

# Krishna Sandeep Reddy Dubba

PhD Student

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## Academics

- **University of Leeds** Leeds, UK  
*Ph.D. Computing* 2008 - 2012
  - Thesis: Learning Relational Event Models from Videos
  - Advisors: Anthony G. Cohn & David C. Hogg
- **University of Hyderabad** Hyderabad, India  
*M.Tech. Artificial Intelligence* 2004 - 2006
  - Thesis: N-Gram Analysis for New Computer Virus Detection
- **Jawaharlal Nehru Technological University** Hyderabad, India  
*B.Tech. Computer Science & Engineering* 2000 - 2004
  - Thesis: Congestion Control in ATM networks using Neural Networks

## Publications

- Krishna S. R. Dubba, Mehul Bhatt, Frank Dylla, Anthony G. Cohn, David C. Hogg: Interleaved Inductive-Abductive Reasoning for Learning Complex Event Models. 21st International Conference on Inductive Logic Programming-2011, Windsor, UK.
- Krishna S. R. Dubba, Anthony G. Cohn, David C. Hogg: Event Model Learning from Complex Videos using ILP. Proc. of *ECAI*, 2010. Lisbon, Portugal.
- Dash, S., Krishna S. R. Dubba, Pujari, A.: New Malicious Code Detection Using Variable Length n-grams. *Algorithms, Architectures and Information Systems Security*, Statistical Science and Interdisciplinary Research - VOL3, World Scientific (2008).
- Krishna S. R. Dubba, Pujari, A.: N-gram analysis for computer virus detection. *Journal in Computer Virology* 2, 231–239, Springer (2006).
- Krishna S. R. Dubba, Dash, S., Pujari, A.: New Malicious Code Detection Using Variable Length n-grams. *LNCS* 4332, 276–288 (2006).

## Research

- VIGIL: Visual Intelligence Grounded In Learning
  - **Summary:** The Mind’s Eye program seeks to develop in machines the capability for ”visual intelligence”: the capability to learn generally applicable and generative representations of action between objects in a scene directly from visual inputs, and then reason over those learned representations. The focus of Mind’s Eye is to add the perceptual and cognitive underpinnings for recognizing and reasoning about the verbs in those scenes, enabling a more complete narrative of action in the visual experience. The four tasks are 1) Recognition of verb events in videos, 2) Description task (describe what is happening in the video in controlled natural language, 3) Gap filling 4) Anomaly detection.
  - **Partners:** SRI (PI: Hung Bui), University of Maryland (PI: Larry Davis)
  - **Period:** Sep:2010 - Feb:2012
  - **Funding:** Mind’s Eye project (umbrella project funded by DARPA)
  - **Contribution** Developed a supervised statistical relational learning framework to learn verb models from videos using Markov Logic Networks for recognition task. A better recognition eventually leads to perform other tasks efficiently. Also developed a video visualization and annotation tool which is light and better in some aspects than the existing popular video annotation tool, VIPER. This tool is now being used by many of the consortiums in the Mind’s Eye project.
- Co-FRIEND : Cognitive & Flexible learning system operating Robust Interpretation of ExteNded real scenes by multi-sensor Datafusion:
  - **Summary:** Co-FRIEND aims to design a framework for understanding human activities in real environments, through an artificial cognitive vision system, identifying objects and events, and extracting sense from scene observation. A heterogeneous sensor network, composed of wide angle and PTZ cameras and GPS vehicle monitoring was deployed in Toulouse airport. The scene understanding is assisted by machine learning, providing advanced reasoning capabilities.
  - **Partners:** University of Hamburg, University of Reading, INRIA (Sophia Antipolis), AKKA, Toulouse Blagnac Airport
  - **Period:** Apr:2008 - Apr:2011
  - **Funding:** European Commission’s Seventh Framework Programme
  - **Contribution:** Developed a supervised relational learning framework to learn event models from real world videos for recognition of events in unseen videos. Also extended it using abduction to handle noise in the data. Lead the project taking care of integration of Leeds’ modules with other modules in the consortium, data handling, report writing etc.

## Awards & Grants

PhD studentship, Mind’s Eye project (DARPA)	2011 - 2012
PhD studentship, Co-Friend project (European Commission Seventh Framework Programme)	2008 - 2011
CS Department Best Thesis Award (Gold Medal), University of Hyderabad	2006
University Grants Commission Scholarship, India	2004 - 2006
Stood in top 25 (All India Level) in JEST-2004 (Joint Entrance Screening Test)	2004
State Government Scholarship, AP, India	1998 - 2004

## Invited Talks

*Learning Relational Event Models from Videos*. School of Computing, University of Dundee, Oct-2011.

## Industry Experience

- **D. E. Shaw India Software** Hyderabad  
*Member of IT* July 2006 - March 2008
  - Built a distributed firm-wide quote analytics/statistics library that any trading system can talk to.
  - Built drivers and applications for Kdb Database Platform in Perl.
  - Order Visualizer and Order Movie tools to view stock market data.

## Skills

- Programming Languages
  - **Expert:** Python, Java, C++, MATLAB
  - **Intermediate:** Prolog
- Specialized Software
  - SciPy, WEKA, ALCHEMY

## Teaching Experience

- **Machine Learning** University of Leeds  
*Graduate Teaching Assistant* Dec. 2011 - Jan. 2012
- **Artificial Intelligence** University of Leeds  
*Graduate Teaching Assistant* Feb. 2009 - March. 2009
- **Knowledge Representation & Reasoning** University of Leeds  
*Graduate Teaching Assistant* Nov. 2008 - Jan. 2009

## Service

Reviewed for **IEEE Transactions on Neural Networks and Learning Systems**. . . . 2011  
Student Placement Coordinator for M.Tech in University of Hyderabad. . . . . 2006  
Alumni Coordinator for M.Tech in University of Hyderabad. . . . . 2006  
Sponsorship Coordinator for activities in DCIS, University of Hyderabad. . . . . 2006  
Member of Editorial Board of Alumni e-NewsLetter, DCIS, University of Hyderabad. 2007 - 2008  
Student Member of IEEE and Greenpeace. . . . . 2000 - 2006