

# Nilanjan Chakraborty

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CONTACT INFORMATION	110 8th Street Department of Computer Science Rensselaer Polytechnic Institute Troy, NY 12180, USA	<i>Voice:</i> (917) 547-1873 <i>Fax:</i> (518) 276-2529 <i>E-mail:</i> chakrn2@cs.rpi.edu <i>WWW:</i> www.cs.rpi.edu/~chakrn2
RESEARCH INTERESTS	Robotics, Mechanism design, Multi-body Dynamics, Convex Optimization, Combinatorial Optimization, Graph Theory, Pursuit-evasion Games.	
EDUCATION	<b>Rensselaer Polytechnic Institute</b> , Troy, NY, USA. Ph.D. Candidate, Computer Science, August 2004 (expected graduation date: June 2008). <ul style="list-style-type: none"><li>• Thesis Title: "Optimization-based Approaches for Geometric Constraints in Robot Motion Planning".</li><li>• Advisor: Srinivas Akella and Jeff Trinkle.</li></ul> <b>Indian Institute of Science</b> , Bangalore, Karnataka, India. M.Sc., Mechanical Engineering (August, 2001 - October, 2003). <ul style="list-style-type: none"><li>• Thesis Title: "Modeling of Wheeled Mobile Robots on Uneven Terrain".</li><li>• Advisor: Ashitava Ghosal.</li></ul> <b>Jalpaiguri Govt. Engg. College</b> , Jalpaiguri, West Bengal, India. B.E., Mechanical Engineering (August 1994 - August, 1998).	
ACADEMIC EXPERIENCE	<b>Rensselaer Polytechnic Institute</b> , Troy, NY, USA. <i>Research Assistant (June, 2005 - present).</i> <i>Teaching Assistant (August, 2004 - May, 2005).</i> Course: Computer Science II (C++ programming for CS undergraduates). Duties included guiding students through weekly computer lab exercises, grading exams, and holding office hours. <b>Indian Institute of Science</b> , Bangalore, Karnataka, India. <i>Research Assistant (August, 2001 - October, 2003).</i>	
RESEARCH SUMMARY	My current research interests are in robot motion planning, manipulation planning, multiple-robot coordination, pursuit-evasion games, and robot mechanism design. In my PhD thesis, I have worked on tools and algorithms for effectively incorporating geometric constraints in robot motion planning under differential constraints. In my masters thesis, I proposed and analysed (kinematic and dynamic) a mechanism design for a 3-wheeled mobile robot that moves without slip on uneven terrain. More recently, I have been working on understanding the effect of sensor information uncertainty in pursuit-evasion games.	
HONORS AND AWARDS	Best Student Paper Award, <i>Robotics Science and Systems</i> , June 2007, Atlanta, GA. West Bengal State Government Fellowship, 1994-1998.	

JOURNAL  
PUBLICATIONS

N.Chakraborty, S. Akella and J. T. Wen. Coverage of a Planar Point Set with Multiple Robots subject to Geometric Constraints. Conditionally accepted (March 2008), *IEEE Transactions on Automation Sciences and Engineering*.

N. Chakraborty, J. Peng, S. Akella, and J. Mitchell. Proximity Queries between Convex Objects: An Interior Point Approach for Implicit Surfaces. *IEEE Transactions on Robotics*, Vol. 24, No. 1, pp. 211-220, February 2008.

N. Chakraborty and A.Ghosal. Dynamic Modeling and Simulation of a Wheeled Mobile Robot for Traversing Uneven Terrain without Slip. *Transactions of the ASME, Journal of Mechanical Design*, Vol. 127, No. 5, pp. 901-909, September 2005 .

N. Chakraborty and A. Ghosal. Kinematics of Wheeled Mobile Robots on Uneven Terrain. *Mechanisms and Machine Theory*, Vol. 39, No. 2, pp. 1273-1287, December 2004.

PAPERS UNDER  
PREPARATION

N. Chakraborty, S. Berard, S. Akella, and J. C. Trinkle. An Implicit Time-Stepping Method for Multibody Systems with Intermittent Contact. To be submitted to *International Journal of Robotics Research*.

N. Karnad, V. I. Isler, and N. Chakraborty. Bearing-only Pursuit. To be submitted to *IEEE Transactions on Robotics*.

CONFERENCE  
PUBLICATIONS

N. Chakraborty, S. Akella, and J. T. Wen. Minimum Time Point Assignment for Coverage by Two Constrained Robots. *IEEE Conference on Robotics and Automation*, Pasadena, CA, May 2008 (To Appear).

N. Chakraborty, S. Akella, and J. T. Wen. Coverage of a Planar Point Set with Multiple Constrained Robots. *IEEE Conference on Automation Sciences and Engineering*, pp 899-904, Scottsdale, AZ, September 2007.

N. Chakraborty, S. Berard, S. Akella, and J. C. Trinkle. An Implicit Time-Stepping Method for Quasi-Rigid Multibody Systems with Intermittent Contact. *Proceedings of ASME DETC'07*, Las Vegas, NV, September 2007.

N. Chakraborty, S. Berard, S. Akella, and J. C. Trinkle. An Implicit Time-Stepping Method for Multibody Systems with Intermittent Contact. *Robotics: Science and Systems 2007*, Atlanta, GA, June 2007. (**Recipient of Best Student Paper Award**).

N. Chakraborty, J. Peng, J. Mitchell, and S. Akella. Proximity Queries between Convex Objects: An Interior Point Approach for Implicit Surfaces. *IEEE International Conference on Robotics and Automation*, pp. 1910-1916, Orlando, FL, May 2006.

N. Chakraborty and A. Ghosal. Kinematics of wheeled mobile robots with toroidal wheels on uneven terrain. *Proceedings of ASME DETC'03*, Chicago, USA, September 2003.

N. Chakraborty and A. Ghosal. Kinematics of wheeled mobile robots on uneven terrain. *Proceedings of National Conference on Mechanism and Machine Theory*, New Delhi, December 2003.

THESIS

N. Chakraborty. Modeling of Wheeled Mobile Robots on Uneven Terrain. M.Sc. Thesis, Dept. of Mechanical Engg., Indian Institute of Science, Bangalore.

PROFESSIONAL  
EXPERIENCE

**General Electric Company**, Global Research Center, Bangalore, Karnataka, India  
*Research Engineer (October, 2003 - July, 2004)*

**Gupta Consultants Pvt. Ltd.**, New Delhi, India.  
*Design Engineer (August, 1998 - November, 2000)*

PROFESSIONAL  
ACTIVITIES

Student Member of IEEE and MPS.

*Journal Review Services:* IEEE Transactions on Robotics, International Journal of Robotics Research.

*Conference Review Services:* IEEE International Conference on Robotics and Automation (ICRA), IEEE Intelligent Robotic Systems (IROS), Robotics: Science and Systems (RSS), Workshop on Algorithmic Foundation of Robotics (WAFR), ASME Design Engineering Technical Conference (DETC).

CITIZENSHIP

India (F1 Visa).

REFERENCES

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