NEW YORK UNIVERSITY

Faculty Personnel Record Supplement, 2000

This form is to provide information on faculty professional activities during the calendar year 2000.

1. PERSONAL INFORMATION

NAME: MISHRA, BHUBANESWAR
DEPARTMENT: COMPUTER SCIENCE, CIMS
CURRENT RANK/TITLE: PROFESSOR OF COMPUTER SCIENCE AND MATHEMATICS

2. RESEARCH INTERESTS Please choose four key words (or phrases of less than 3 words) best describing the major areas of your research interests:

- *Computer Science*
- *Genomics*
- *Robotics*
- *Finance*
- *Algebra* (Commutative & Differential)

3. INSTRUCTION AND THESIS SUPERVISION

A. Courses taught at NYU during the past year (titles and course numbers):

Fall 00: Computational Biology (G22.3033.06)
Fall 00: Fundamental Algorithms (G22.1170)
Fall 00: Genomics (G23.1128), with P. Benfey

B. New courses developed:

Fall 00: Computational Biology (G22.3033.06) (New Course)

C. Thesis Supervision:

1. **Completed M.S. theses principally supervised** (list student name and thesis title):

   None

2. **Completed Ph.D. theses principally supervised** (list student name and thesis title):

None

3. **Current Ph.D. students being principally supervised** (list student name, thesis topic (if determined), and estimated date of completion):

[1] Gideon Berger: March, 2001. (Expected)
(Intrusion Detection)

[2] William Casey: September, 2003. (Expected)
(Physical Mapping, Phylogeny)

[3] Vera Cerepinsky: September, 2003. (Expected)
(Mathematical Biology)

[4] Salvatore Paxia: December, 2001. (Expected)
(Large Databases, Distributed Computing)

[5] Yi Zhao: September, 2002. (Expected)
(Cell Informatics)

4. SERVICE

A. University Service (Committees, Administrative):

[1] NYU Center for Comparative Functional Genomics, Co-director, 2001-Present;

[2] Search Committee for Genetic Epidemiologist, NYU and MSSM (Mt. Sinai School of Medicine), 2000-2001;

[3] Science Council, 1995–Present.

B. Department Service (Committees, Administrative):

[1] Computer Science Appointment Committee;

C. Professional Service (Program Committees, Editorships, etc.):

(Fall 2000) Working Group, *Program on "Functional Genomics*, Institute of Pure and Applied Mathematics (IPAM), UCLA, Los Angeles, Ca.

(August 2000) Organizing Committee (with Rohit Parikh): *Workshop on "Probability, Conditionals and Games*, Courant Institute, New York, NY.

(July 2000) Program Committee: *2000 ACM International Symposium on Symbolic and Algebraic Computation* (ISSAC'2000).

(April 2000) Panelist, *A Morning on the Millenium*, NYU, NY.

5. PROFESSIONAL RECOGNITION (prizes, honorary degrees, competitive fellowships, endowed lectureships, invited lectures (give lecture series name), other):

(May 2000) *Distinguished Lecturer*, Distinguished Computer Scientists Symposium, *Frontiers of Research in the New York Area*, New York Academy of Sciences, NY.

(April 2000) Panelist, *A Morning on the Millenium*, NYU, NY.

6. GRANTS OR FELLOWSHIPS

A. Grants or fellowships awarded (period, title, amount, funding source):

[1] *BioInformatics Prototyping Language for Mapping, Sequence Assembly and Data Analysis*: 2000-2003, *Department of Energy*, $880,000.

[2] *High-Density Gene Copy Number Microarrays*: 2000-2003, *National Institutes of Health*, $126,000.

[3] *Genomics via MicroArrays*: 2000-2001, *University Research Challenge Fund*, $5,857.

B. Grants or fellowships currently submitted but pending (period, title, amount, funding source):

[1] *Efficient and Scalable BioInformatics and Database Tools for Microbe Map Data Assembly and Data Analysis*: 2001-2004, *Department of Energy*, $750,000.

[2] *Microarray Gene Sequnce Database*: (with Stuart Brown and Michael Zhang), 2001-2004, *National Science Foundations*, $690,000.

[3] *Nitrogen Networks in Plants*: 2001-2004, *National Science Foundations*.

C. Grants proposals or fellowship applications submitted but not funded:

None

D. Current grants other than those reported in A (period, title, amount, funding source):

[1] *BioInformatics: Computational Genomics*, *NYU Curr. Challenge Fund*, $6,562, 1999-2000.

[2] *Urban Research Initiative: Information Technology and the Future of Urban Environments*: with M. Moss, R. Zimmerman, I. Ellen and S. Gregory. 1999–2001, *National Science Foundation*, SBR-98-1-7778, $499,281.

[3] *KDI: Automated Learning in Network Traffic Control*: 1998–2001, *National Science Foundation*, $ 348,347.

[4] *Global Analysis of Human Genomic Aberrations by Optical Mapping*: with D.C. Schwartz. 1998–2001, *National Cancer Institute*, $ 302,757.

7. PUBLICATIONS AND RESEARCH IN 2000

A. Books (Include title, publisher, year of publication, number of pages, and authors list as on publication.) Items accepted or in-press are to be listed in D below.

1. Authored (co-authored if applicable)

None

2. Edited (co-edited, if applicable)

None

3. Chapters in Books (co-authored if applicable)

[1] "A Survey of Computational Differential Algebra," **Geometric Robotics**, (Edited by Jon Selig), World-Scientific, Singapore, 2000.

[2] "On the Other Hands: Geometric Ideas in Robotics," **Geometry at Work**, (Edited by C.A. Gorini, E. Hart, W. Meyer and T. Phillips), Mathematical Association of America, MAA, 2000.
Invited Contribution.

B. Journal Articles (Include title, journal, volume, year of publication, inclusive pages, and author list as on publication). Articles being published but which had not appeared in 2000 are to be listed in D, below. Articles which appeared in conferences are to be listed in C, below.

1. Refereed

[1] "Detecting Gene Copy Number Fluctuations in Tumor Cells by Microarray Analysis of Genomic Representations," (with R. Lucito et al.), *Genome Research*, **10**(11): 1726-1736, 2000.

[2] "Optical Mapping of BAC Clones from the Human Y Chomosome *DAZ* Locus," (with J. Giacalone et al.), *Genome Research*, **10**:1421-1429, September, 2000.

[3] "On the Dynamic Finger Conjecture for Splay Trees. Part I: Splay Sorting $\log n$-Block Sequences," (with R. Cole, J. Schmidt and A. Siegel), *SIAM Journal of Computing*, **30**(1):1–43, 2000.

[4] "Reactive Robotics I: Reactive Grasping with a Modified Gripper and Multi-fingered Hands," (with M. Teichmann), *International Journal of Robotics Research*, **19**(7):697–708, 2000.

[5] "Partitioning Single-Molecule Maps into Multiple Populations: Algorithms And Probabilistic Analysis," (with L. Parida), *Discrete Applied Mathematics* (The Computational Molecular Biology Series), **104**(l-3):203–227, August, 2000.

[6] "Probabilistic Algorithms for Efficient Grasping and Fixturing," (with M. Teichmann), Special Issue: Algorithms in Robotics, (Guest editor: R. Motwani and P. Raghavan), *Algorithmica*, Springer-International, **26**:345–363, 2000.

2. Non-refereed

None

C. Paper presentations or participation in panels at professional societies. Indicate whether you were invited to deliver (paper, society, place, time, author list as on publication). Articles being published but which had not appeared in 2000 are to be listed in D, below.

None

D. Other Work (Be specific, as above)

1. Accepted or In-Press

None

2. Work in progress and/or Items Not Yet Accepted

[1] "Learning in the Santa Fe Bar Problem," (with A. Greenwald and R. Parikh). Submited to ICML 2001.

[2] "A Probabilistic Analysis of False Positives in Optical Map Alignment and Validation," (with T.S. Ananatharaman). Submitted to ISMB 2001.

[3] "Algorithms and Analysis for Combining Sequences and Maps: Application to the Malaria Parasite Plasmodium falciparum," (with M. Antoniotti et al.). Submitted to ISMB 2001.

[4] "Placing Probes along the Genome using Pair-wise Distance Data," (with W. Casey and M. Wigler).Submitted to ISMB 2001.

[5] Grasping: On the Other Hands and Grippers,
(with Marek Teichmann), 2001. (Book)

Under preparation.

[6] Algorithmic Biology,
In *Courant Lecture Notes Series*, 2001(Tentative).

E. Notes, Book Reviews, Abstracts (Be specific, as above.)

None

F. Other publications, including research notes, limited circulation reports, etc. (Be specific, as above.)

None

8. ANY OTHER ITEMS (Any other pertinent information that did not fall in the above categories.)

None