bing) Product Search using web search query logs. [VLDB'09]

**Google, New York** (Manager: Shubin Zhao)

*Software Engineer Intern, Question Answering Team (June 2007 – Sept 2007)*

- Worked with the structured *Question Answering* team for improving results based on web search query logs.

**Technical Research Group, Yahoo! Bangalore**

*Student Intern (May 2005 – Aug 2005)*

- worked on structural indexing and typed querying on graph databases.

**Database Group, IIT Bombay**

*Intern (Summer '03, Winter '04), Research Assistant (Apr 2004 – 2005)*

- Worked with S. Sudarshan and S. Chakrabarti. Developed an access-control aware version of BANKS, later took over as maintainer of the BANKS project. Was responsible for architecting and developing the *SPIN* system prototype. [SIGIR'05]

**MIT Media Lab Asia, Delhi, Student Intern (Winter 2003)**

**idya Research, Delhi, Co-founder (2002 – 2003), worked on developing novel web-applications**

- *idyaDBX* - SQL queried database engine in PHP; uses web-accessible XML documents as data store.
- *Blogsnob* – Text advertising service for blogs. **Later acquired** by Kalsey Consulting in 2003; now part of Pheedo, Inc.

## PUBLICATIONS: JOURNAL & CONFERENCE PROCEEDINGS

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- Lilong Jiang, Larry Xu, Eugene Wu, Arnab Nandi: **Perceptual Impact of Animated Visualizations:** *(In preparation)*
- Niranjan Kamat, Arnab Nandi: **SESAME: A Session-Based Approach to Fast-But-Approximate Interactive Data Cube Exploration:** *ACM TKDD 2017 Special Issue on Interactive Data Exploration and Analytics*
- Niranjan Kamat, Arnab Nandi: **A Unified Correlation-based Approach to Sampling Over Joins:** *SSDBM 2017*
- Meraj Ahmed Khan, Larry Xu, Arnab Nandi, Joseph Hellerstein: **Data Tweening: Incremental Visualization of Data Transforms:** *VLDB 2017*
- Juan Felipe Beltran, Ziqi Huang, Azza Abouzied, Arnab Nandi: **Don't Just Swipe Left, Tell Me Why: Enhancing Gesture-based Feedback with Reason Bins:** *IUI 2017 (Best Paper Honorable Mention Award)*
- Jiongqian Liang, David Fuhry, David Maung, Roger Crawfis, Lynne Gauthier, Arnab Nandi, Srinivasan Parthasarathy: **Data Analytics Framework for A Game-based Rehabilitation System:** *ACM Digital Health 2016*
- Roece Ebenstein, Niranjan Kamat, Arnab Nandi: **FluxQuery: An Execution Framework for Highly Interactive Query Workloads:** *SIGMOD 2016*
- Arnab Nandi, Meris Mandernach: **Hackathons as an Informal Learning Platform:** *SIGCSE 2016*
- Akash Das Sarma, Ayush Jain, Arnab Nandi, Aditya Parameswaran, Jennifer Widom: **Surpassing Humans and Computers with JellyBean: Crowd-Vision-Hybrid Counting Algorithms:** *HCOMP 2015, pg 178–187*
- Lilong Jiang, Arnab Nandi: **SnapToQuery: Providing Interactive Feedback during Exploratory Query Specification:** *VLDB 2015, pg 1250–1261*

- Manirupa Das, Micha Elsner, Arnab Nandi, Rajiv Ramnath: **TopChurn: Maximum Entropy Churn Prediction Using Topic Models Over Heterogeneous Signals**: *WWW Web Science 2015 (Invited to Journal of Web Science as one of the Best Papers from WWW Web Science)*, pg 291—297
- Yi Wang, Gagan Agrawal, Arnab Nandi: **SAGA: Array Storage as a DB with Support for Structural Aggregations**: *SSDBM 2014*, Article No. 9
- Niranjan Kamat, Prasanth Jayachandran, Kathik Tunga, Arnab Nandi: **Distributed Interactive Cube Exploration**: *ICDE 2014*, pg 472—483
- Arnab Nandi, Lilong Jiang, Michael Mandel: **Gestural Query Specification**: *VLDB 2014*, pg 289—300
- Arnab Nandi: **Querying Without Keyboards**: *CIDR 2013 (Vision Track: Best Paper Award)*
- Arnab Nandi, Cong Yu, Philip Bohannon, Raghu Ramakrishnan: **Data Cube Materialization And Mining Over Mapreduce**: *TKDE 2012*, pg 1747—1759
- Manish Singh, Arnab Nandi, H.V. Jagadish: **Skimmer: Rapid Scrolling of Relational Query Results**: *SIGMOD 2012*, pg 181—192
- Arnab Nandi, H. V. Jagadish: **Guided Interaction: Rethinking the Query-Result Paradigm**: *VLDB 2011 (Vision Track)*, pg 1466—1469
- Arnab Nandi, Cong Yu, Philip Bohannon, Raghu Ramakrishnan: **Distributed Cube Materialization on Holistic Measures**: *ICDE 2011 (Invited to the TKDE “Best Papers of ICDE” Special Issue)*, pg 183—194
- Arnab Nandi, Phil Bernstein: **Using Search Clicklogs for Schema and Taxonomy Matching**: *VLDB 2009*, pg 181—192
- Arnab Nandi, H. V. Jagadish: **Qunits: queried units in database search**: *CIDR 2009, CoRR abs/0909.1765*
- Arnab Nandi, H. V. Jagadish: **Effective Phrase Prediction**: *VLDB 2007*, pg 219—230
- H. V. Jagadish, Adriane Chapman, Aaron Elkiss, Magesh Jayapandian, Yunyao Li, Arnab Nandi, Cong Yu: **Making database systems usable**: *SIGMOD 2007*, pg 13—24
- Magesh Jayapandian, Adriane Chapman, V. Glenn Tarcea, Cong Yu, Aaron Elkiss, Angela Ianni, Bin Liu, Arnab Nandi, Carlos Santos, Philip Andrews, Brian D. Athey, David J. States, H. V. Jagadish: **Michigan Molecular Interactions (MiMI): putting the jigsaw puzzle together**: *Nucleic Acids Research 35 (Database-Issue) 2007*, pg 566—571

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## PUBLICATIONS: SHORT PAPERS, WORKSHOPS, DEMOS & WORKS-IN-PROGRESS

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- Meraj Ahmed Khan, Larry Xu, Arnab Nandi, Joseph Hellerstein: **DataTweener: A Demonstration of a Tweening Engine for Incremental Visualization of Data Transforms**: *VLDB 2017 demo*
- Behrooz Omidvar-Tehrani, Arnab Nandi, Nicholas Meyer, Dalton Flanagan and Seth Young: **DV8: Interactive Analysis of Aviation Data**: *ICDE 2017 demo*
- Niranjan Kamat, Eugene Wu, and Arnab Nandi. **TrendQuery: A System for Interactive Exploration of Trends**: *Human In-the-Loop Data Analytics (HILDA) Workshop at SIGMOD 2016*
- Arnab Nandi, Carsten Binnig, Alan Fekete: **Human In-the-Loop Data Analytics (HILDA) Workshop 2016**, Front Matter
- Niranjan Kamat, Arnab Nandi: **A Closer Look at Variance Implementations In Modern Database Systems**: *SIGMOD Record*
- Eugene Wu, Arnab Nandi: **Towards Perception-aware Interactive Data Visualization Systems**: *Data Systems for Interactive Analysis (DSIA) Workshop 2015*
- Erin Fletcher, Meris Mandernach, Arnab Nandi, Alex Oliszewski: **Piloting Interactive Exhibits In The Academic Research Library**: *Symposium on Information and Technology in the Arts and Humanities 2015*
- Arnab Nandi, Ziqi Huang, Man Cao, Micha Elsner, Lilong Jiang, Srinivasan Parthasarathy, Ramiya Venkatachalam: **Interactive Tweaking of Text Analytics Dashboards**: *DNIS 2015 / Springer LNCS*, pg 122—132
- Lilong Jiang, Arnab Nandi: **Designing Interactive Query Interfaces to Teach Database Systems in the Classroom**: *CHI WIP 2015*, pg 1479—1482

- Ziqi Huang, Juan Felipe Beltran, Azza Abouzied, Arnab Nandi: **Beyond Binary Gestures: Exploring Documents using Touch Interfaces:** *CHI WIP 2015*, pg 1747—1751
- Prasanth Jayachandran, Niranjana Kamat, Kathik Tunga, Arnab Nandi: **Combining User Interaction, Speculative Query Execution and Sampling in the DICE System:** *VLDB 2014 (Demo)*, pg 1697—1700
- David Fuhry, Yang Zhang, Venu Satuluri, Arnab Nandi, Srinivasan Parthasarathy: **PLASMA-HD: Probing the Lattice Structure and Makeup of High-dimensional Data:** *VLDB 2013 (Demo)*, pg 1318—1321
- Lilong Jiang, Arnab Nandi, Michael Mandel: **GestureQuery: A Multitouch Database Query Interface:** *VLDB 2013 (Demo)*, pg 1342—1345
- Arnab Nandi, Stelios Paparizos, John Shafer, Rakesh Agrawal: **With a Little Help from My Friends:** *ICDE 2013 (Demo)*, pg 1288—1291
- H. V. Jagadish, Arnab Nandi, Li Qian: **Organic Databases:** *DNIS 2011*, pg 49—63
- Arnab Nandi, Michael Mandel: **The Interactive Join: Recognizing Gestures for Database Queries:** *CHI 2013 (WIP)*, pg 1203—1208
- Arnab Nandi, H. V. Jagadish: **Assisted querying using instant-response interfaces:** *SIGMOD 2007 (Demo)*, pg 1156—1158
- Soumen Chakrabarti, Jeetendra Mirchandani, Arnab Nandi: **Searching personal information networks:** *SIGIR 2005 (Demo)*, pg 674

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## PATENT FILINGS / COMMERCIALIZATION

- Providing Interactive Feedback During Exploratory Query Specification Provisional USPTO App #62/188,015
- Fluxquery: An Execution Framework For Highly Interactive Query Workloads: Provisional USPTO App# 62/188,011
- Stratified Random Sampling From Both Sides Of A Join: Provisional USPTO #62/188,006
- Schema Matching Using Clicklogs, with Phil Bernstein et al, Microsoft Corporation. USPTO App #20100274821

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## OPEN SOURCE

- **Pig CUBE-BY:** Mentored student Prasanth J to implement the **CUBE BY** operator in Pig (core feature, v0.11 onwards)
- **Pig-Python:** Developed *Baconsnake*, enabling inline **Python UDFs in Pig**. Contributed patches to Pig core, enabling pluggable scripting engine support for UDFs. (core feature, v0.8 onwards)
- **Drupal:** Misc. patches to core. Original creator of the *Captcha* and *Similar Entries* modules (now maintained by others.)

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## INVITED TALKS

- College of Engineering Advisory Council, “Interactive Data Analytics”, May 2017
- Nationwide Insurance, “Querying Without Keyboards: Challenges in Gesture-driven Data Exploration”, December 2016
- Google Mountain View, “Building Interactive Data Visualization and Analytics Backends”, November 2016
- UMass Amherst, “Querying Beyond Keyboards”, October 2016
- IBM India Research Lab, “Building Interactive Data Systems”, September 2016
- CrossChx, Inc., Columbus, Ohio (ScaleTech Talk Series), “Large Scale Data Cubing”, June 2016
- Aalto University, Helsinki, Finland (ICDE 2016), “Chasing Interactivity” (ICDE award talk), May 2016
- FAA Technical Center, Atlantic City NJ, “Interactive Data Analytics”, April 2016
- Cornell University, “Querying Beyond Keyboards”, January 2016
- Brown University, “Querying Beyond Keyboards”, November 2015
- UC San Diego, “Querying Beyond Keyboards”, November 2015
- Samsung Research Labs, “Challenges in Gesture-driven Data Exploration”, July 2015
- HP Labs, “Challenges in Gesture-driven Data Exploration”, July 2015
- IBM Almaden, “Systems Challenges in Gesture-driven Data Exploration”, June 2015

- UC Berkeley, “Building Interactive Database Systems”, May 2015
- CIDR 2015, “Breathing Life into Database Textbooks”, Jan 2015
- SUNY Buffalo, “Interactivity as a First-class Concept in Database Systems”, Jan 2015
- Purdue University, “Building Interactive Database Systems”, Jan 2015
- Massachusetts Institute of Technology: “Building Interactive Database Systems”, May 2014
- Trifacta Inc: “Querying Without Keyboards: GestureDB”, September 2013
- NEC Labs: “Querying Without Keyboards: GestureDB”, September 2013
- Technicolor Labs: “Querying Without Keyboards: GestureDB”, March 2013
- IBM Almaden: “Building Interactive Data Systems”, Feb 2013
- Carnegie Mellon University: “Guided Interaction over Large Datasets”, Oct 2012
- IIT Bombay: “Distributed Cube Materialization on Holistic Measures”, Oct 2011
- Hadoop Summit Pig User Group Meeting: “Data Cubing in Pig”, Aug 2011
- Greenplum, Inc.: “Searching Databases: Rethinking the Query-Result Paradigm”, Oct 2010
- IBM Almaden: “Qunits: Queried Units in Database Search,” Jan 2009
- Data Mining Workshop, Univ. of Michigan: “Autocompletion for Structured Querying”, Apr 2010

## PROGRAM COMMITTEES & CHAIR POSITIONS

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- Demonstrations co-chair: ICDE 2017
- Publicity co-chair: SIGMOD 2017
- Steering Committee, HILDA 2017
- Student Scholarship co-chair: SoCC 2016  
Organizer / co-chair: HILDA 2016 (SIGMOD Human In-the-Loop Data Analytics Workshop)
- SIGMOD (2015, 2016)
- VLDB (2014, 2015, 2016, 2017)
- Experiments and Analysis Track, VLDB 2014
- Demo Track, VLDB 2014
- SOCC 2013
- WebDB 2013
- Industrial Track, VLDB 2013
- ICDE 2013

## OTHER PEER REVIEW

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- **National Science Foundation CAREER Proposal Reviewer**, 2016
- **National Science Foundation Proposal Review Panelist**, 2015
- **National Science Foundation Proposal Review Panelist**, 2014
- **Reviewer**, Ohio State University Discovery Themes, Data Analytics New Faculty Hiring Proposals
- **National Science Foundation Proposal Review Panelist**, 2012
- **Reviewer/External reviewer**: TKDE 2012, TKDE 2011, VLDBJ 2010, ICDE 2010, VLDB 2008, SIGMOD 2008, VLDB 2006, WWW 2005.

## PANELS AND COMMUNITY ACTIVITIES

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- **Speaker**: “Small Data” Panel, ICDE 2017
- **Speaker**: College of Engineering Advisory Council meeting, 2017
- **Speaker**: OSU Office of Research CAREER Award Panel, 2017
- **Technical Mentor, GiveBackHack 2016** – Columbus / Community-focused Social Hackathon
- **Invited** to present Hackathon efforts to the Ohio State Board of Trustees Finance Committee Meeting, 2016
- **Speaker**: “Designing for Interaction: Broadening our View of Working with Data”, VLDB 2015 Panel

- **OSU Faculty Researcher Representative**, Coalition for National Science Funding (CNSF) Reception 2015
- **Speaker**: University Explorations Interdisciplinary Panel, The Ohio State University, 2014
- **Speaker**: New Researcher Panel, SIGMOD 2014
- **Member**, Data Analytics Faculty Advisory Committee, The Ohio State University
- **Admissions Committee**, OSU Graduate Admissions, 2013 and 2014
- **Speaker**: UROP Career Panel 2010, UofM Distinguished Alumni Panel 2012
- **Speaker**: Fellowship Application Workshop 2009
- **Guest Judge**: Yahoo! HackU Competition 2010
- **Faculty Advisor, Buckeye Hackers Club** ('15—)
- **Faculty Director**, OHI/O Tech Engagement / Hackathon Program, 2013 –
- **Founding Director, The STEAM Factory** ('12—) Platform for Collaborative Interdisciplinary Research & Outreach, comprising over 70 faculty and staff at Ohio State. (<http://steamfactory.osu.edu>)
- **President, CSE Graduate Society, Univ. of Michigan** ('08-09): Managed the organization's operations, events, and planning. Also served as Vice-president ('07-08) and Secretary ('06-07).

## MEDIA MENTIONS

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- OHI/O 2014 Hackathon, **WCMH-TV Channel 4 News**, October 2014
- “Hackathon teams at Ohio State create code to success” – **The Columbus Dispatch**, November 2013
- “STEAM Factory helps Ohio State connect, collaborate across disciplines” – **Buckeye Engineering News**, May 2013
- “How to Trick Users Into Liking Facebook Pages” – Sarah Perez, **The New York Times / ReadWriteWeb**, April 2010
- “Wie man Nutzer zu Spamschleudern macht” (German) – **Spiegel Online**, April 2010
- “Want your diary (blog) to be read by others?” – Vipin V. Nair, **The Hindu Business Line**, July 2002
- “A Banner-Free Year for Advertising” – Paul Adams, **Wired.com's Webmonkey**, June 2002
- “Connecting the dots” – Nidhi Taparia, **Rediff Guide to the Net**, May 2002

## STUDENT ADVISING

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- **Thesis Advisor**
  - **Ritesh Sarkhel (Ph.D.)**
  - **Protiva Rahman (Ph.D.)**
  - **Meraj Ahmed Khan (Ph.D.)**
  - **Lilong Jiang (Ph.D.)**
  - **Niranjan Kamat (Ph.D.)**
  - **Ziqi Huang (M.S., Employment: Twitter)**
  - **Sudharshan Muralidharan (MS, Employment: Yahoo!)**
  - **Vivek Ratnavel Subramaniam (MS, Employment: Hortonworks)**
  - **Karthik Tunga (MS, Employment: Microsoft)**
  - **Prasanth Jayachandran (MS, Employment: Hortonworks)**