

# Nakul Verma

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CONTACT INFORMATION	Department of Computer Science and Engineering University of California, San Diego 9500 Gilman Drive, mailcode 0404 La Jolla, CA 92093-0404 USA	<i>phone:</i> (858) 349-3974 <i>email:</i> naverma@cs.ucsd.edu <i>www:</i> www.cse.ucsd.edu/~naverma
RESEARCH INTERESTS	Machine learning and high-dimensional statistics with current focus on manifold learning.	
EDUCATION	<b>University of California, San Diego</b> , La Jolla, California, USA  Doctor of Philosophy, Computer Science (expected graduation date: June 2011) <ul style="list-style-type: none"><li>• Advisor: Professor Sanjoy Dasgupta</li><li>• Area of Study: Artificial Intelligence</li></ul> Master of Science, Computer Science, June 2008.  Bachelor of Science, Computer Science, December 2004.	
AWARDS	Programming related <ul style="list-style-type: none"><li>• Second place in UCSD Programming Contest, 2005.</li><li>• Fourth place in Southern California Regional ACM Programming Contest, 2004.</li><li>• Third place in UCSD Programming Contest, 2004. (top undergraduate finisher)</li><li>• Fourth place in UCSD Datamining Contest, 2004.</li></ul> University of California, San Diego <ul style="list-style-type: none"><li>• Provost honors, 2001–2004.</li></ul>	
PUBLICATIONS	N. Verma, S. Kpotufe, S. Dasgupta. Which spatial trees are adaptive to intrinsic dimension?. <i>Twenty-Fifth Conference on Uncertainty in Artificial Intelligence (UAI)</i> , 2009.  N. Verma. Mathematical advances in manifold learning. <i>Survey</i> , 2008.  Y. Freund, S. Dasgupta, M. Kabra, N. Verma. Learning the structure of manifolds using random projections. <i>Twenty-First Conference on Neural Information Processing Systems (NIPS)</i> , 2007.  S. Dasgupta, D. Hsu, N. Verma. A concentration theorem for projections. <i>Twenty-Second Conference on Uncertainty in Artificial Intelligence (UAI)</i> , 2006.	
PATENTS	D. Krishnaswamy, N. Verma, V. Bychkovsky. Method and system using keyword vectors and associated metrics for learning and prediction of user correlation of targeted content messages in a mobile environment. <i>US Patent Application # 20090125462</i> , May 2009.  D. Krishnaswamy, N. Verma, V. Bychkovsky. Method and system for keyword correlation in a mobile environment. <i>US Patent Application # 20090125517</i> , May 2009.	

RESEARCH &  
WORK  
EXPERIENCE

**Qualcomm Incorporated**, San Diego, California USA

*Research Intern*

**Summer 2008**

- Applying machine learning and data mining concepts to design provably correct algorithms for phone personalization in a memory constraint environment.
- Part of the Advanced Technologies Group in the Office of the Chief Scientist.

**University of California, San Diego**, La Jolla, California USA

*Graduate Student Researcher*

**January 2005 to Present**

- Working with Dr. Sanjoy Dasgupta on clustering issues in high-dimensional data with weak dependencies.

*Undergraduate Student Researcher*

**March 2003 to December 2003**

- Part of Dr. Alex Orailoglu's Reliable System Synthesis Group, which focuses on testing and verification of VLSI circuits.
- Assisted a PhD student in reducing power consumption issues during the chip-testing phase.

*Undergraduate Student Researcher*

**September 2002 to June 2003**

- Improved and implemented artificial intelligence algorithm for goal-directed systems.

**CalSpace Institute**, La Jolla, California USA

*Webmaster and Developer for CORAX project*

**Fall 2001**

- Maintained webpages and assisted with other computing needs for the CORAX team.

**International School of Kuala Lumpur**, Kuala Lumpur, Malaysia

*Application Developer*

**Summer 2001**

- Designed and developed a Technology Help-Desk System, which maintains a real-time job list for technicians to respond to user queries.
- The system is integrated with the internal bulletin board service to receive and respond to problems effectively.

TEACHING  
EXPERIENCE

**University of California, San Diego**, La Jolla, California USA

*Teaching Assistant and Course Tutor*

**January 2003 to March 2007**

- Advanced Data Structures – WI04, SP05, SP06, FA06
- Compiler Construction – WI05, FA05, WI06, FA06, WI07
- Design and Analysis of Algorithms – SP05
- Discrete Mathematics – SP04
- Intro to Computer Science and OOP: Java – WI03, SP03, FA03, FA04, WI07
- California State Summer School for Math and Science (COSMOS) program, Computer science cluster – SU06

**International School of Kuala Lumpur**, Kuala Lumpur, Malaysia

*Course Instructor*

**Summer 2002**

- Taught classes in Introduction to Computer Programming and Interactive Multimedia to high-school students.
- Responsible for organizing and teaching relevant course material on daily basis.
- Assigned and graded weekly homeworks and semester exams.

PROJECTS

**Artificial Intelligence**

*Random Projection Trees for Manifold Learning*

**Fall 2007**

- Developed a framework to implicitly learn the non-linear dependencies in collected data. Implemented a recently proposed datastructure, called RP-Trees, in C for manifold learning.

**Game development**

*Little Johnny has Cirrhosis*

**Spring 2004**

- Created an original, distributed, real-time, 3D, multiplayer game in C++ using DirectX. Worked in a five person team to materialize a game concept to a finished product in just ten weeks.
- Responsible for implementing enemy AI, input handling and server-side networking.

TECHNICAL SKILLS

**Programming Languages:** C, C++, Java, C#, Visual Basic, Lisp, Prolog, SPARC Assembly, MIPS Assembly, XQuery, Oberon, DBase, Visual FoxPro, SQL, PHP, Matlab, UNIX shell scripting.

RELEVANT COURSES

**AI Related and Special Interest:** Metric Embeddings, Graphical Models, Learning Theory, Stochastic Processes, Information Theory, Convex Optimization, Randomized and Approximation Algorithms, Modern Cryptography, Expander Graphs.

**Computer Science General:** Algorithms, Datastructures, Operating Systems, Computer Architecture, Compiler Construction, Database Theory, Programming Languages, Game Programming.

**Mathematics:** Real Analysis, Probability Theory, Statistics, Modern Algebra, Differential Geometry, Topology.

REFERENCES

Available upon request.