

Subrahmanyam Muthukumar

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PROFESSIONAL PREPARATION

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|--|---------------|-----------------|
| University of Roorkee, Roorkee, India | Architecture | B.Arch. 1989 |
| University of Texas at Austin, Austin | Architecture | M.Arch. 1994 |
| Georgia Institute of Technology, Atlanta | City Planning | M.C.R.P 2000 |
| Georgia Institute of Technology, Atlanta | City Planning | Ph.D. [ongoing] |

APPOINTMENTS

- July 2001 – Present: Research Scientist, Center for GIS, Georgia Institute of Technology, Atlanta, GA
- August 2001 – Present: Instructor, City Planning, College of Architecture, Georgia Institute of Technology, Atlanta, GA
- September 1994 – June 2001: Research Assistant, City Planning, College of Architecture, Georgia Institute of Technology, Atlanta, GA
- September 1993 – May 1994: Teaching Assistant, School of Architecture, University of Texas at Austin, Austin, TX
- July 1989 – August 1992: Architect, Komfort Architects and Designers Pvt. Ltd., Bangalore, India

REPORTS AND PUBLICATIONS

- French, Steven P, Arthur C. Nelson, Subrahmanyam Muthukumar and Maureen M. Holland. (1996). "The Northridge Earthquake: Land Use Planning for Hazard Mitigation," Final Report to the National Science Foundation, CMS – 9416458
- French, Steven P., Xudong Jia, Yi-Chang Tsai and Subrahmanyam Muthukumar. (1997). "Estimating Social and Economic Impacts of Infrastructure Damage with GIS," Final Report to National Center for Earthquake Engineering Research, NCEER 95-6101C
- Muthukumar, Subrahmanyam. (2002). "Transportation Networks and Essential Facilities in Mid-America: Accessibility Characteristics and Visualization," Final Report to the Mid-America Earthquake Center. February
- Muthukumar, Subrahmanyam. (2002). "Measuring Change in Accessibility to Essential Facilities due to Event-related Transportation Network Closures using GIS," GIS-T Conference, Atlanta. May
- Steven P. French, Subrahmanyam Muthukumar, Christina Baxter, Jean Wolf and Jeremy Myers. (2002). "Savannah River Site Emergency Operations Center GIS/GPS Evaluation Report", Final report to Savannah River Site EOC, GA 0089. October
- Subrahmanyam Muthukumar. (2005). "Riverine Flood Modeling in HAZUS-MH: Overview of the Implementation," Georgia Water Resources Conference Proceedings, Athens, GA.
- Subrahmanyam Muthukumar and Liora Sahar. (2005). "Using High-resolution Aerial Photography and Advanced Inventory Production Techniques for Earthquake Modeling and Risk Assessment in Mid-America," ASPRS Regional Conference, Athens, GA.
- Subrahmanyam Muthukumar. (2006). "Using High-resolution aerial photography and Neural networks for inventory production of people and properties at risk of earthquakes," GIS in Teaching and Research Conference, Atlanta, GA
- Subrahmanyam Muthukumar. (2006). "Aerial Photography and Neural Networks for Hazard Inventory", Georgia URISA GIS-IT Conference, Athens, GA.
- French, Steven P. and Subrahmanyam Muthukumar. (2006). "Advanced Technologies for Earthquake Risk Inventories," in *Journal of Earthquake Engineering*, Vol. 10, No. 2 , pp. 207-236.
- Vaidyanathan, Ambarish, Forrest Staley, Jeffrey Shire, Subrahmanyam Muthukumar and Mary Jean Brown. (2008 forthcoming). "Screening for Lead Poisoning: A Geo-spatial Approach to Determine Testing Rates for Children in At-risk Neighborhoods," *Journal of the American Institute of Pediatrics*.

SYNERGISTIC ACTIVITIES

1. Developed and updated new curriculum for introductory and advanced graduate level courses on the Use of Geographic Information Systems Technology in the City Planning program
2. Developed and delivered several short-term courses in the use of Geographic Information Systems through the Continuing Education program at the Georgia Institute of Technology (approximately 15-20 students per class)
3. Developed several spatial databases and GIS applications for a variety of Center for GIS projects and other institutions, including the City of Atlanta, Hartsfield-Jackson Atlanta International Airport, the Atlanta Regional Commission, the Mid-America Earthquake Center, the USGS and FEMA
4. Developed a neural network model for creating urban structural inventories for Shelby County as part of the ongoing Advanced Inventory Technologies research effort for the Mid-America Earthquake Center
5. Serve as data preparation and analysis expert for faculty across Georgia Tech, University of Georgia and Georgia State University
6. Act as natural disaster support staff for FEMA during hurricane and flood seasons
7. Served as Secretary and currently Treasurer for the Georgia Chapter of the Urban and Regional Information Systems Association from 2004 to present.

RELATED RESEARCH AND EXPERIENCE

Geographic Information Systems

- Teaching the Introductory Course in Geographic Information Systems in City Planning at the Georgia Institute of Technology [1995 - current]
- Population and Employment projections, demographic analysis and mapping
- Extensive experience working with Census data, American Housing Survey data and other Census products
- GIS spatial database design and data requirements analysis
- GIS data development, GIS data transfer across a variety of platforms and GIS software
- Preparation of data using GIS and spatial analysis for downstream research and statistical analysis
- Development of standalone mapping applications using MapObjects, ActiveX controls and automation objects with Visual Basic
- Development of web-based mapping applications using MapObjects Internet Map Server, with Java Scripting and Visual Basic
- Land Use modeling using GIS
- Development of customized user interfaces in ArcInfo with AMLs and AML programming
- Development of customized user interfaces in ArcView 3.x and ArcGIS 9.x with Avenue and VB/VBA
- Integration of Raster and Vector data in GIS applications
- Extensive and comprehensive experience with FEMA's HAZUS MR-2, including Level I and Level II analyses

Internet and Programming Applications

- Design and development of web interface for the Introductory Course in Geographic Information Systems at the Georgia Institute of Technology, including all relevant support materials
- Development of GIS-based Internet applications
- Development of database applications using Visual Basic and MS Access
- Data preparation using C

Planning

- Development of Comprehensive Land Use Plans
- Land Use Modeling and Research
- Development of Transportation Models using TRANPLAN
- Policy Research and Analysis
- Development of Real Estate applications and solutions
- Statistical and Econometric Research Methods
- Artificial Neural Networks and City Planning applications
- Disaster Preparedness, Response, Mitigation and Planning using HAZUS MR-3 and MAEViz 3.0

COMPUTER SKILLS

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| Hardware Platforms | - Sun SPARC, IBM PC compatible, Macintosh |
| Operating Systems | - UNIX, Windows NT, Windows 95, DOS |
| Programming | - C, Arc/Info AML, ArcView Avenue, ArcObjects, HTML, ASP, JavaScript |
| GIS Systems | - Arc/Info and ArcView on UNIX and PC platforms, ArcGIS 9.x - Atlas*GIS, MapInfo, ERDAS-IMAGINE |
| Development Tools | - MapObjects, MapObjects IMS, Visual Basic 6.0, VB .Net |
| Database Systems | - MS Access, SQL Server |
| Internet Applications | - Cold Fusion, NetObjects |
| Other | - MS Office Suite, Quattro Pro, dBase, TRANPLAN, HERS, MINITAB, SPSS, SAS - AutoCAD 14, Microstation Intergraph, Adobe Pagemaker, Photoshop, COREL Suite |

IMMIGRATION STATUS

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| Current Citizenship | - India |
| US Immigration Status | - Permanent Resident (Green Card) since July 2003 |

BIO -- SUBRAHMANYAM MUTHUKUMAR, M.Arch., MCRP

Subrahmanyam Muthukumar is currently a Research Scientist at the Center for Geographic Information Systems and serves as an adjunct faculty member in the City and Regional Planning at the Georgia Institute of Technology, Atlanta, Georgia. All of Mr. Muthukumar's activities are currently funded through center for GIS projects, the Mid-America Earthquake Center and the Georgia Institute of Technology. His research interests lie in urban and spatial analysis, statistical and econometric modeling, disaster management, custom development in geographic information systems for planning applications and geographic information systems education. He has held positions as Secretary and Treasurer for the Georgia Chapter of the Urban and Regional Information Systems Association.

Mr. Muthukumar has been teaching GIS for transportation, earth sciences and planning over the last 8 years. His most recent and ongoing projects include development of accessibility measures for emergency preparedness and the application of neural networks to developing urban building inventories. He also works closely with the Federal Emergency Management Association in Atlanta during times of natural disasters, and assists in disaster modeling, mitigation, preparedness and response activities. Mr. Muthukumar is currently a Ph.D. candidate in City Planning at the Georgia Institute of Technology and is expected to graduate in December 2008. He has two Master's degrees -- in City and Regional Planning at the Georgia Institute of Technology, 2000 and in Architecture (Urban design) from the University of Texas at Austin, 1994.