JOE CHERI ROSS

PERSONAL INFORMATION

Research Scholar, Computer Science, IIT Bombay

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RESEARCH INTERESTS

I am interested in Natural Language Processing (NLP); especially coreference resolution, Music Information Retrieval (MIR), NLP applied for MIR, Deep learning for NLP and MIR.

PHD RESEARCH

The research on music information retrieval (MIR) for Hindustani music targets retrieval from music content and text (meta-content)

Music content This research focusses on Motif identification and identification of similarity between ragas.

- motif is a small music segment or a phrase which can be seen repeating in a composition. We investigated methods for identifying *pakad* (characteristic phrase) and *mukhda* (main title phrase) instances from a Hindustani raga performance.

- The task of raga similarity identification aims at identifying similarities between ragas to assist problems like music recommendation in Hindustani music. Out of the two proposed methods, the first one identifies raga similarities from textual discussions on Hindustani ragas and the other one extracts similarities with the help of composition notations. In both the approaches we try to learn representation for a raga in the form of a neural embedding.

Text content This part of the research aims at improving information extraction from online forums related to Indian classical music to enrich the knowledge base with music metadata along with content based information. Coreference resolution being a crucial problem in identifying entities in the text, here we focus on coreference resolution in online forums related to Indian classical music. This involves design of features considering the nature of the text. We have also proposed a few methods to improve coreference resolution on forum posts.

WORK EXPERIENCE

June 2016– July 2016	Internship with IBM RESEARCH

IBM India Research Lab	Worked on sequence modeling approach for coreference resolution using conditional random fields.

July 2008– July 2011 Worked as component design engineer with microprocessor pre-silicon verification tools team, INTEL TECHNOLOGY

Intel Technology	1. Designed environment dependent algorithms & implemented a scheduler for credit based scheduling of validation regressions in batch servers. This project also involved development of GUI in Perl-Tk for providing an user interface to the scheduler. 2. Configuration based coverage This implementation targeted at getting coverage of configuration and other information mined from validation logs. This project helped in analyzing parameters randomized by constrains solvers and uncovered parameter values within the allowable domain. This tool suite identified holes in diverse validation sub-environments.

May 2007– June 2008 Internship with Design and Technology Solutions team at INTEL TECHNOLOGY

Intel Technology	Worked on developing and debugging modules for microprocessor post-silicon validation tool.

EDUCATION

2011-till date Indian Institute of Technology Bombay, India

PhD	University : Indian Institute of Technology Bombay GPA: 8.13/10 course work

2006-2008 National Institute of Technology, Calicut, India

Master of Technology	University : National Institute of Technology, Calicut GPA: 8.63/10 · *First Class with Distinction* · School: Computer Science

2002-2006 Amal Jyothi College of Engg:, Kanjirapally, Kerala, India

Bachelor of Technology	University : Mahatma Gandhi University Percentage:80.7 · *First Class with Distinction* · School: Computer Science

PUBLICATIONS

2017

Joe Cheri Ross, Abhijit Mishra, Kaustuv Kanti Ganguli and Pushpak Bhattacharyya, **Identifying Raga Similarity Through embeddings learned from Compositions' notation**, The 18th International Society for Music Information Retrieval Conference (ISMIR 2017), Suzhou, China, October 23, 2017.

Joe Cheri Ross, Rudra Murthy, Kaustuv Kanti Ganguli and Pushpak Bhattacharyya, **Identifying Raga Similarity in Hindustani Classical Music**

through Distributed Representation of Raga Names, The 13th International Symposium on Computer Music Multidisciplinary Research (CMMR 2017), Porto, Portugal, September 25, 2017.

Samarth Agarwal, Aditya Joshi, Joe Cheri Ross, Pushpak Bhattacharyya and Harsha Wabgaonkar, **Are Word Embedding and Dialogue Act Class-based Features Useful for Coreference Resolution in Dialogue?**, The 15th International Conference of the Pacific Association for Computational Linguistics (PACLING 2017), Yangon, Myanmar, August 16, 2017.

Joe Cheri Ross and Pushpak Bhattacharyya, **Towards Harnessing Memory Networks for Coreference Resolution**, 2nd Workshop on Representation Learning for NLP (Repl4NLP) at ACL 2017, Vancouver, Canada, August 3, 2017.

Joe Cheri Ross and Pushpak Bhattacharyya, **Improved Best-First Clustering for Coreference Resolution in Indian Classical Music Forums**, 18th International Conference on Computational Linguistics and Intelligent Text Processing (CICLING 2017), Budapest, Hungary, April 17, 2017.

2016

Joe Cheri Ross, Abhijit Mishra and Pushpak Bhattacharyya, **Leveraging Annotators' Gaze Behaviour for Coreference Resolution**, ACL 2016 Workshop on Cognitive Aspects of Computational Language Learning (CogACLL 2016) at ACL 2016, Berlin, Germany, August 11, 2016.

Joe Cheri Ross, Aditya Joshi, Pushpak Bhattacharyya, **A Framework th at Uses the Web for Named Entity Class Identification: Case Study for Indian Classical Music Forums**. Computacin y Sistemas 20(3): 505-513, 2016. (journal)

Joe Cheri Ross, Aditya Joshi, Pushpak Bhattacharyya **A Framework That Uses the Web for Named Entity Class Identification: Case Study for Indian Classical Music Forums**, 17th International Conference on Computational Linguistics and Intelligent Text Processing (CICLING 2016), Konya, Turkey, April 3-9, 2016.

2015

Joe Cheri Ross, Pushpak Bhattacharyya **Coreference Resolution to Support IE from Indian Classical Music Forums**, Recent Advances in Natural Language Processing (RANLP 2015), Hissar, Bulgaria, September 5, 2015.

2014

Joe Cheri Ross, Sachin Pawar, Pushpak Bhattacharyya **Coreference Resolution for Better Information Retrieval from Indian Classical Music Forums**, 11th International Conference on Natural Language Processing (ICON 2014), Goa, India, December 18, 2014.

Preeti Rao, Joe Cheri Ross, Kaustuv Kanti Ganguli, Vignesh Ishwar, Sankalp Gulati and Hema Murthy, **Classification of Melodic Motifs in Raga Music with Time series Matching**, Journal of New Music Research, 2014 (journal)

2012

Joe Cheri Ross, TP Vinutha and Preeti Rao, **Detecting Melodic Motifs from Audio for Hindustani Classical Music**, 13th International Society for Music Information Retrieval Conference (ISMIR 2012), Porto, Portugal, October 2012.

Joe Cheri Ross and Preeti Rao, **Detection of Raga-Characteristic Phrases from Hindustani Classical Music Audio**, Proceedings of the 2nd CompMusic Workshop; 2012 Jul 12-13; Istanbul, Turkey, July, 2012

Joe Cheri Ross and John Samuel, **Hierarchical Clustering of Music Database Based on HMM and Markov Chain for Search Efficiency**, Speech, Sound and Music Processing: Embracing Research in India, Lecture Notes in Computer Science, Volume 7172, 2012

2008

Joe Cheri Ross and Priya Chandran, **Object Serialization Support for Object Oriented Java Processors**, ITSim 2008, Kuala Lumpur, Malaysia, Aug, 2008.

PROFESSIONAL ACTIVITIES

Reviewer, COLING 2016

Reviewer, ICON 2016

Part of organizing team, COLING 2012

TECHNICAL KNOWLEDGE

Courses Done	Foundations of Machine Learning , Artificial Intelligence , Natural Language Processing
Course Seminar	Music Ontology
Programming Languages	**Python**, Java, Perl, C,Borland Kylix, Visual Basic, C++
Technologies/packages	Tensorflow, Scikit-learn, JAXB, Matplotlib, Velocity, QT 4, C++ boost libraries, perl-tk
Web technologies	Perl cgi, Java script, jQuery, Experience with Shell scripts, Make utility(Makefile)

OTHER INFORMATION

Achievements	Idea on developing an API for Bluetooth based routing for setting up a simple adhoc network got selected and implemented a PoC in Intel India Business solution contest. Recognized with Departmental Award twice at Intel.
	Qualified in GATE (Graduate Aptitude Test in Engineering) 2006 with percentile 96.3 with Rank 818
	Passed IIIrd grade Music Theory Examination scoring 97% marks conducted by London School of Music
	Awarded 'GEM of AJCE' (Best outgoing student award) in B-Tech
Hobbies	Listening to and Playing music · Reading

July 20, 2017