JATIN KHURANA

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Professional Experience

- **Microsoft India Development Center,Hyderabad** *June 2018- Present*
  Data Scientist(Bing Retail Segment)
  - Designed a neural network for product SKU embedding using autoencoder and variational autoencoder.
  - Implemented a deep network for image to query mapping using ResNet architecture.
  - Defined evaluation metrics of user engagement on follow up query impressions of a given experience.
  - Designed a ranking function to rank explore more suggestion using positional bias and click stream data.
  - Currently working on object segmentation of fashion images. Training mask-rcnn for fashion dataset.
- **NEC Central Research Laboratories, Tamagawa, Japan** *July 2016- December 2017*
  Researcher(Automatic Reasoning Group)
  - Implemented different architectures of deep neural network like feed forward network, convolution network, recurrent networks like LSTM, GRU etc.
  - Designed a semantic parser using LSTM in torch. Achieved **84.4%** accuracy on Geoquery dataset.
  - Developed an explainable network using deep neural network which explains its output using interpretable components. Achieved **90.3%** accuracy on sentiment analysis dataset with manually designed interpretable components.
  - Developed a probabilistic model which combines logistic rules with neural network to reduce the amount of training data required to learn deep model.
- **Sopra India Pvt. Ltd, Noida** *July 2012 - June 2014*
  Software Engineer
  Projects
  1. CAPITA-Prism
     - *Objective:* Project Prism was developed for client Capita which was to replace the existing legacy system MSL for managing all the shares and holdings of the employees of their clients.
     - *Responsibilities:* Requirement analysis, module development,UI design.
     - *Technology:* WCF(Window Communication Foundation), Oracle, CAB(Composite Application Block).
  2. AGORA
     - *Objective:* Development of reports for client AGORA to analyze their business.
     - *Responsibilities:* Designed and optimized SQL-queries, UI design.
     - *Technology:* Cognos 8.1(IBM BI toolkit), Oracle.

Area of Interest

Machine learning, Natural Language Processing, Algorithms, Data Structures, Statistics and Databases

Academic Achievements

- 3^{rd} Rank in Retail Hackathon in Microsoft Hackathon 2018 for innovative idea
- ***All India Rank 59*** in GATE 2014 among 1,55,190 candidates.
- ***Third*** position in Bulandshahar district-level science exhibition 2006-07.
- ***Third*** position in programming event in FUSION'10, ABES Eng. College (College Tech. Event).
- ***Third*** position in computer tournament in Fest-With-Zest'10, ABES Eng. College (College Tech. Event).

Academic Details

Examination	University	Institute	Year	CPI/%	
Post Graduation	IIT Bombay	IIT Bombay	2016	9.29	
Graduation	UPTU	ABES Engineering College	2012	79.20	
Intermediate	UP Board	J.A.S. Inter College	2008	71	
Matriculation	UP Board	J.A.S. Inter College	2006	72	

Major Projects and Seminars

- **Mining patterns using Sub-modular Optimization** *July 2015 - June 2016*
  Master of Technology thesis, Adviser: Prof. Ganesh Ramakrishnan
  - Designed a generalized pattern miner framework to extract the set of patterns using Sub-Modular Optimization.
  - Designed various quality functions for patterns like coverage, frequency etc.
  - Build a framework to learn various quality functions of the patterns using active learning.
- **Translation improvement using Translation Memory** *January 2015 - May 2015*
  Master of Technology seminar, Adviser: Prof. Ganesh Ramakrishnan
  - A semester long survey on machine translation techniques SMT(Statistical Machine Translation), EBMT(Example Based Machine Translation) and TM(Translation Memory).
  - Studied various translation techniques which combine SMT, EBMT and TM.
  - Studied active learning techniques to minimize EBMT example base.
- **Content Based Image Retrieval** *July 2011 - May 2012*
  Bachelor of Technology Project, Adviser: Prof. Madhu Khurana
  - Developed a system in MATLAB which takes an image as input and outputs various similar images.
  - Used contrast, mean color, compactness, area of the region etc as features of image.
  - Implemented K-means and Fuzzy c-means algorithms for segmentation.

Course Projects

- **Analysis of Classification Model using Logistic Regression** *January 2016 - April 2016*
  Statistical Inference course project, Adviser: Prof. Suili Mukopadhyay
  - Implemented logistic regression model for classification in R with **70%** accuracy on Heart Disease Data.
  - Performed Hypothesis testing for learned parameters of the model.
- **Implementation of NEO-KMeans clustering using Low SDP** *July 2015 - November 2015*
  Convex Optimization course project, Adviser: Prof. Ganesh Ramakishnan
  - Implemented NEO-Kmeans clustering in MATLAB using L-BFGS algorithm.

- Achieved **0.412** F_1 score on music data with 6 different classes.

- **Part of Speech Tagger** *July 2014 - November 2014*
  Natural Language Processing course project, Adviser: Prof. Pushpak Bhattacharyra
  - Developed a Part of Speech Tagging system for english sentences with **94.07%** accuracy on brown corpus.
  - Used HMM(Hidden Markov Model), Viterbi algorithm and various smoothing techniques to avoid data sparsity issues.
- **Pivot-Based Machine Translation** *January 2015 - May 2015*
  Topics in Natural Language Processing course project, Adviser: Prof. Pushpak Bhattacharyra
  - Implemented phrase-table triangulation method for pivot-based machine translation.
  - Achieved **0.5** increment in BLEU score for Hindi-Bengali language pair using English as pivot language.
- **Implementation of Raft Consensus Algorithm in GO** *July 2015 - November 2015*
  Engineering a cloud course project, Adviser: Prof. Sriram Srinivasan
  - Implemented five machines which have peer to peer communication.
  - Implemented leader selection algorithm for leader selection in case of leader failure.
- **Implementation of ROLLUP and CUBE Operator in PostgreSQL** *July 2014 - November 2014*
  Implementation techniques in DBMS course project, Adviser: Prof. S. Sudarshan
  - Implemented ROLLUP and CUBE operator in PostgreSQL by query re-writing using GROUPBY.
  - Implemented ROLLUP operator using External Merge-Sort method.
- **Parallelizing Inter-procedural Analysis using SOOT** *July 2014 - November 2014*
  Advanced Compiler course project, Adviser: Prof. Dhananjay M. Dhamdhere
  - Literature survey on parallel inter-procedural analysis.
  - Implemented Inter-procedural analysis for common sub-expression elimination in **SOOT**.
- **Performance analysis of network trace** *July 2014 - November 2014*
  Software Lab, Adviser: Prof. Bhaskaran Raman
  - Developed an utility to automate analysis of a simulated network trace.
  - Extensively used lex, yacc, sed, awk, python and bash scripting to generate graphical reports.

Technical Skills

Programming Languages:	C, C++, Java, C#
Scripting Languages:	Shell, awk, Python
Databases:	PostgreSQL, Oracle
Tools and Frameworks:	Moses, GIZA++, Yacc, Lex, Latex, Git, MATLAB, Eclipse, Microsoft Visual Studio, Toad

Positions of Responsibility

- **Event Coordinator,** *November - 2010*
  Inter-college Techno-Fest, Genero'10, ABES Engineering College
  Genero is the annual festival of ABES Engineering College. As an event coordinator, lead a team of 20 students and organised code-hack, virus removal, sql-master etc. Involved in design and analysis of questions in code-hack finale.

- **Teaching Assistant for the following courses:**

  CS725, Machine Learning. *(Under Prof. Ganesh Ramakrishnan, IIT Bombay) January 2016 - April 2016*

  Conducted quizzes and prepared weekly tutorials on linear algebra, convex functions, SVM, Lagrangian Dual etc. Evaluated quizzes, exams and managed moodle and piazza course forum.

  CS699, Software Lab. *(Under Prof. R. K.Joshi, IIT Bombay) July 2015 - December 2015*

  Conducting Lab and preparing weekly assignments for Lab. Evaluating weekly assignments, quizzes and exams.

  Conducted quizzes and resolved doubts of students on programming fundamentals. Evaluated quizzes, exams and projects.

  CS101, Computer Programming. *(Under Prof. Kavi Arya, IIT Bombay) January 2015 - May 2015*

  CS348, Computer Network. *(Under Prof. Varsha Apte, IIT Bombay) July 2014 - November 2014*

  Conducted quizzes and tutorial on sliding window protocol, routing protocol etc. Evaluated quizzes, exams and managed moodle and piazza course forum.

Selected Graduate Courses

Fundamentals of Machine Learning, Statistical Inference, Convex Optimization, Natural Language Processing, Topics in Natural Language Processing, Algorithm and Complexity, Implementation Techniques in DBMS, Advanced Compiler, Artificial Intelligence, Linear Optimization, Probabilistic Models, Engineering as a cloud

Extra-Curricular Activities and Interests

- Member of winning team in KReSIT Premier League, annual Intra-Department cricket tournament, CSE IIT Bombay. *2014-15*
- **Hobbies :** Playing Table-Tennis, Badminton, Cricket, FoosBall, Listening classical music.

Personal Details

DOB:	24-Apr-1991
Gender:	Male
Nationality:	Indian
Permanent Address:	124 Holi Bharamnana-1 (Chhoti Holi) Near Ganga Mandir Khurja, UP-203131
Language:	English, Hindi, Punjabi, Japanese(Beginner)