

## CV

### **ANSHUL BHARAT KUNDAJE**

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Webpage: <http://www.cs.columbia.edu/~abk2001/academics.html>

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**Higher Education**                      **Bachelor of Engineering (Electrical),**                      (07/1997 – 06/2001)  
**Veermata Jijabai Technological Institute (V. J. T. I.),**  
**Mumbai University,**  
**Mumbai (Bombay), India.**  
Overall Result (1<sup>st</sup> to 8<sup>th</sup> Semester): “Dinstinction”-75%  
**Top student in Mumbai University (Electrical Engineering)**

**Masters in Electrical Engineering**  
**Columbia University in The City of New York,** (09/2001-12/2002)  
Currently in the Final Semester (current GPA 3.634)

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### **Programming Skills**

#### **Conversant in:**

1. Programming Approaches and Techniques
2. Programming in C, C++, Visual C++, MATLAB, Simulink, PERL, SQL
3. Operating systems: Windows, Unix & Linux Kernel and system programming
4. CISCO router configuration
5. Network Programming

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### **Research and Projects:**

1. Research student member of the Computational Biology Group & Machine Learning Group at Columbia University.
2. **Research Assistant:** Using Dynamic Bayesian Networks to analyse gene expression time-series data and develop causal regulatory relationships in different pathways. (Paper submitted to RECOMB 2003) (Guide: Prof. Christina Leslie, Prof. Tony Jebara, Computer Science, Columbia University)  
<http://www.cs.columbia.edu/~abk2001/DBN.pdf>
3. Simulations of synthetic genetic networks using stochastic differential equations and algorithms for validation of novel methods of learning combinatorial gene regulatory relationships. Concepts: Information bottleneck, Multiinformation (Guide: Prof. Chris Wiggins, Applied Math, Columbia University)
4. **Research Assistant:** Spectrogram analysis of DNA sequences from yeast, C.Elegans, human and other higher organisms. Involved use of DFT for spectrogram analysis. Large number of patterns were found and had to be annotated. Familiarity with vast number of DNA and protein analysis tools. (Guide: Prof. Dmitri Anastassiou, Electrical Engg., Columbia University)  
(To be submitted to BIOINFORMATICS journal)
4. Collaboration with Memorial Sloan-Kettering Cancer Center on learning p73 regulatory pathways and role of p53 & p73 in apoptosis.
5. **Research Project:** Using EM algorithms for clustering genes based on expression profiles in multiclass cancerous and normal tissues. [http://www.cs.columbia.edu/~abk2001/multiclass\\_pres.pdf](http://www.cs.columbia.edu/~abk2001/multiclass_pres.pdf)
6. Project on differential equation simulation of Checkpoint controls in Cell cycle and Cancer.  
<http://www.cs.columbia.edu/~abk2001/cellcycle.pdf>
7. Project on Beta-helix supersecondary protein structural predictions. (Implemented in PERL based on the BETA-WRAP algorithm and tested on test set from the SCOP database)  
<http://www.cs.columbia.edu/~abk2001/betawrap.htm>
8. Published an Internet draft titled ‘RADIUS accounting for SIP’ to Internet Engineering Task Force (IETF).  
<http://www.ietf.org/internet-drafts/draft-schulzrinne-accounting-sip-00.txt>
9. Published an Internet Draft titled 'Diameter Accounting Application for SIP' to be submitted to IETF.  
<http://www.ietf.org/internet-drafts/draft-narayanan-sipping-aaa-diameter-00.txt>
10. Research project on Network management, topology modeling and design & mobile agents. (Developed software in VC++) <http://www.cs.columbia.edu/~abk2001/SIMPSON.html>

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**Familiarity with Biological Tools and Datasets:**

1. The yeast cell cycle dataset by Spellman et al.
  2. Various Cancer Datasets (Hela cell-line and p53 perturbation datasets)
  3. TGF-beta dataset by Erwin Bottinger et al.
  4. A number of cancer Affymetrix and c-DNA datasets (Studied noise models and normalization techniques)
  5. Genbank, SGD, CYGD, MIPS, PFAM, SCOP, SWISS-PROT, PDB, WormBase
  6. NCBI Tools, Protein structural analysis tools and simulation tools (Caltech System Biology Workbench)
  7. Working knowledge of Molecular Basis of Cancer and Cancer Immunology.
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**Relevant Courses**

1. Stochastic processes
  2. Operating Systems with case study of LINUX
  3. Computational modelling of genetic networks: Detailed study of different modeling approaches and simulations (Book used: Computational Modelling of Genetic and Biochemical Networks, MIT Press)
  4. Computational genomics: Study of various algorithms used for Biological Sequence Analysis, Gene Expression profiles, HMMs, SVMs, Bayes Nets, Protein structural analysis. Discussions on latest findings and papers on Gene Finding and many other topics.
  5. Genomics and the cell: Biochemical Aspects of Genome expression, Biological Feedback, Mechanisms and control of transcription (kinetics and steady state analysis), Differential equation and soft Boolean models of regulation, Genetic switches, Tryptophan and Lactose regulation models.
  6. Special Topics in Biology: Readings and evaluations of papers and books on Gene expression, Protein folding, DNA microarrays, viruses, Senescence & Ageing, Immunology etc.
  7. Statistical Pattern Recognition: (Audit) Various Machine learning, Neural network, Natural Language Processing Algorithms for Pattern Classification, Clustering and Classification
  8. Advanced Machine Learning using Graphical Models: (Audit)
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**Scholarships and Assistantships:**

1. National Scholarship of Central Board Of Secondary Education for scoring 100 % marks in Maths in the Class 10 examination, conducted by the Board.
  2. Prof. P.R Dandavate Memorial Award: Highest GPA in the Bachelor's Program
  3. D.D. & L.H. Prize: Consistent Academic Career in the Bachelor's Program
  4. M.B.P. Memorial Foundation Award: Highest GPA in final Year of Bachelors Program
  5. 2 Research Assistantships in summer 2002
  6. Teaching Assistant: Computer Networks Spring 2002 & Computational Genomics Summer 2002
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**Accomplishments and Co-curricular Activities**

1. Ranked in the Top 3% in the JUNIOR & Intermediate Gulf Math Olympiad
  2. Developed Signal Processing tools using C for the DSP laboratory in undergraduate school.
  3. Won First prize in Inter Collegiate Scientific Paper Writing Contest (TECHNOVANZA2000), where I presented a technical paper on "Nanotechnology"
  4. Authored a technical paper titled "Storage area Networks-An evolution" approved by BARC (Bhabha Atomic Research center), which is a national level research organization.
  5. Authored a 3-module technical paper titled "Solutions for bandwidth expansion & protocol independence for voice over packet networks" approved by SITA (Societe Internationale de Telecommunications Aeronautiques)
  6. Voluntary internship with SITA to help develop their WAN to support Voice Over IP.
  7. Paper on Ethernet: Link of the future selected in the top 5 papers at the IEEE technical paper contest at Mumbai.
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**Interests & Activities**

1. Was Leader of the Designing Committee of the VJTI College Magazine-NIRMAAN-99
  2. Represented School & VJTI College in Inter-school & Inter Collegiate Basket Ball & Soccer Tournaments respectively.
  3. Learnt Indian Classical Music for 7 years & participated as Lead Singer in Orchestra in Dubai, United Arab Emirates
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