

Gopala Krishna Koduri

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Educational Qualifications

Masters (Musicology and Music Information Retrieval)	Cognitive Science Lab, International Institute of Information Technology, Hyderabad, Andhra Pradesh, India (2009 - present)	--
	Advisor: Prof. Bipin Indurkhya	
B. Tech (Computer Science Dual Degree)	International Institute of Information Technology, Hyderabad, Andhra Pradesh, India (2005 - 2009)	7.3/10

Research Interests and Publications

Cognitive Science, Music and Emotions, Music Signal Processing, Interactivism, Music Web Interfaces and Computer Vision.

- **K. Gopala Krishna**, Sankalp Gulati and Preeti Rao, Under review in Sound and Music Computing conference, 2011.
- **K. Gopala Krishna** and Bipin Indurkhya, A Behavioral Study of Emotions in South Indian Classical Music and Its Implications in Music Recommendation Systems, In the proceedings of ACM Multimedia 2010 Workshop – SAPMIA 2010, Firenze, Italy.
- **K. Gopala Krishna**, G. Anupama and Bipin Indurkhya, A Ray Exploration Model That Caters to The Search Needs of Multi-Attribute Data, In the proceedings of ACM Multimedia 2010 Workshop – SAPMIA 2010, Firenze, Italy.
- **K. Gopala Krishna**, Bipin Indurkhya and G. Anupama. A Generalized Architecture For A Narrative-Based Interactive Multimedia Dialogue System, IADIS – IHCI 2010, Freiburg, Germany.
- **K. Gopala Krishna**, Amitash Ojha and Bipin Indurkhya, Semantic Interference Effects of Text and Images in Stories Presented on Web, *Design Principles and Practices: An International Journal*, [Volume 3, Issue 6](#), pp.161-174, Berlin, Germany, 2009.

Developmental Interests and Skill Set

Web Development and Usability studies, Localization of open source technical resources ([techsetu](#)[as admin, contributor] and [ubuntu linux telugu localization](#)[as contributor] are efforts towards this goal).

Operating Systems GNU/Linux, Windows NT and later, Solaris

Programming Languages C/C++

Scripting Languages	Python, Shell Scripting, Perl, Awk, Sed
Web Technologies	HTML, CGI, PHP, XML and CMS platforms like Drupal, Wordpress
Tools & Libraries	Matlab, Octave, Sonic Visualizer, Python music related libraries (Scikits, PyLab, Matplotlib etc.), FFmpeg/Mencoder and Google Web Toolkit

Academics: Courses, Projects

Courses

Main Stream - Introduction to Cognitive Science, Advanced Cognitive Science, Introduction to Cognitive Neurophysiology, Music Appreciation, Usability Engineering, and Artificial Intelligence.

General courses – Basic Math, Advanced Math, Discrete Math, and Physics.

Other Streams - Electrical Sciences, Digital Image Processing, Pattern Recognition, Computer Vision, Computer Graphics, Artificial Neural Networks, Theory of Computation, Software Engineering, Computer Programming, Compilers, Computer Networks, Data Structures, Operating Systems, and Database Management Systems.

Projects

Computer Vision and Image Processing

- **OCR-free Document Image Search.**
Guide: [Prof. C.V Jawahar](#)
Abstract: Developed a OCR independent Document Image Search as a semester project in [Center for Visual Information and Technology](#), International Institute of Information Technology-Hyderabad.
- **Image Classification System.**
Guide: [Prof. N Anoop](#)
Abstract: Developed a clustering based image classification system as a part of Pattern Recognition course work.
- **Optimized retrieval from huge image databases.**
Guide: [Prof. C.V Jawahar](#)
Abstract: Worked on optimizations to retrieval of data from huge databases as part of Computer Vision course work and implemented Vocabulary Tree data structure on SIFT features for a large collection of images.
- **Automated Web Data Extraction.**
Guide: [Prof. C.V. Jawahar](#)
Abstract: Worked on structured web data extraction as part of course work for Machine Learning. This work is an extension for the crawler I worked for in summer 2006.
- **Auto-fill the patches in Images.**
Guide: [Prof. Jayanthi Sivaswamy](#)

Partner: [K Ravindra](#)

Abstract: When photos have some patches in them, like flash reflections, mirror glares etcetera, we need some way to fill in that patch using knowledge of surroundings, semi-automatically. We proposed and partially implement such a system as course work for Digital Image Processing.

Cognitive Science and Web Usability

- **MusiCog – Framework to assess Music Recommendation Systems.**

Guide: [Prof. Bipin Indurkhya](#)

Abstract: MusiCog is a framework which combines the best of content based recommendations systems and collaborative filtering based systems. This is out current and active project.

- **Semantic Interference Effects between Text and Images in Content on Web.**

Guide: [Prof. Bipin Indurkhya](#)

Abstract: This work aims to apply the research over semantic interference effects between words (text) and images in the field of web presentation. A major issue that occupies most of the designers' attention in building such pages is choosing appropriate images for the content. This work tries to suggest few general guidelines to help a designer to handle this task efficiently.

- **Exploring Alternative Methods in Presenting Indian Multimedia Content on Web.**

Guide: [Prof. Bipin Indurkhya](#), [Ms. Aparajita Ranjan](#)

Partners: Anupama Gali & Bhargava Chowdary

Abstract: This work models new interfaces to browse the Indian multimedia content which is quite complex with its multitude of attributes for each entity. This is one of the components in the music recommendation system we are building.

Music

- **Raaga recognition system.**

Guide: [Prof. Preeti Rao](#) (IIT-Mumbai)

Partner: Sankalp Gulati (IIT-Mumbai)

Abstract: To know a raaga, it is often said that there is no other way except to listen and feel it. This well defined, yet an abstract entity drew our attention to build a model to identify the raaga of a given musical piece. In this work, we discuss the previous proposed systems and propose few enhancements to a Hindustani raaga recognition model to suit the requirements of Carnatic music, and demonstrate our raaga recognition system.

- **A Behavioral Survey to Study the Historical Raaga-Rasa Relationship.**

Guide: [Prof. Bipin Indurkhya](#)

Abstract: Almost every scholarly article available on Indian music treats the term rasa as though it is identical to the term emotion. In the course of our work, at one point, even we used the term with the same sense. But, our investigation has yielded an insight which is very different from the current understanding of the term. Briefly, rasa suits the context of drama, and it is intended to be so. In this work, we report the results of a survey conducted

to analyze the relationship between raaga and emotion. The survey included the term rasa, however, the context we have used it in, makes it an emotion, but not a rasa.

Work Experience

- In summer 2006, I have designed and coded a minor scale web crawler for an Intranet news channel in [Center for Visual Information and Technology](#), International Institute of Information Technology-Hyderabad, which fetches news from all major Indian language news channels. As a part of it, I implemented a HTML text parser system which removes irrelevant data and filters out just the news.
- I have worked as an intern in [Center for Visual Information and Technology](#), International Institute of Information Technology-Hyderabad for 3 semesters, where I created and maintained web portals for the lab products.
- In summer 2008, I have worked as an intern for a startup by two Google engineers (still in stealth mode), to develop and extend functionalities of an application similar to Google docs.
- For two academic semesters in 2008-09, I have worked as an intern in [Center for Computational Natural Sciences and Bio-informatics](#), International Institute of Information Technology-Hyderabad to maintain the databases and interfaces for data used in experiments conducted by the lab.
- In summer 2009, I worked as an intern in [Publiture](#), a stealth mode Startup to develop and extend functionalities of [Padma](#), an Indic Script extension for [Firefox](#) web browser.
- In spring 2009, I worked as a research fellow at [IRIT-ENSEEIH](#)T in developing a program which could interactively listen to Indian Classical Music (work in progress).
- In summer 2010, I worked as a research fellow at [Digital Audio Processing lab, IIT-Bombay](#), India to develop a raaga recognition module which is a required component of our music recommendation system.
- In Spring 2011, I worked as a research fellow at [Music Technology Group, UPF](#), Spain. In the guidance of [Prof. Xavier Serra](#), I have worked in developing ideas for computational models for Carnatic music, as part of [CompMusic](#) project.