

# **SUBHASRI DUTTAGUPTA**

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## **Career Highlights**

- Seven years of IT experience in organizations like IBM, Micron, Hewlett-Packard.
- Six years of research experience in Media lab Asia, Indian Institute of Technology, Bombay.
- About to complete PH.D in Computer Sc. And Engineering, IIT Bombay.

## **Education**

- 1991 B.Tech, Computer Sc. And Engineering, Indian Institute of Technology, Bombay
- 1993 M.Tech, Computer Sc. And Engineering, Indian Institute of Technology, Bombay

## **Professional Experience**

### **Research in Sensor Networks, CSE department, IIT Bombay, Mumbai, India**

#### **Dec '02-till today**

- Advances in embedded system technologies motivate the deployment of sensor networks for measurement, detection and surveillance applications. In many applications such as detecting leakage of plume or tracking forest fires, there is a need to detect and track dynamic boundaries separating two regions in a homogeneous field. We propose a novel approach which uses a non-parametric regression-based spatial estimation technique to determine discrete points on the boundary from noisy sensor observations. In addition, a Kalman Filter-based temporal estimation technique selectively refreshes the estimated boundary to meet accuracy requirements.
- Our algorithm, Dynamic Boundary Tracking (DBTR), combines temporal estimation with an aperiodically updated spatial estimation and provides a low overhead solution to track boundaries without requiring prior knowledge about the dynamics of the boundary.
- Our heuristic-based approach uses only a minimal number of estimation points to obtain a confidence band around the entire boundary. Estimated confidence bands indicate a loss of coverage of less than 2-5% for a variety of boundaries with different spatial characteristics.

### **Development Informatics Lab, IIT Bombay, Mumbai, India**

#### **Dec '02-till today**

- Working as a research associate in Development Informatics lab (formerly known as Media Lab Asia) and looking after the system design issues related to on-going projects, for example, an on-line questions and answering system, on-line pricing system. One of the responsibilities includes making the future plan of actions for the system group in the lab.
- Have created an on-line pricing system for rural India, using Java Servlet and XML interface. The front end is created using Flash. The application provides prices of commonly sold commodities at various markets in Maharashtra.

## **Customer Relationship Management projects, Hewlett-Packard, Boise, Idaho, USA**

**April'00-March'02**

- Worked as a technical lead for HP User Support Forums project. The forums were based on multi-tiered complex architecture with front-end using **Java-servlet** running on Windows NT machine and back-end using **Oracle** database. Millions of HP Customers all over the world used these forums for solving problems on their HP products.
- Was responsible for creating and maintaining forums. Introduced a number of new features on forums which resulted in higher resolution rates and higher customer satisfaction scores.
- Worked as a key developer in World-wide Entitlement project. A **CORBA** server running on HP-UX system provides the warranty information on all hp consumer products.
- Was responsible for developing an **XML** interface to the entitlement server. This interface used to take the input in terms of XML string and provide the output as an XML string after retrieving the warranty information from the server.

## **Fab Tracking, Micron Technology Inc, Boise, Idaho, USA**

**March'98 – Nov'98**

- Built Object layer over common manufacturing data e.g., parts, facilities, areas and common tracking data e.g. lots, steps, travelers etc. The layer was built using **Visual Basic** and **COM technology**. The server was made accessible on the web using **HTML and ASP**.
- The server interacted with **Sybase** server using Generic Persistence Layer that involved working with **SQL**.

## **Kodak OPTISTAR Writable CD System, Eastman Kodak Company, Rochester, NY, USA**

**Oct'96 – Jan'97**

- Involved in Current Product Engineering (CPE) role for the product. The system was developed in order to meet customer retrieval requirements for computer-generated reports and source document image data. To accomplish this, the product provided two major subsystems: authoring software running on **Unix** machines and retrieval software running on Windows **NT** machines.

## **Cluster Availability Services, IBM T.J. Watson Research Center, NY, USA**

**Dec'95 – Sept'96.**

- A collection of common services that helps in building high-availability **parallel servers** and **distributed applications** in a cluster. The toolkit provides a comprehensive **failure detection** service along with recovery drivers to automatically recover from failures.
- The services were independent of the underlying machine architecture and specific client applications and targeted towards SP/2 like systems. The platforms were **AIX, OS/2, Windows NT and IBM microkernel**.

- Worked on a component called **Topology Services**. This maintained the full graph of the system and was used to compute message routes to reachable nodes. This involved in-depth knowledge and working with **Networking**.

### **IBM Microkernel, IBM, Boca Raton, FL, USA**

**Sept'94 – Nov'95.**

- Development and testing of an **Object-Oriented** interface using **C++** for the abstractions and services provided by IBM Micro-Kernel for **Power PC** target architecture. Was responsible for classes dealing with IPC, shared heap and memory management.

### **Testing Adapter and Graphics API, Tata-IBM, Bangalore, India,**

**March'93 – April'94.**

- Developed a simulation environment for testing the drawing engine code for a high performance **3D Graphics Adapter**.

### **List of Publications**

- Subhasri Duttagupta, Krithi Ramamritham, Purushottam Kulkarni  
Tracking Dynamic Boundary Fronts using Sensor Networks, The fifth European Conference on Wireless Sensor Networks, Bologna, Italy, Jan 2008, *Lecture Notes in Computer Science, no-4913*.
- Subhasri Duttagupta, Krithi Ramamritham and Parmesh Ramanathan,  
Distributed Boundary Tracking using Sensor Networks,  
*The 3rd IEEE Intl. Conference on Mobile Ad-hoc and Sensor Systems*,  
Vancouver, Canada, Oct 2006.
- Krithi Ramamritham, Anil Bahuman, Subhasri Duttagupta,  
aAQUA: A Database-backed Multilingual, Multimedia Community Forum (A  
Demonstration), SIGMOD, Chicago, IL, June 2006.
- **Book Chapter**  
Krithi Ramamritham, Subhasri Duttagupta, Anirudha Joshi, Gaurav Mathur and Tushar  
Vilankar, An Interface-Driven Approach to Information Provision for Wired and Wireless  
Customers, in *Mobile Computing*, Hrushikesh Mohanty and Ratan K. Ghosh (ed.),  
Allied Publishers, 2003, pp.102-109..

### **List of References**

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Prof. Kannan M. Moudgalya email: [kannan@che.iitb.ac.in](mailto:kannan@che.iitb.ac.in)