

---

---

# RESUME

## ACHINT OOMMEN THOMAS

88 Englewood Ave

Buffalo, NY – 14214

Ph: (716)-472-6899

Email: [aothomas@buffalo.edu](mailto:aothomas@buffalo.edu)

Webpage: [www.achintoommenthomas.net](http://www.achintoommenthomas.net)

---

### Educational Qualifications

- Doctoral Candidate (PhD) in Computer Science, SUNY at Buffalo, NY.
- Graduate Studies (MS) in Computer Science, in the year 2007 from SUNY at Buffalo, NY. GPA: 3.75
- Undergraduate Studies (BE) in Computer Science and Engineering in the year 2005 from M. S. Ramaiah Institute of Technology (Visveswaraya Technological University), Bangalore.

### Relevant Coursework

Machine Learning, Computer Vision and Image Processing, Animate Vision Principles, Image Analysis and Biometrics, Medical Image Analysis

### Areas of Interest

Biometrics, HIPs, Machine Learning, Image Processing

### Publications

- P. Deepa Shenoy, K.G. Srinivasa, A.O. Thomas, K.R. Venugopal, Lalit M. Patnaik, "*Compress and Mine: An Efficient Graph Based Algorithm for Generating Multiple Level Frequent Itemsets*"; in Proc of The 11th International Conference on Advanced Computing and Communications (ADCOM 2003); Dec 2005, pp 33-38.
- P. Deepa Shenoy, K.G. Srinivasa, A.O. Thomas, K.R. Venugopal, Lalit M. Patnaik, "*Mining Top-k Ranked Web Pages using Simulated Annealing and Genetic Algorithms*"; in Proc of Asian Applied Computing Conference (AACC 2004); Springer Verlag, LNCS 3285, 2004, pp 137-144.
- K.G. Srinivasa, A.O. Thomas, Amrinder Singh, K.R. Venugopal, Lalit M. Patnaik, "*Generic Feature Extraction for Classification using Fuzzy C-Means Clustering*"; In Proc of The Third International Conference on Intelligent Sensing and Information Processing 2005.

### Work Experience

- Research Assistant at the Centre for Unified Biometrics and Sensors (CUBS), SUNY – Buffalo – Responsibilities include odor typing for biometrics and design of a non-writer specific synthetic handwriting generator.  
Period: Jan 2006 to Present
  - Project Assistant at the Department of Media Study, SUNY - Buffalo on the Tactical Sound Garden [TSG] Toolkit Project – The project involves integrating PlaceLab for WiFi positioning on mobile devices and the FMOD 3D audio engine to enable anyone living within dense 802.11 wireless "hot zones" in urban environments to install a "sound garden" for public use. Using a WiFi enabled mobile device, participants "plant" sounds within a positional audio environment. These plantings are mapped onto the coordinates of a physical location by a 3D audio engine - overlaying a publicly constructed soundscape onto a specific urban space. Wearing headphones connected to a WiFi enabled device, participants drift through virtual sound gardens planted by others as they move throughout the city. More information about the project is available at <http://www.andinc.org/tsg>  
Period: Nov 2005 to Jan 2006
-

---

## Projects and Technical Reports

- Simulation of a Reconfigurable Fovea Designed for Object Tracking - The project dealt with the simulation of a reconfigurable fovea designed for single object tracking. Foveal parameters like gate size, number of perifoveal levels and initial fovea location were varied and the system performance in terms of object tracking accuracy versus noise was studied. The case of multiple object tracking was also looked into and interesting observations were made.
- Text Independent Speaker Identification - This project implemented text independent speaker recognition for a biometrics application. Data pre-processing using pre-emphasis and feature extraction using mel cepstrum co-efficients were performed. The speaker models were generated using two methods; the Linde, Buzo, Gray Algorithm and a PCA variant approach, both types of vector quantization for codebook generation. The classification accuracies for the two methods were compared and system performance was determined in terms of the ROC curves.
- Unsupervised Classification of Treatment Resistant and Non-Resistant Cancerous Cells – The project involved mining relevant features for the binary classification task of treatment resistant cancerous tissue and treatment non-resistant tissue.
- Simulation of Short Term Memory and Long Term Memory using Hopfield Networks – The objective was to build a software system to simulate the human memory system w.r.t. short term memory and long term memory, and explore the interaction between them. This was achieved using Hopfield Networks and Hebbian learning.
- Maximum Ball Skeleton Object Recovery - The objective was to design an algorithm to compute maximum ball skeletons of all objects in a given binary image. It had to be shown that reconstruction of the exact original image from its labeled skeletons was possible.
- Design of a Two-Class Classifier - This project involved a classification task on a spam email dataset that represented a 2-class problem. The objective was to build the best possible classifier to classify the datapoints with highest accuracy on an unseen test dataset. After analysis of the data, a feed forward neural network was designed to perform the classification task.
- Kernel Modification of NACHOS - The project involved working with an educational software system, NACHOS, which has the basic functionalities of an operating system. Further enhancements like file system calls were added and modifications were made to support multi-programming and to include demand paging. The programming was based on the Linux platform.
- Online Generation of Association Rules – Implementation of an efficient online association rule generation algorithm for data mining, in the Linux environment. The implementation was based on the paper, C.C. Aggarwal and Philip S. Yu, “*A New Approach to Online Generation of Association Rules*”, in IEEE Transactions on Knowledge and Data Engineering, Vol. 13, No. 4, pp. 527-540, August 2001.
- INSTAQUEST – Question Bank Software that generates question papers. Entered for the Intel Science Talent Discovery Fair 2001.
- CRYPT – An Encryption Algorithm with a novel method of generating the encrypting key from a user-specified password. Entered for the Kishore Vaigyanik Protsahan Yojana 2002 by Indian Institute of Science in India.

## Achievements

One of 150 selected from approximately 12000 applicants for the Summer Research Fellowship Program (SRFP 2004) at Jawaharlal Nehru Centre for Advanced Scientific Research in Bangalore, India. The work carried out was in the field of information retrieval.

---

---

**Skills**

- Proficient in the following languages: BASIC, C / C++, MATLAB
  - Experience in working on the following platforms: Windows, Unix / Linux
  - Familiar with Visual Studio .NET and CF, Java, Assembler (Intel 8086)
  - Excellent written and verbal communication skills in English
  - Worked on both individual and team projects
-