

Krishna Dubba

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Employment

- **Bell Labs** **Cambridge, UK**
Research Scientist, Machine Learning *January 2018–*
 - Machine Learning and Cognitive Vision.
- **Advanced Research Lab, Nokia Technologies** **Cambridge, UK**
Principal Researcher, Machine Learning *February 2015–December 2017*
 - Worked on Deep Learning algorithms, depth maps from 360 video content, Scene Understanding and Dialogue Systems for health care.
 - Filed five patents.
- **Institute for Artificial Intelligence & Biological Systems** **University of Leeds**
Research Fellow *July 2012 – January 2015*
 - Developed supervised machine learning framework for learning event models from huge and noisy real world videos and sensor inputs.
 - Extensively worked in Machine Learning concepts such as Structure Learning in Graphical Models, Graph Kernels, Support Vector Machines, Hidden Markov Models, Kalman Filter, Vector Quantization etc.
 - Technical Lead for the Leeds University team for two European Commission research projects and a DARPA (USA) funded research project.
 - Worked with three different robots in research: PR2, Baxter and Scitos A5.
 - Founder and maintainer of Python Discussion Group in School of Computing, University of Leeds organizing tutorials, data hacking sessions etc.
 - Responsibilities also include in charge of integration of Leeds' modules with other modules in the research consortia, report writing etc. of all the highly collaborative projects involved.
- **D. E. Shaw & Co, India** **Hyderabad, India**
Member, Information Technology *July 2006–March 2008*
 - Worked in the front office group responsible for building real-time financial data-feed infrastructure, high-performance middleware, interactive trading systems, portfolio management and workflow tools, and quantitative analysis tools.
 - Built a distributed firm-wide quote analytics/statistics library that a trading system can use.
 - Built drivers and applications for KDB database platform in Perl. KDB is a high-performance database for time-series analytics used for real-time business applications
 - Built Order Visualizer and Order Movie tools to view stock market data.
 - Developed and implemented the migration strategy for the company to move from Perl to Python.

Education

- **University of Leeds** **Leeds, UK**
PhD, Machine Learning *2008–2012*
Thesis: Learning Relational Event Models from Video
- **University of Hyderabad** **Hyderabad, India**
Master of Technology, Artificial Intelligence (First Class with Distinction) *2004–2006*

Thesis: N-Gram Analysis for New Computer Virus Detection

Jawaharlal Nehru Technological University

Hyderabad, India

○ *Bachelor of Technology, Comp. Science & Engineering (First Class with Distinction)* 2000–2004

Technical and Personal skills

- **Programming Languages:** Python, Java, C++, MATLAB, Typescript
- **Specialized Software:** PyTorch, TensorFlow, Keras, Spark, Kafka, Celery, ElasticSearch, Numpy, Pandas, Scikit-Learn, OpenCV, MongoDB, Redis and Kdb databases, Docker, Robot Operating System (ROS)
- **Cloud Services:** AWS Lex, AWS ML, API.AI, Google Speech and Assistant.
- **Web and Mobile App Development:** Flask, Falcon, Angular 4, Ionic
- **Code and Project Management:** Jupyter, Zeppelin, Eclipse, GIT, Redmine
- **General Business Skills:** Good interpersonal and presentation skills, works well in a team. Willing to take the lead but respects authority when appropriate. Patent, business proposal and research paper writing skills.

Awards & Grants

- PhD studentship, Mind's Eye project (DARPA, USA)
- PhD studentship, Co-Friend project (European Commission Seventh Framework Programme)
- Computer Science Department Best Thesis Award (Gold Medal), University of Hyderabad, India
- University Grants Commission Scholarship, University of Hyderabad, India

Selected Publications

- Filed 5 patents.
- Krishna S.R. Dubba, Anthony G. Cohn, David C. Hogg, Mehul Bhatt, Frank Dylla: Learning relational event models from videos. *Journal of Artificial Intelligence Research*, Oct-2014.
- Krishna S.R. Dubba; Miguel R. de Oliveira; Gi Hyun Lim et.al.: Grounding Language in Perception for Scene Conceptualization in Autonomous Robots. In AAIL Spring Symposium Series, 2014.
- Rockel, S.; Neumann, B.; Zhang, J.; Krishna S.R. Dubba. et.al.: An Ontology-based Multi-Level Robot Architecture for Learning from Experiences. In AAIL Spring Symposium Series, 2013.
- 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. Springer *LNCS 4332*, 276–288 (2006).

Research Projects

- **STRANDS: Spatio-Temporal Representation and Activities for Cognitive Control in Long-Term Scenarios:** *July 2013–January 2015*

- **Objective:** Produce intelligent mobile robots that are able to run for months in dynamic human environments by providing the robots with the longevity and behavioural robustness necessary to make them truly useful assistants in a wide range of domains.
 - **Partners:** Universities: Birmingham, Lincoln, KTH, Aachen, Vienna, G4S, Academy for Age Research.
 - **Contribution:** Developing online machine learning algorithms to learn and recognize events from streaming video and sensor data gathered over a long time from a group of robots operating at different sites.
- **RACE: Robustness by Autonomous Competence Enhancement:** *January 2012–November 2014*
 - **Objective:** Develop an artificial cognitive system, embodied by a service robot, able to build a high-level understanding of the world it acts in by storing and exploiting appropriate memories of its experiences.
 - **Partners:** Universities: Hamburg, Orebro, Aveiro and Osnabruk.
 - **Contribution:** Developing machine learning framework to conceptualize robot experiences from different sources of inputs such as perception, language, textual description etc. using statistical relational learning methods and graph matching.
- **VIGIL: Visual Intelligence Grounded In Learning:** *September 2010–February 2012*
 - **Objective:** 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.
 - **Partners:** Stanford Research Institute & University of Maryland (funded by DARPA, USA).
 - **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 was used by many of the consortia in the Mind's Eye project (DARPA's umbrella project where VIGIL is a part).
- **Co-FRIEND : Cognitive & Flexible Learning System Operating Robust Interpretation of Extended Real Scenes by Multi-sensor Datafusion:** *April 2008–April 2011*
 - **Objective:** 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 using a heterogeneous sensor network, composed of wide angle and PTZ cameras and GPS vehicle monitoring in Toulouse airport. The scene understanding is assisted by machine learning, providing advanced reasoning capabilities.
 - **Partners:** Universities: Hamburg, Reading, INRIA (Sophia Antipolis). Industry: AKKA Technologies and Toulouse Blagnac Airport.
 - **Contribution:** Developed a supervised statistical relational learning framework to learn event models from real world low resolution videos for recognition of events in unseen videos.