

Curriculum Vitae Rajendra Bose

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Education

University of California, Santa Barbara **2004**

Ph.D. in Environmental Science and Management (Environmental Informatics)

University of California, Berkeley **1991**

M.S. in Industrial Engineering and Operations Research

Includes study at **University of Nottingham, England** (Masters Project 1991)

Stevens Institute of Technology, Hoboken NJ **1989**

B.E. in Electrical Engineering, with Honor

Includes study at **University of Dundee, Scotland** (International Scholars Program 1987-1988)

Includes study at **University of Oxford, England** (International Graduate Summer School 1988)

Academic and Professional Experience

Manager, Research Computing Services, Columbia University **Aug 2009-present**

Responsible for developing and advancing new central research computing services at Columbia. The manager role includes working closely with faculty and research and information technology staff across the university, as well as senior administrators in the Office of Research Initiatives and the Libraries/Information Services. Activities include implementing professionally-managed, shared high performance computing systems, participating in data center "greening" projects, and defining strategies for biomedical and social science research computing with Columbia scientists, economists, and population-related researchers.

Digital Initiatives Manager, Columbia University **Jan 2008-Jul 2009**

Center for Digital Research and Scholarship (CDRS)

This position involved initiating and cultivating partnerships with Columbia research groups in all disciplines, and serving as a bridge for these groups to other divisions in the Columbia University Libraries/Information Services and various campus information technology teams.

Postdoctoral Research Fellow, University of Edinburgh **2004-2007**

United Kingdom Digital Curation Centre and Database Group, School of Informatics

Self-directed research topics include database annotation and digital geospatial data curation, including approaches to citation for geospatial data products.

Visiting Scientist, Columbia University **Jul-Oct 2007**

Research project: Applying semantics to socioeconomic Earth science product collections for enhanced data retrieval. Included investigations of ontology design and prototype system development using Ruby and RDF/XML tools in collaboration with the International Research Institute for Climate and Society (IRI) data library managers and the Center for International Earth Science Information Network (CIESIN)/Socioeconomic Data and Applications Center (SEDAC) metadata team.

Graduate Student Researcher, University of California **1998-2004**

Institute for Computational Earth System Science and Bren School of Environmental Science and Management, University of California, Santa Barbara. Ph.D. dissertation topic: **Composing and conveying lineage metadata for environmental science research computing**. Ph.D. Advisor: Professor James Frew.

Teaching Assistant in Geographic Information Systems **2002**

Bren School of Environmental Science and Management, University of California, Santa Barbara

Information Systems Consultant, Stanford University **1992-1998**

Independent consultant: Managed two complete lifecycle projects for design and implementation of integrated office information systems, including financial program development and legal document production. Tasks included project scheduling and prioritizing, arranging client meetings, writing proposals and design documents. Also served as an information systems consultant for other firms in the San Francisco Bay Area.

Environmental Consulting: Senior Staff Engineer **1994-1996**

Woodward-Clyde Consultants, New York City Metropolitan Office

Responsible for managing geographical information for a major wetland restoration project, as well as providing support for other diverse projects, for this environmental consulting firm. Tasks included managing an assistant, implementing new GIS technology, and interacting with clients and vendors.

Professional and Academic Activities

- NSF Proposal Review Panel participant, Washington DC, 2009
- Co-convener for Union session, American Geophysical Union (AGU) Fall 2008 Meeting: **The Library - Data Center Alliance in Earth and Space Sciences**
- Affiliate Member, Columbia Population Research Center, Columbia University (2008-present)
- Co-convener for Earth and Space Science Informatics session, American Geophysical Union (AGU) Fall 2007 Meeting: **Embracing GIS in the Earth and Planetary Sciences**
- Program Committee (2005), Reviewer and Session Chair (2006), International Conference on Scientific and Statistical Database Management (SSDBM)
- Program Committee, 14th ACM International Symposium on Advances in Geographic Information Systems (ACM-GIS 2006)
- Program Committee, VLDB 2005 Workshop on Trends in Enterprise Application Architecture
- Advisor to M.Sc. in GIS student Jeff (Xiaodi) Chen (Institute of Geography, University of Edinburgh) on his thesis project: **Implementing an online geospatial repository to manage geographical data from Belize** (January-August 2006)
- Advisor to computer science M.Sc. student Diego Prina-Ricotti (Dipartimento di Informatica e Automazione, Università di Roma Tre) on his thesis project: **AstroDAS: Querying Astronomical Databases Through a Distributed Annotation System** (January-September 2005)

Affiliations

- Coalition for Academic Scientific Computing (2010-present)
- Association for Computing Machinery (1998-present)
- American Geophysical Union (1998-present)
- Institute of Electrical and Electronics Engineers (1989-2008)

Publications and presentations

Peer-reviewed Publications

- R. Bose, R. Mann and D. Prina-Ricotti. 2006. **AstroDAS: Sharing Assertions across Astronomy Catalogues through Distributed Annotation**. Proceedings of the International Provenance and Annotation Workshop (IPAW 2006), Chicago IL, May 2006, Lecture Notes in Computer Science (LNCS) Volume 4145, 193-202.
- R. Bose and J. Frew. 2005. **Lineage Retrieval for Scientific Data Processing: A Survey**. ACM Computing Surveys, Volume 37, Issue 1 (March 2005), 1-28.
- R. Bose and J. Frew. 2004. **Composing Lineage Metadata with XML for Custom Satellite-Derived Data Products**. Proceedings of the 16th International Conference on Scientific and Statistical Database Management, Santorini, Greece, 275-284.
- R. Bose. 2002. **A Conceptual Framework for Composing and Managing Scientific Data Lineage**. Proceedings of the 14th International Conference on Scientific and Statistical Database Management, Edinburgh, Scotland, 15-19.

- J. Frew and R. Bose. 2001. **Earth System Science Workbench: A Data Management Infrastructure for Earth Science Products**. Proceedings of the 13th International Conference on Scientific and Statistical Database Management, Fairfax, VA, 180-189.

Other Refereed Papers and Presentations

- R. Downs, R. Chen, R. Cartolano, and R. Bose. **Collaborative Establishment of a Long-Term Archive for Stewardship of Interdisciplinary Scientific Data**, presented at the American Geophysical Union 2008 Fall Meeting (AGU 2008), San Francisco, CA, USA. (December 2008) (EOS Transactions of the AGU, 89 (53), Fall Meeting Supplement, Abstract U23A-0047)
- R. Bose, G. McGarva. **Citing geospatial feature inventories with XML manifests**, presented at the American Geophysical Union 2006 Fall Meeting (AGU 2006), San Francisco, CA, USA. (December 2006) (EOS Transactions of the AGU, 87 (52), Fall Meeting Supplement, Abstract IN54A-06)
- R. Bose, P. Buneman and D. Ecklund. **Annotating scientific data**, presented at the Fifth UK e-Science All Hands Meeting (AHM 2006), Nottingham, England. (September 2006)
- R. Bose and F. Reitsma. **Advancing Geospatial Data Curation**, presented at the Ensuring Long-term Preservation and Adding Value to Scientific and Technical Data (PV 2005) Conference, Edinburgh, Scotland. (November 2005)

Other Non-refereed Papers and Presentations

- Maximizing the Reach of a Graduate Research Journal through Open Source Tools and Social Media**, presented at the 2nd International Public Knowledge Project (PKP) Scholarly Publishing Conference, Vancouver, BC, Canada. (July 2009).
- Extending the Reach of Academic Research in the Digital Age**, invited presentation at a Special Seminar on Scholarly Communication of Scientific Data, Lamont Campus, Columbia University. (March 2009).
- Realizing the Research Library—Data Center Alliance**, invited presentation at the Geoscience Information Society Annual Meeting, Houston, TX. (October 2008); to be published in the *Proceedings of the Geoscience Information Society*.
- Tracking data provenance: some recent approaches**, presented at National Oceanic and Atmospheric Administration (NOAA) National Geophysical Data Center, Boulder, CO. (March 2008)
- Socioeconomic Data and Applications Center (SEDAC) Faceted Browsing Demonstration**, Visiting Scientist report submitted to Center for International Earth Science Information Network (CIESIN), Lamont Campus, Columbia University. (November 2007)
- Towards CI4EI success: lessons from UK e-Science initiatives**, presented at Cyberinfrastructure for the Earth Institute (CI4EI) meeting, Lamont Campus, Columbia University. (September 2007)
- Ordnance Survey MasterMap topography: Amending old geographies?** (with G. McGarva), presented at Scottish Executive GIS Seminar, Edinburgh, Scotland. (June 2007)
- A geoinformatics research agenda**, presented at the GeoForschungsZentrum (GFZ)-Potsdam, Germany. (April 2007)

Geospatial data curation: keeping the (geo)scientific record intact, presented at the Bren graduate School of Environmental Science and Management, University of California, Santa Barbara. (December 2006)

R. Bose, G. McGarva. **Using XML manifests to cite geospatial feature databases**, presented at the Digital Curation Centre Workshop: Maintaining Long-term Access to Geospatial Data, e-Science Institute, Edinburgh, Scotland. (October 2006)

Annotating scientific databases, presented at the Glasgow Interactive Systems Group (GIST) seminar, Department of Computing Science, University of Glasgow, Scotland. (February 2006)

R. Bose (with A. Robertson). **Geospatial repository literature review**. Part of the EDINA Geospatial Repository for Academic Deposit and Extraction (GRADE) project. (January 2006)

AstroDAS and Mondrian: New Approaches for Annotating Scientific Databases, presented at the First International Digital Curation Conference, Bath, England. (September 2005)

Curation for Spatial Scientific Data Products and Processing, presented at the Institute of Computer Science Colloquium, Freie Universität Berlin, Germany. (May 2005)

Digital Curation for Service-based Workflows, presented at the Web services for environmental applications workshop, National Institute for Environmental eScience (NIEES), University of Cambridge, England. (January 2005)

Retrieving the Lineage of Scientific Data Products across Organizations, presented at the Department of Spatial Information Science and Engineering, University of Maine at Orono. (October 2004)

Delivering Data Lineage for Earth Science Research Computing, presented at the Japan-US Workshop on Annotation and Resource Discovery of Geographic Image Data (A Joint Workshop by the National Institute of Informatics (NII), Japan, and National Center for Geographic Information and Analysis (NCGIA), USA), Nikko, Japan. (March 2003)

Awards and Honors

- Parson's Fellowship, University of California, Santa Barbara 1998-99, 1999-2000 academic years
- Outstanding New Employee Award, Woodward-Clyde Consultants, 1994
- Selected for Washington DC AAAS Summer Internship, UC Berkeley, 1990
- Tau Beta Pi National Engineering Honor Society, The Stevens Institute of Technology, 1989

Technical Background

- Database systems and web applications
- Geographic information systems and remote sensing applications
- Programming and general scripting (Python and other languages), metadata and semantic web approaches
- Engineer-in-Training certification, 1989

Citizenship

U.S. Citizen