

# CV of Inder “Jiti” Gupta

Inder Jeet Gupta  
7435 Coventry Woods Dr.  
Dublin, OH 43017

(614)292-5951 (office)  
(614)657-2952 (cell)  
gupta.11@osu.edu

## EDUCATION

**Ph. D., Electrical Engineering**, The Ohio State University, Columbus, Ohio, June 1982.

**M. Tech., Electrical Engineering**, Indian Institute of Technology, Kanpur, India, July 1977.

**B. Sc. (Eng.), Electronics & Electrical Communications**, Punjab Engineering College, Chandigarh, India, June 1975.

## POSITIONS HELD

September 2009 to Present, *Research Professor*, July 1997 to August 2009 – *Senior Research Scientist & Adjunct Professor*, January 1996 to June 1997 – *Adjunct Associate Professor*, July 1988 to June 1997 – *Research Scientist*, July 1982 to June 1988 – *Senior Research Associate*, April 1979 to July 1982 – *Graduate Research Associate*, Department of Electrical and Computer Engineering, The Ohio State University, Columbus, Ohio.

September 1978 to March 1979 – *Graduate Research Assistant*, UT Space Institute, Tullahoma, Tennessee.

December 1977 to August 1978 – *Research Scholar*, August 1977 to December 1977 – *Research Engineer*, July 1976 to July 1977 – *Research Assistant*, Indian Institute of Technology, Kanpur, India.

## PROFESSIONAL HONORS and AWARDS

**Fellow** – Institute of Electrical and Electronics Engineers (IEEE)

**Fellow** – Institute of Navigation (ION)

**Edmond S. Gillespie Fellow** – Antenna Measurement Techniques Association (AMTA)

**Air Force Material Command (AFMC) News**, March 11, 2009

**AMTA Distinguish Achievement Award** for year 2007

The Ohio State University, College of Engineering’s **Lumley Research Award** for the years 1991, 1998 and 2005.

IEEE Antennas and Propagation Society’s **H.A. Wheeler Applications Prize Paper Award** for the year 1991.

The Ohio State University ElectroScience Laboratory's **Outstanding Paper Award** for the years 1990 and 2001.

### **RESEARCH FUNDING**

Principal Investigator for the last twenty years. During the last five year, average research funding exceeds \$650K per year. Have been supporting graduate students as well as junior researchers independently. A list of various research projects during the last fifteen years is given in the Appendix.

### **GRADUATE STUDENTS**

Supervised / advised graduate students for the last twenty five years. In the last ten years, advised three Ph.D. students independently, co-advised a Ph.D. student, and advised thirteen master students to completion. Currently, advising four graduate (three Ph.D. and one Masters) students.

### **PERTINENT PROFESSIONAL ACTIVITIES**

Chairman (1985-86), Vice Chairman (1984-85) and Secretary/Treasurer (1983-84) of the Columbus Chapter of IEEE Antennas and Propagation/Microwave Theory and Techniques Societies.

Technical Coordinator, Antenna Measurement Techniques Association, 1995 and 1996.

President, Antenna Measurement Techniques Association, 1997.

Member, Advisory Board, Antenna Measurement Techniques Association, 1999 to 2004.

Co-Chair, Technical Program Committee, IEEE Antennas and Propagation Society's 2003 International Symposium

Member, Technical Program Committee, AMTA 2007, 2008 and 2009

Principal Investigator, EM Range Consortium, The Ohio State University ElectroScience Laboratory, July 2002 to Present

University Representative, Consortium of Ohio Universities on Navigation and Timekeeping (COUNT), since its inception

Regular Session Chair at IEEE APS Symposiums, AMTA Annual Symposium and Institute of Navigation meetings.

Technical reviewer for more than ten professional journals

**PUBLICATIONS:** A list of journal papers, conference papers and conference abstracts is given below. All my publications are peer reviewed. Coauthors with \* next to their names indicate the students advised by Dr. Gupta. Coauthors with \*\* next to their names are indicate students not advised by Dr. Gupta; whereas coauthors with \*\*\* indicates non-OSU persons.

**Archived Journal Papers**

1. A.J. O'Brien\* and I.J. Gupta, "An Optimal Adaptive Filtering Algorithm with Zero Antenna-Induced Bias for GNSS Antenna Arrays," submitted for publication in the *Journal of the Institute of Navigation*, October 2009.
2. I.J. Gupta, T.-H. Lee, K.A. Griffith\*, C.D. Slick\*, C.J. Reddy\*\*\*, M.C. Bailey\*\*\* and D. DeCarlo\*\*\*, "Non-planar Adaptive Antenna Arrays for GPS Receivers," submitted for publications in *IEEE Antennas and Propagation Magazine*, August 2009.
3. K.A. Griffith\* and I.J. Gupta, "Inclusion of Rotor Blade Modulation in Hardware-in-the-loop Testing of RF Systems," accepted for publication in *IEEE Transactions on Aerospace and Electronic Systems*.
4. A.J. O'Brien\* and I.J. Gupta, "Mitigation of Adaptive Antenna-Induced Bias Errors in GNSS Receivers," accepted for publication in *IEEE Transactions on Aerospace and Electronic Systems*.
5. K.A. Griffith\* and I.J. Gupta, "Effects of Mutual Coupling on the Performance of GNSS Antennas," *Journal of the Institute of Navigation*, volume 56, pages 161-174, Fall 2009.
6. C.M. Church\* and I.J. Gupta, "Estimation of Adaptive Antenna Induced Code and Carrier Phase Bias in GNSS Receivers," *Journal of the Institute of Navigation*, volume 56, pages 151-160, Fall 2009.
7. A.J. O'Brien\* and I.J. Gupta, "Comparison of Output SINR and Receiver C/No for GNSS Receivers," *IEEE Transactions on Aerospace and Electronic Systems*, volume 45, pages 1630-1639, October 2009.
8. J.A. Kasemodel\*\*, C.-C. Chen, I.J. Gupta and J.L. Volakis, "Miniature Continuous Coverage Antenna Arrays for GNSS Receivers," *IEEE Antennas and Wireless Propagation Letters*, volume 7, pages 592-595, 2008.
9. J.D. Krieger,\* E.H. Newman and I.J. Gupta, "The Single Antenna Method for the Measurement of Antenna Gain and Phase," *IEEE Transactions on Antennas and Propagation*, volume 54, pages 3562-3565, November 2006.
10. I.J. Gupta, J.A. Ulrey\* and E.H. Newman, "Effects of Antenna Element Bandwidth on Adaptive Array Performance," *IEEE Transactions on Antennas and Propagation*, Vol. 53, pp. 2332-2336, July 2005.
11. I.J. Gupta, "Stray Signal Source Location in Far-Field Antenna/RCS Ranges," *IEEE Antennas and Propagation Magazine*, Vol. 46, No. 3, pp. 20-29, June 2004.

12. I.J. Gupta and T.D. Moore\*, "Space-Frequency Adaptive Processing (SFAP) for Radio Frequency Interference Mitigation in Spread- Spectrum Receivers," *IEEE Transactions on Antennas and Propagation*, Vol. AP-52, No. 6, pp. 1611-1616, June 2004.
13. R.J. Burkholder, I.J. Gupta and J.T. Johnson, "Comparison of Monostatic and Bistatic Radar Images," *IEEE Antennas and Propagation Magazine*, Vol. 45, No. 3, pp. 41-50, June 2003.
14. I.J. Gupta, J.R. Baxter\*, S.W. Ellingson, H.G. Park\*\*\*, H.S. Oh\*\*\* and M.G. Kyeong\*\*\*, "An Experimental Study of Antenna Array Calibration," *IEEE Transactions on Antennas and Propagation*, Vol. AP-51, No. 3, pp. 664-668, March 2003.
15. A. van der Merwe\* and I.J. Gupta, "A Novel Signal Processing Technique for Clutter Reduction in GPR Measurements," *IEEE Transactions on GeoScience and Remote Sensing*, Vol. 38, pp. 2627-2637, November 2000.
16. M.J. Gerry\*\*, L.C. Potter, I.J. Gupta and A. van der Merwe\*, "A Parametric Model for Synthetic Aperture Radar Measurements," *IEEE Transactions on Antennas and Propagation*, Vol. AP-47, No.7, pp. 1179-1188, July 1999.
17. L.-C. T. Chang\*, I.J. Gupta, W.D. Burnside and C.-L. T. Chang\*, "A Data Compression Technique for Scattered Fields from Complex Targets," *IEEE Transactions on Antennas and Propagation*, Vol. AP-45, No. 8, pp. 1245-1251, August 1997.
18. M.-W. Tu\*, I.J. Gupta and E.K. Walton, "Application of Maximum Likelihood Estimation to Radar Imaging," *IEEE Transactions on Antennas and Propagation*, Vol. AP-45, No. 1, pp. 20-27, January 1997.
19. I.J. Gupta, M. Beals\* and A. Moghaddar\*, "Data Extrapolation for High Resolution Radar Imaging," *IEEE Transactions on Antennas and Propagation*, Vol. AP-42, No. 11, pp. 1540-1545, November 1994.
20. J.W. Nehrbass\* and I.J. Gupta, "A Vectorized Multiple Plate Scattering Code," *Applied Computational Electromagnetics Society Journal*, Vol. 9, No.2, pp. 135-141, July 1994.
21. W.D. Burnside and I.J. Gupta, "A Method to Reduce Stray Signal Errors in Antenna Pattern Measurements," *IEEE Transactions on Antennas and Propagation*, Vol. AP-42, No. 3, pp. 399-405, March 1994.
22. I.J. Gupta, "High Resolution Radar Imaging Using 2-D Linear Prediction," *IEEE Transactions on Antennas and Propagation*, Vol. AP-42, No. 1, pp. 31-37, January 1994.
23. Z. Al-Hekil\*, I.J. Gupta and W.D. Burnside, "Scattering from Thin Dielectric Straps Surrounding a Perfectly Conducting Structure," *IEEE Transactions on Antennas and Propagation*, Vol. AP-41, No. 4, pp. 442-447, April 1993.

24. T. Lee, T. Clark\*\*, W.D. Burnside and I.J. Gupta, "Critical Range Evaluation using a Diagonal Flat Plate," *IEEE Transactions on Antennas and Propagation*, Vol. AP-40, no. 8, pp. 966-974, August 1992.
25. I.J. Gupta, D. Brown\*, W.D. Burnside and W. Lin, "A Serrated Edge Gregorian Subreflector for Dual Compact Range System," *IEEE Transactions on Antennas and Propagation*, Vol. AP-39, No. 8, pp. 1258-1260, August 1991.
26. I.J. Gupta and W.D. Burnside, "Compact Range Measurement Systems for Electrically Small Test Zones," *IEEE Transactions on Antennas and Propagation*, Vol. AP-39, No. 5, pp. 632-638, May 1991.
27. R.L. Dilsavor\* and I.J. Gupta, "An Experimental SMI Adaptive Antenna Array for Weak Interfering Signals," *IEEE Transactions on Antennas and Propagation*, Vol. AP-39, No. 2, pp.236-243, February, 1991.
28. S.W. Ellingson\*, I.J. Gupta and W.D. Burnside, "Analysis of Blended Rolled Edge Reflectors Using Numerical UTD," *IEEE Transactions on Antennas and Propagation*, Vol. AP-38, No. 12, pp. 1969-1971, December 1990.
29. K. Steadman\*, I.J. Gupta and E.K. Walton, "Performance of a Modified Feedback Loop Adaptive Array with TVRO Satellite Signals," *IEEE Transactions on Antennas and Propagation*, Vol. AP-38, No. 10, pp. 1701-1709, October 1990.
30. I.J. Gupta, K. Ericksen\* and W.D. Burnside, "A Method to Design Blended Rolled Edges for Compact Range Reflectors," *IEEE Transactions on Antennas and Propagation*, Vol. AP-38, No. 6, pp. 853-861, June 1990.
31. I.J. Gupta, A.K. Lai\* and W.D. Burnside, "Scattering by Dielectric Straps with Potential Application as Target Support Structures," *IEEE Transactions on Antennas and Propagation*, Vol. AP-37, No. 9, pp. 1109-1115, September 1989.
32. J. Ward\* and I.J. Gupta, "Effects of the Desired Signal on the Performance of a Sidelobe Canceller," *IEEE Transactions on Antennas and Propagation*, Vol. AP-37, No. 9, pp. 1109-1115, September 1989.
33. J. Ward\*, E. Walton, I. Gupta and A. Ksienski, "An Experimental Adaptive Array to Suppress Weak Interfering Signals," *IEEE Transactions on Antennas and Propagation*, Vol. AP-34, No. 11, pp. 1551-1559, November 1988
34. I.J. Gupta, C.W.I. Pistorius\*\* and W.D. Burnside, "An Efficient Method to Compute Spurious End Point Contributions in PO Solution," *IEEE Transactions on Antennas and Propagation*, Vol. AP-35, No. 12, pp. 1426-1435, December 1987.
35. I.J. Gupta and W.D. Burnside, "A Physical Optics Correction for Backscattering from Curved Surfaces," *IEEE Transactions on Antennas and Propagation*, Vol. AP-35, No. 5, pp. 553-561, May 1987.
36. I.J. Gupta, "Two-State Feedback Loop Adaptive Arrays for Pulsed Interference Signals," *IEEE Transactions on Aerospace and Electronic Systems*, Vol. AES-22, No. 6, pp. 716-724, November 1986.

37. I.J. Gupta, "SMI Adaptive Antenna Arrays for Weak Interfering Signals," *IEEE Transaction on Antennas and Propagation*, Vol. AP-34, No. 10, pp. 1237-1243, October 1986.
38. I.J. Gupta and A.A. Ksienski, "Adaptive Antenna Arrays for Weak Interfering Signals," *IEEE Transactions on Antennas and Propagation*, Vol. AP-34, No. 3, pp. 420-427, March 1986.
39. I.J. Gupta, "Performance of a Modified Applebaum Adaptive Array," *IEEE Transactions on Aerospace and Electronic Systems*, Vol. AES-20, No. 5, pp. 583-593, September 1984.
40. I.J. Gupta, "Effect of Jammer Power on the Performance of Adaptive Arrays," *IEEE Transactions on Antennas and Propagation*, Vol. AP-32, No. 9, pp. 933-937, September 1984.
41. I.J. Gupta, "Adaptive Arrays for Multiple Simultaneous Desired Signals," *IEEE Transactions on Aerospace and Electronic Systems*, Vol. AES-19, No. 5, pp. 761-767, September 1983.
42. I.J. Gupta and A.A. Ksienski, "Effect of Mutual Coupling on the Performance of Adaptive Arrays," *IEEE Transactions on Antennas and Propagation*, Vol. AP-31, No. 5, pp. 785-791, September 1983.
43. I.J. Gupta and A.A. Ksienski, "Prediction of Adaptive Array Performance," *IEEE Transactions on Aerospace and Electronic Systems*, Vol. AES-19, No. 3, pp. 380-388, May 1983.
44. I.J. Gupta and A.A. Ksienski, "Dependence of Adaptive Array Performance on Conventional Array Design," *IEEE Transactions on Antennas and Propagation*, Vol. AP-30, No. 4, pp 549-553, July 1982.
45. A. Paul\*\*\* (Master's Advisor) and I.J. Gupta, "An Analysis of Log Periodic Antenna with Printed Dipoles," *IEEE Transactions on Microwave Theory and Techniques*, Vol. MTT-29, No. 2, pp. 114-118, February 1981.

### **Conference Papers**

1. K.A. Griffith\* and I.J. Gupta, "Inclusion of Rotor Blade Modulation in Computer Simulations or Wavefront Simulators," *Proceedings of ION 2008 GNSS Meeting*, Savannah, GA, September 2009.
2. A. O'Brien\*, K. Hayhurst\* and I.J. Gupta, "Effects of Rotor Blade Modulations on GNSS Receiver Measurements," *Proceedings of ION 2008 GNSS Meeting*, Savannah, GA, September 2009.
3. C.M. Church\* and I.J. Gupta, "Calibration of GNSS Adaptive Antennas," *Proceedings of ION 2008 GNSS Meeting*, Savannah, GA, September 2009.
4. D. Brzezinska, C. Toth, L. Li\*\*, J. Park\*\*, X. Wang\*\*, H. Sun, I.J. Gupta, and Y. Zheng, "Positioning in GPS-Challenged Environments: Dynamic Sensor Network with Distributed Aperture and Inter-Nodal ranging Signals," *Proceedings of ION 2008 GNSS Meeting*, Savannah, GA, September 2009.

5. I.J. Gupta and K.A. Griffith\*, "Simulation of Antennas Mounted on Retrocrafts," *Proceedings of ION 2008 GNSS Meeting*, Savannah, GA, September 2008.
6. A.J. O'Brien\* and I.J. Gupta, "Optimum Adaptive Filtering for GNSS Antenna Arrays," *Proceedings of ION 2008 GNSS Meeting*, Savannah, GA, September 2008.
7. K.A. Griffith\* and I.J. Gupta, "Effect of Mutual Coupling on the Performance of GPS AJ Antennas," *Proceedings of 2008 Position, Location, and Navigation Symposium (PLANS)*, Monterey, CA, May 2008.
8. A.J. O'Brien\* and I.J. Gupta, "Mitigation of Adaptive Antenna Induced Biases in GNSS Receivers," *Proceedings of ION 2008 National Technical Meeting*, San Diego, CA, January 2008.
9. J.A. Kasemodel\*\*, C.C. Chen, I.J. Gupta and J.L. Volakis, "Compact Wideband Antenna Array for GNSS Receivers," *Proceedings of AMTA 2007 Annual Meeting and Symposium*, St. Louis, MO, November 2007.
10. S. Goodman\* and I.J. Gupta, "A Method to Correct Measurement Errors in Far-Field Antenna Ranges," *Proceedings of AMTA 2007 Annual Meeting and Symposium*, St. Louis, MO, November 2007.
11. C.M. Church\* and I.J. Gupta, "GNSS Receiver Biases Due to Non-Linear Phase of Controlled Pattern and Fixed Pattern Antennas," *Proceedings of ION 2007 GNSS Meeting*, Fort Worth, TX, September 2007.
12. K.A. Griffith\* and I.J. Gupta, "Reduced Order Antenna Array Calibration," *IEEE International Symposium on Antennas and Propagation*, Honolulu, Hawaii, July 2007.
13. S. Goodman\* and I.J. Gupta, "Measurement of Low Sidelobe Antennas in Far-Field Test Ranges," *IEEE International Symposium on Antennas and Propagation*, Honolulu, Hawaii, July 2007.
14. C.M. Church\*, I.J. Gupta and A.J. O'Brien\*, "Adaptive Antenna Induced Biases in GNSS Receivers," *Proceedings of ION 2007 Annual Meeting*, Harvard, MA, April 2007.
15. I.J. Gupta, J.L. Volakis and C.C. Chen, "A Reduced Size CRPA (R-CRPA) for GNSS Receivers," *Proceedings of ION 2007 National Technical Meeting*, San Diego, CA, January 2007.
16. I.J. Gupta, C. Church\*, A. O'Brien\*, and C. Slick\*, "Prediction of Antenna and Antenna Electronics Induced Biases in GNSS Receivers," *Proceedings of ION 2007 National Technical Meeting*, San Diego, CA, January 2007.
17. I.J. Gupta and T.H. Lee, "Measurement of Circular Polarized Antennas," *Proceedings of Antenna Measurement Techniques Association's 2006 Annual Meeting and Symposium*, Austin, TX, October 2006.
18. I.J. Gupta, J.A. Ulrey\*, C.J. Reddy\*\*\* and C.B. Ravipati\*\*\*, "Non-Planar Controlled Reception Pattern Antennas for GPS Receivers," *Proceedings of Institute of Navigation's 2006 GNSS Meeting*, Fort Worth, TX, September 2006.

19. M.L. Rankin\*, I.J. Gupta and A. O'Brien\*, "Effects of Sampling Rate on STAP-Based RFI Suppression Systems," *Proceedings of IEEE Antennas and Propagation Society's International Symposium*, Albuquerque, NM, July 2006.
20. T.M. Sokol\*, I.J. Gupta and E.H. Newman, "Finite Impulse Response (FIR) Filters to Simulate Response of an Antenna," *Proceedings of IEEE Antennas and Propagation Society's International Symposium*, Albuquerque, NM, July 2006.
21. I.J. Gupta and J.A. Ulrey\*, "Optimum Element Distribution for Circular Adaptive Antenna Systems," *Proceedings of Institute of Navigation's 2006 National Technical Meeting*, Monterey, CA, January 2006.
22. I.J. Gupta, E.H. Newman, C.-C. Chen, W.D. Burnside and J.D. Krieger\*, "A Novel Method for Antenna Gain and Phase Calibration," *Antenna Measurement Techniques Association Annual Meeting*, New Port, RI, October - November 2005.
23. I.J. Gupta, J.A. Ulrey\* and E.H. Newman, "Antenna Element Bandwidth and Adaptive Array Performance," *IEEE Antennas and Propagation Society International Symposium*, Washington, D.C., July 2005.
24. T.-H. Lee, I.J. Gupta, W.D. Burnside, A.J. Fenn\*\*\* and G. Somers\*\*\*, "Rolled Edge Reflector for MIT Lincoln Laboratory New Compact Range," *Antenna Measurement Techniques Association's 26 Annual Symposium – AMTA '2004*, Stone Mountain, GA, October 2004.
25. I.J. Gupta, W.D. Burnside, J.F. Lee and R. C. Flippo\*\*\*, "A Novel Structure for Accurate Measurements of Antenna Mounted on Ground Planes," *Antenna Measurement Techniques Association's 25<sup>th</sup> Annual Symposium – AMTA'2003*, Irvine, CA, October 2003.
26. I.J. Gupta and S.W. Ellingson, "Adaptive Antenna Research at the ElectroScience Laboratory," *Proc. of IEEE Antennas and Propagation Society's International Symposium*, Vol. 4, pp. 590-593, Columbus, OH, June 2003.
27. I.J. Gupta and T.D. Moore\*, "Space Frequency Adaptive Processing (SFAP) for RFI Mitigation in Spread Spectrum Receivers," *Proc. of IEEE Antennas and Propagation Society's International Symposium*, Vol. 4, pp. 172-175, Columbus, OH June 2003.
28. T.D. Moore\* and I.J. Gupta, "The Effect of Interference Power and Bandwidth on Space-Time Adaptive Processing," *Proc. of IEEE Antennas and Propagation Society's International Symposium*, Vol. 1, pp. 53-56, Columbus, OH June 2003.
29. I.J. Gupta, "Time Domain Near Field Focusing to Map Stray Signals in Spherical Ranges," *Antenna Measurement Techniques Association's 24<sup>th</sup> Annual Symposium – AMTA '2002*, Cleveland, OH, November 2002.
30. I.J. Gupta and W.D. Burnside, "Performance of an Experimental Outdoor RCS Range with R-Card Fences," *Antenna Measurement Techniques Association's 23<sup>rd</sup> Annual Symposium – AMTA '2001*, Denver, CO, October, 2001.
31. I.J. Gupta, "Stray Signal Source Location in Antenna/RCS Ranges," *Proc. of IEEE Antennas and Propagation Society's International Symposium*, Boston, MA, Vol. 4, pp. 424-427, July 2001.



32. J.T. Johnson, R.J. Burkholder and I.J. Gupta, "Comparison of Monostatic and Bistatic Radar Images," *Proc. of IEEE Antennas and Propagation Society's International Symposium*, Boston, MA, Vol. 4, pp. 281-284, July 2001.
33. T.D. Moore\* and I.J. Gupta, "Comparison of SFAP and STAP for Interference Suppression in GPS Receivers," *Proc. of ION's Annual Meeting*, Albuquerque, NM, June 2001.
34. I.J. Gupta and T.D. Moore\*, "Space-Frequency Adaptive Processing (SFAP) for Interference Suppression in GPS Receivers," *Proc. of ION National Technical Meeting*, Long Beach, CA, pp 377-385, January 2001.
35. I.J. Gupta, W.D. Burnside and R.N. Silz, "Performance of a Well Designed Rolled Edge Compact Range System," *Antenna Measurement Techniques Association's 22<sup>nd</sup> Annual Symposium – AMTA '2000*, Philadelphia, PA, November 2000.
36. I.J. Gupta and T.D. Moore\*, "Calibration of Range Probe Data for Stray Signal Analysis," *Antenna Measurement Techniques Association's 22<sup>nd</sup> Annual Symposium – AMTA '2000*, Philadelphia, PA, November 2000.
37. I.J. Gupta and T.D. Moore\*, "Time Domain Processing of Range Probe Data for Stray Signal Analysis," *Antenna Measurement Techniques Association's 21<sup>st</sup> Annual Symposium - AMTA '99*, Monterey, CA, October 1999.
38. S. Nag\*\*, LO. Peters, Jr., I.J. Gupta and C.C. Chen, "Ramp Response Signatures for the Detection of Anti-Personnel Mines," *SPIE Proceedings on Detection and Remediation Technology for Mines and Mine like Targets III*, vol. 3710, pp. 1313-1322, Orlando, FL April 1999.
39. A. van der Merwe\*, I.J. Gupta and L. Peters, Jr., "A Clutter Reduction Technique for GPR Data from Mine Like Targets," *SPIE Proceedings on Detection and Remediation Technology for Mines and Mine like Targets III*, vol. 3710, pp. 1094-1105, Orlando, FL, April 1999.
40. I.J. Gupta, A. van der Merwe\* and C.-C. Chen, "Extraction of Complex Resonances Associated with Buried Targets," *SPIE Proceedings on Detection and Remediation Technology for Mines and Mine like Targets III*, vol. 3710, pp. 1094-1105, Orlando, FL April 1998.
41. I.J. Gupta and A. Gandhe\*, "Comparison of Various Enhanced Radar Imaging Techniques," *SPIE Proceeding on Algorithm for Synthetic Aperture Radar Imagery V*, vol. 3370, pp. 250-260, Orlando FL, April 1998.
42. I.J. Gupta, W.D. Burnside, E.K. Walton and J.D. Young, "Some Top-Down Experiments for Range Characterization," *Antenna Measurement Techniques Association's Nineteenth Annual Symposium – AMTA '97*, Boston, MA, November 1997.
43. I.J. Gupta, W.D. Burnside and R. McArthur\*\*\*, "A Technique to Reduce the Scan Length in Near-Field Antenna Measurements," *Antenna Measurement Techniques Association's Nineteenth Annual Symposium – AMTA '97*, Boston, MA, November 1997.

44. I.J. Gupta, W.D. Burnside, B.M. Kent\*\*\*, C.W. Chuang and M.C. Gilreath\*\*\*, "Design and Testing of New Curved Pyramidal Absorber," *Antenna Measurement Techniques Association's Nineteenth Annual Symposium – AMTA '97*, Boston, MA, November 1997.
45. W.D. Burnside, C. Handel\*, C.W. Chuang I.J. Gupta, and B.M. Kent\*\*\*, "Design and Performance of the Absorber Fence for WL Advanced Compact Range Facility," *Antenna Measurement Techniques Association's Nineteenth Annual Symposium – AMTA '97*, Boston, MA, November 1997.
46. A. van der Merwe\*, M.J. Gerry\*\*, L.C. Potter and I.J. Gupta, "Feature Estimation Performance Using a Two-Dimensional Parametric Model of Radar Scattering," (co-authors) *SPIE Proceedings on Algorithm for Synthetic Aperture Radar Imagery IV*, vol. 3070, pp. 322-333, Orlando, FL, April 1997.
47. I.J. Gupta, W.D. Burnside and E.K. Walton, "Time and Direction of Arrival Estimation of Stray Signals in a RCS/Antenna Range," *Antenna Measurement Techniques Association's Eighteenth Annual Symposium – AMTA '96*, Seattle, WA, October 1996.
48. I.J. Gupta, W.D. Burnside, E.K. Walton and J.D. Young, "A Top-Down versus Bottom-Up RCS Range Certification Approach," *Antenna Measurement Techniques Association's Eighteenth Annual Symposium – AMTA '96*, Seattle, WA, October 1996.
49. I.J. Gupta and A. Gandhe\*, "Comparison of Radar Imaging Using Data Extrapolation and Adaptive FIR Filters," *Antenna Measurement Techniques Association's Eighteenth Annual Symposium – AMTA '96*, Seattle, WA, October 1996.
50. I.J. Gupta and A. van der Merwe\*, "Compact Range Evaluation at Low Frequencies," *Antenna Measurement Techniques Association's Seventeenth Annual Symposium – AMTA '95*, Williamsburg, VA, October 1995.
51. M. Gerry\*\* and I.J. Gupta, "Analysis of Amplitude Dispersion in Radar Scattering Using the MUSIC Algorithm," *Antenna Measurement Techniques Association's Seventeenth Annual Symposium – AMTA '95*, Williamsburg, VA, October 1995.
52. E. Walton, L.Cai\*\* and I.J. Gupta, "Inverse Synthetic Aperture Imaging Studies of a Ship at X-Band," *Antenna Measurement Techniques Association's Seventeenth Annual Symposium – AMTA '95*, Williamsburg, VA, October 1995.
53. W. Odendaal\*\*\*, I.J. Gupta, and E.K. Walton, "Enhanced High Resolution Radar Imaging," *Antenna Measurement Techniques Association's Sixteenth Annual Symposium – AMTA '94*, Long Beach, CA, October 1994.
54. I.J. Gupta, M. Tu\* and E.K. Walton, "Application of ML Estimation to Radar Imaging," *Antenna Measurement Techniques Association's Sixteenth Annual Symposium – AMTA '94*, Long Beach, CA, October 1994.
55. I.J. Gupta and W.D. Burnside, "An Ultra Low Sidelobe Antenna Measurement Error Correction Technique," *Antenna Measurement Techniques Association's Sixteenth Annual Symposium – AMTA '94*, Long Beach, CA, October 1994.

56. I.J. Gupta and M. Beals\*, "High Resolution Radar Imaging Using Data Extrapolation," *Antenna Measurement Techniques Association's Fifteenth Annual Symposium – AMTA '93*, Dallas, TX, October 1993.
57. E.K. Walton, I.J. Gupta, M. Tu\* and A. Moghaddar\*, "Super Resolution Radar Target Imaging of Realistic Targets," *Antenna Measurement Techniques Association's Fourteenth Annual Symposium – AMTA '92*, Columbus, OH, October 1992.
58. A. Moghaddar\* and I.J. Gupta, "High Resolution radar Imaging Using Parametric Modeling and Data Extrapolation," *Antenna Measurement Techniques Association's Fourteenth Annual Symposium – AMTA '92*, Columbus, OH, October 1992.
59. I.J. Gupta, S. Suleiman\* and W.D. Burnside, "Estimation of RMS Surface Error in Compact Range Reflectors," *Antenna Measurement Techniques Association's Fourteenth Annual Symposium – AMTA '92*, Columbus, OH, October 1992.
60. T. Clark\*\*, T. Lee, W.D. Burnside, I.J. Gupta, "Imaging Stray Signals in a Compact Range Using a Diagonal Flat Plate," *Antenna Measurement Techniques Association's Thirteenth Annual Symposium – AMTA '91*, Boulder, CO, October 1991.
61. I.J. Gupta, "Performance of Super Resolution Techniques in Imaging Compact Range Probe Data," *Antenna Measurement Techniques Association's Thirteenth Annual Symposium – AMTA '91*, Boulder, CO, October 1991.
62. I.J. Gupta and P.A. Beyerle\*, "A Resistive Edge Treated Gregorian Subreflector for a Dual Chamber Compact Range Measurement System," *IEEE AP-S 1991 International Symposium*, London, Ontario, June 1991.
63. I.J. Gupta, "Imaging the Compact Range Probe Data Using MUSIC Algorithm," *International Conference on Millimeter Wave and Microwave*, Dehra Dun, India, December 1990.
64. I.J. Gupta and W.D. Burnside, "Imaging the Compact Range Probe Data," *Antenna Measurement Techniques Association's Twelfth Annual Symposium – AMTA '90*, Philadelphia, PA, October 1990.
65. P. Joseph\*\*, R. Mariano\*, W. D. Burnside and I.J. Gupta, "Analysis of Absorber Scattering in Compact Range Measurement System," *Antenna Measurement Techniques Association's Twelfth Annual Symposium – AMTA '90*, Philadelphia, PA, October 1990.
66. I.J. Gupta, D. Brown\*, W. Lin and W. D. Burnside, "Serrate Edge Gregorian Subreflector for Use in Dual Chamber Compact Range Systems," *Antenna Measurement Techniques Association's Twelfth Annual Symposium – AMTA '90*, Philadelphia, PA, October 1990.
67. I.J. Gupta and W.D. Burnside, "Compact Range Measurement System for Electrically Small Targets," *Antenna Measurement Techniques Association's Twelfth Annual Symposium – AMTA '90*, Philadelphia, PA, October 1990.

68. I.J. Gupta, K. Steadman\* and E. K. Walton, "Performance of Modified Feedback Loop Adaptive Array with TVRO Satellite Signals," *IEEE AP-S 1990 International Symposium*, Dallas, TX, May 1990.
69. Z. Al-Hekail\*, W.D. Burnside and I.J. Gupta, "Scattering from Thin Dielectric Straps Surrounding a Perfectly Conducting Structure," *Antenna Measurement Techniques Association's Eleventh Annual Symposium – AMTA '89*, Monterey, CA, October 1989.
70. I.J. Gupta and W.D. Burnside, "Scattered Fields of Metallic Tapes Used to Cover Gaps in Compact Range Reflectors," *Antenna Measurement Techniques Association's Eleventh Annual Symposium – AMTA '89*, Monterey, CA, October 1989.
71. I.J. Gupta and R.J. Mariano\*, "Analysis of Serrated Edge Compact Range Reflectors," *Antenna Measurement Techniques Association's Eleventh Annual Symposium – AMTA '89*, Monterey, CA, October 1989.
72. S. W. Ellingson\*, I.J. Gupta and W. D. Burnside, "Analysis of Blended Rolled Edge Reflectors Using Numerical UTD," *Antenna Measurement Techniques Association's Eleventh Annual Symposium – AMTA '89*, Monterey, CA, October 1989.
73. I.J. Gupta and W.D. Burnside, "A Method to Remove GO and Cross-Polarization Errors from Compact Scattering Measurements," *IEEE AP-S 1989 International Symposium*, San Jose, CA, June 1 1989.
74. B. Taute\*, I.J. Gupta and W. D. Burnside, "Envelope Radar Cross Section Analysis of Faired Composite Bodies," *IEEE AP-S 1989 International Symposium*, San Jose, CA, June 1989.
75. I.J. Gupta and R.L. Dilsavor\*, "An Experimental SMI Adaptive Antenna Array for Weak Interfering Signals," *IEEE AP-S 1989 International Symposium*, San Jose, CA, June 1989.
76. A. Dominek, I.J. Gupta and W. D. Burnside, "A Novel Approach for Two- and Three-Dimensional Imaging," *Antenna Measurement Techniques Association's Tenth Annual Symposium – AMTA '88*, Atlanta, GA, September 1988.
77. I.J. Gupta, K. Ericksen\* and W. D. Burnside, "Design of Blended Rolled Edge for Arbitrary Rim Shape Compact Range Reflectors," *Antenna Measurement Techniques Association's Tenth Annual Symposium – AMTA '88*, Atlanta, GA, September 1988.
78. E. K. Walton, I.J. Gupta, J. Ward\* and A.A. Ksienski, "Hardware Simulation of an Adaptive Array with Low Level Interference," *Antenna Measurement Techniques Association's Ninth Annual Symposium – AMTA '87*, Seattle, WA, September-October 1987.
79. B.J.E. Taute\*, W.D. Burnside and I.J. Gupta, "The Effect of Mechanical Discontinuities on the Performance of Compact Range Reflectors," *Antenna Measurement Techniques Association's Ninth Annual Symposium – AMTA '87*, Seattle, WA, September-October 1987.

80. I.J. Gupta, W.D. Burnside and C.W.I. Pistorius\*\*, "Design of Blended Rolled Edge for Compact Range Reflectors," *Antenna Measurement Techniques Association's Ninth Annual Symposium – AMTA '87*, Seattle, WA, September-October 1987.
81. I.J. Gupta and W.D. Burnside, "A Numerical Method to Compute Diffraction from Blended Surfaces," *IEEE AP-S 1987 International Symposium*, Blacksburg, VA, June 1987.
82. W. D. Burnside, R. C. Rudduck, I.J. Gupta and J. Clerici\*\*, "Electromagnetic Performance Study of Scientific-Atlanta's New Compact Range Reflector," *Antenna Measurement Techniques Association's Eighth Annual Symposium – AMTA '86*, Ottawa, Canada, September 1986.
83. I.J. Gupta, "Transient Response of Adaptive Antenna Arrays to Wideband Jammers," *IEEE Global Telecommunication Conference – GLOBECOM '84*, Atlanta, GA, November, 1984
84. I.J. Gupta and A.A. Ksienski, "Prediction of Adaptive Array Performance," *IEEE Military Communication Conference – MILCOM '82*, Boston, MA, October 1982.

### **Conference Abstracts**

1. A. Svendsen\* and I.J. Gupta, "Effects of Rotor Modulation on the Nulling Performance of GNSS Adaptive Antennas," *Proceedings of Joint Navigation Conference*, Orlando, FL, June 2009.
2. I.J. Gupta, C. Slick\* and J. Duly\*, "Performance of GPS Adaptive Antennas Under Emerging Threats," *ION 2007 Annual Meeting*, classified session, Harvard, MA, April 2007.
3. C.D. Slick\* and I.J. Gupta, "Non-Planar Adaptive Antennas for GPS Receivers," *2007 Joint Navigation Conference*, Orlando, FL, March 2007.
4. A. O'Brien\* and I.J. Gupta, "Relationship between Output SINR of GNSS Adaptive Antennas and Receiver C/N Performance," *2007 Joint Navigation Conference*, Orlando, FL, March 2007.
5. I.J. Gupta and C.D. Slick\*, "Multiple Beam Antenna Electronics and Legacy GPS Receivers," *Joint Navigation Conference*, Las Vegas, NV, May 2006.
6. I.J. Gupta and R.T. Compton, Jr., "Diagonal Unloading in AE for Weak Interfering Signals," *Joint Navigation conference*, Las Vegas, NV, May 2006.
7. I.J. Gupta, J.A. Ulrey\* and A. O'Brien\*, "Advanced Antenna Electronics With and Without Beam Forming," *Institute of Navigation 2005 Satellite Navigation Conference (GNSS 2005)*, classified session, Long Beach, CA, September 2005.
8. I.J. Gupta, "Performance of GPS AE in the Presence of Jammer Multipath," *Institute of Navigation (ION) 61<sup>st</sup> Annual Meeting*, classified session, Cambridge, MA, June 2005.
9. I.J. Gupta, "Performance of Various Spatial AJ Techniques with a GAS-1 CRPA Mounted on a C-12J Aircraft," *2005 Joint Navigation Conference*, Orlando, FL, April 2005.

10. I.J. Gupta, W.D. Burnside, E.K. Walton and J.D. Young, "Deterministic Error Issues in RCS Range Certification," *NIST 1997 RCS Range Certification Meeting*, Boulder, CO, March 1997.
11. I.J. Gupta, "Radar Imaging at Ohio State University," *Antenna Measurement Techniques Association's 1994 Workshop*, Seattle, WA, June 1994.
12. G. Somers\*\*, I.J. Gupta and P. Pathak, "Electromagnetic Scattering by Metallic Tapes on Paneled Compact Range Reflectors," *URSI Radio Science Meeting*, Dallas, TX, May 1990.
13. I.J. Gupta, "Evaluation of Compact Ranges by Field Probing," *URSI Radio Science Meeting*, Dallas, TX, May 1990.

## Appendix: Research Funding

A list of my research projects for the last fifteen years is given below. Note that research projects with less than \$25K in funding are not listed. Also, research projects where my responsibility is/was less than 25% are not listed.

### Projects as PI

**Project Title:** Collaboration on Navigation Research and Development – Task Order 4

**Sponsor:** Air Force Research Lab, WPAFB, OH

**PI:** Inder J. Gupta

**RF Projects:** 60019953

**Duration:** January 16, 2009 – July 15, 2011

**Total Expected Funding:** \$700,000

**Percentage Responsibility:** 100%

**Comments:** Under this project, we support GPS Wing, LAAFB programs.

**Project Title:** Consortium of Ohio Universities on Navigation and Timekeeping—  
COUNT

**Sponsor:** Various US Industries

**PI:** Inder J. Gupta

**RF Project:** 60012634 and 60014082

**Duration:** October 1, 2006 -- September 30, 2011

**Total Expected Funding:** \$500K

**Percentage Responsibility:** 75%

**Comments:** This is a joint effort with OSU-SPIN Laboratory, Ohio University, Miami University of Ohio and Air Force Institute of Technology. The scope is increasing every year.

**Project Title:** Collaborative Research & Development Effort on Precision  
GPS/EO/Nav/Navigation Fusion – Task Order 1

**Sponsor:** Air Force Research Lab, WPAFB, OH

**PI:** Inder J. Gupta

**Co-PIs:** Dorota Brzezinska and Charles Toth

**RF Projects:** 60018316, 60018508, 60018724 and 6002331

**Duration:** August 15, 2008 – May 31, 2010

**Total Funding:** \$631,821

**Percentage Responsibility:** 50%

**Comments:** This is a joint project between the Ohio State University, Ohio University, and Miami (Ohio) University.

**Project Title:** AFRL Sensor Fellows

**Sponsor:** AFRL/RY (Wright Brother Institute is prime)

**PI:** Inder J. Gupta

**RF Project:** 60014906

**Duration:** September 1, 2007 – June 30, 2010

**Total Funding:** \$159,000.

**Percentage Responsibility:** 100%

**Comments:** This project supports US students as Air Force Fellows.

**Project Title:** EM Range Consortium

**Sponsor:** Various US Industries

**PI:** Inder J. Gupta

**Co-PI:** Jonathan D. Young

**RF Project:** 727723

**Duration:** July 1, 1993 – June 30, 2010

**Total Funding:** \$1,709,919.

**Percentage Responsibility:** 100%

**Comments:** I took over this project about seven years ago. The total funding for this project is about \$100K per year.

**Project Title:** Advanced Reference Technology Research Program for Anti-Jam GPS Antenna System

**Sponsor:** Air Force Research Laboratory (Northrop Grumman is Prime)

**PI:** Inder J. Gupta

**RF Project:** 746089 and 746331

**Duration:** January 1, 2004 – April 27, 2010

**Total Funding:** \$1,031,500.

**Percentage Responsibility:** 100%

**Comments:** None

**Project Title:** Digital Anti-Jam ASIC for Hand-held GPS Receivers

**Sponsor:** Air Force Research Lab, WPAFB, OH (RBS Technologies is Prime)

**PI:** Inder J. Gupta

**RF Project:** 60018270

**Duration:** July 18, 2008 – July 17, 2010

**Total Funding:** \$150,013

**Percentage Responsibility:** 100%

**Comments:** This is Phase II of an Air Force SBIR

**Project Title:** Novel Techniques for Multipath Mitigation in Airborne GPS Receivers

**Sponsor:** NAVAIR, Pax River (Applied EM was Prime)

**PI:** Inder J. Gupta

**RF Project:** 60021819

**Duration:** April 30, 2009 – November 3, 2009

**Total Funding:** \$24,000

**Percentage Responsibility:** 100%

**Comments:** This was Phase I of an Navy SBIR

**Project Title:** SBIR Phase 1 on Topic AF083-159 – Combining Remotely Located GPS Antennas on UAV Platforms



**Sponsor:** Air Force Research Lab, WPAFB, OH (Applied EM was Prime)

**PI:** Inder J. Gupta

**RF Project:** 60019881

**Duration:** January 01, 2009 – September 30, 2009

**Total Funding:** \$30,000

**Percentage Responsibility:** 100%

**Comments:** This is Phase I of an Air Force SBIR

**Project Title:** Non-planar antenna arrays for GPS Receivers

**Sponsor:** NAVAIR, Pax River, MD (Applied EM is Prime)

**PI:** Inder J. Gupta

**RF Project:** 60011018

**Duration:** August 1, 2006 – June 24, 2009

**Total Funding:** \$335K

**Percentage Responsibility:** 100%

**Comments:** This was Phase II of a Navy STTR.

**Project Title:** Phase Characterization of Multi-Element AJ Antennas for GPS Receivers

**Sponsor:** Air Force Office of Scientific Research (AFOSR)

**PI:** Inder J. Gupta

**RF Project:** 60007261

**Duration:** May 15, 2006 – March 31, 2009

**Total Funding:** \$298,863

**Percentage Responsibility:** 100%

**Comments:** None

**Project Title:** Small CRPA with Advanced Antenna Electronics for Anti-Jam GPS Antenna Systems

**Sponsor:** Office of Naval Research (ONR)

**PI:** Inder J. Gupta

**Co-PI:** John L. Volakis and Chi-Chih Chen

**RF Project:** 746081 and 60003157

**Duration:** June 15, 2004 – January 1, 2008

**Total Funding:** \$931,578.

**Percentage Responsibility:** 60%

**Comments:** Under this project we developed a reduced size adaptive antenna array for GPS receivers, and evaluated the performance of the antenna on an F-18 aircraft. For three interfering signals, the antenna array performed as well as the current GPS adaptive antenna arrays which are approximately three times the reduced size antenna array in linear dimensions.

**Project Title:** Digital Anti-Jam Processing ASIC for handheld GPS Receivers

**Sponsor:** US Air Force (RBS Technologies was prime)

**PI:** Inder J. Gupta

**RF Project:** 60013601

**Duration:** June 20, 2007 – March 20, 2008

**Total Funding:** \$30K

**Percentage Responsibility:** 100%

**Comments:** This was Phase I of a SBIR. We have been selected for Phase II effort, and the sub-project has been awarded to OSURF.

**Project Title:** Technical Support for LEGAND and WASPS Programs

**Sponsor:** Wyle Laboratories, Dayton , OH

**PI:** Inder J. Gupta

**RF Project:** 60011605

**Duration:** January 31, 2007 – December 31, 2007

**Total Funding:** \$25K

**Percentage Responsibility:** 100%

**Comments:** These two programs are flagship program of AFRL/RYRN.

**Project Title:** Low Frequency Antenna Test Facility Design

**Sponsor:** Raytheon, Tucson, AZ

**PI:** Inder J. Gupta

**Co-PI:** Teh-Hong Lee

**RF Project:** 60011146

**Duration:** November 1, 2006 – September 15, 2007

**Total Funding:** \$30K

**Percentage Responsibility:** 50%

**Comments:** None

**Project Title:** Reflector Probing at BATC Range

**Sponsor:** IAM Systems, Dayton, OH

**PI:** Inder J. Gupta

**Co-PI:** Teh-Hong Lee

**RF Project:** 60008024

**Duration:** February 17, 2006 – October 31, 2006

**Total Funding:** \$33K

**Percentage Responsibility:** 40%

**Comments:** None

**Project Title:** Antenna Bias research for Navy SRGPS

**Sponsor:** US Navy (ARINC was Prime)

**PI:** Inder J. Gupta

**RF Project:** 60007767

**Duration:** February 01, 2006 – September 30, 2006

**Total Funding:** \$115K

**Percentage Responsibility:** 100%

**Comments:** This work is related to Joint Precision Approach and Landing Systems Program of DoD.

**Project Title:** Non-Planar Antenna Arrays for GPS receivers

**Sponsor:** NAVAIR, Pax River, MD (Applied EM was Prime)

**PI:** Inder J. Gupta

**RF Project:** 60005799

**Duration:** August 01, 2005 – August 31, 2006

**Total Funding:** \$50K

**Percentage Responsibility:** 100%

**Comments:** This was Phase I of a Navy STTR. We were selected for Phase II effort, and are working on Phase II project now.

**Project Title:** Design Analysis of a Compact Range Blended Rolled Edge Reflector

**Sponsor:** Orbit/FR

**PI:** Inder J. Gupta

**Co-PI:** Teh-Hong Lee

**RF Project:** 60002093

**Duration:** October 1, 2004 – December 12, 2005

**Total Funding:** \$25K

**Percentage Responsibility:** 50%

**Comments:** None

**Project Title:** Multipath Analysis for JPALS SRGPS

**Sponsor:** US Navy (ARINC was the Prime)

**PI:** Inder J. Gupta

**RF Project:** 746624

**Duration:** April 01, 2004 – January 30, 2006

**Total Expected Funding:** \$135,970

**Percentage Responsibility:** 100%

**Comments:** None

**Project Title:** MIT – Lincoln Laboratory Scholar Program

**Sponsor:** MIT – Lincoln Laboratory

**PI:** Inder J. Gupta

**RF Project:** 745851

**Duration:** October 01, 2003 – March 31, 2004

**Total Funding:** \$27,711

**Percentage Responsibility:** 100%

**Project Title:** Advanced Concept Exploration for Multipath Characterization in Anti-Jam GPS Antenna Systems

**Sponsor:** Air Force Material Command (Northrop Grumman was Prime)

**PI:** Inder J. Gupta

**RF Project:** 744074 and 744269

**Duration:** November 11, 2002 – December 31, 2003

**Total Funding:** \$408K

**Percentage Responsibility:** 100%

**Comments:** None

**Project Title:** Aircraft Cabin Wireless System Study

**Sponsor:** Matrx Corporation  
**PI:** Inder J. Gupta  
**Co-PI:** S.W. Ellingson  
**RF Project:** 744073  
**Duration:** December 1, 2002 to October 31, 2004  
**Total Funding:** \$457,500  
**Percentage Responsibility:** 30%  
**Comments:** None

**Project Title:** GPS STAP/SFAP Evaluation and Study  
**Sponsor:** Air Force Materials Command  
**PI:** Inder J. Gupta  
**RF Project:** 741718  
**Duration:** September 06, 2001 – April 15, 2003  
**Total Funding:** \$225K  
**Percentage Responsibility:** 100%  
**Comments:** None

**Project Title:** Electromagnetic Fence Study  
**Sponsor:** FMV, Sweden  
**PI:** Inder J. Gupta  
**Co-PI:** Teh-Hong Lee  
**RF Project:** 743827  
**Duration:** August 01, 2002 – April 03, 2003  
**Total Funding:** \$45K  
**Percentage Responsibility:** 50%  
**Comments:** None

**Project Title:** Specification Definition and Quote Evaluation for a Compact Range  
**Sponsor:** Applied Composites AB, Sweden  
**PI:** Inder J. Gupta  
**RF Project:** 743807  
**Duration:** October 01/2002 – March 31, 2003  
**Total Funding:** \$21K  
**Percentage Responsibility:** 100%

**Project Title:** Development of STAP and SFAP for GPS Interference Suppression  
**Sponsor:** Georgia Tech Research Institute  
**PI:** Inder J. Gupta  
**RF Project:** 741074  
**Duration:** May 09, 2001 – March 31, 2002  
**Total Expected Funding:** \$105K  
**Percentage Responsibility:** 100%  
**Comments:** None

**Project Title:** Multipath Parameter Estimation for TDOA Receivers  
**Sponsor:** Lockheed Martin, Owego, NY

**PI:** Inder J. Gupta  
**RF Project:** 739225  
**Duration:** April 15, 2000 – June 30, 2001  
**Total Funding:** \$146,879  
**Percentage Responsibility:** 100%  
**Comments:** None

**Project Title:** Smart Antenna Array Processing for 3G Wideband CDMA Mobile System  
**Sponsor:** ETRI, South Korea  
**PI:** Inder J. Gupta  
**Co-PI:** S.W. Ellingson  
**RF Project:** 738600  
**Duration:** November 1, 1999 – December 31, 2001  
**Total Funding:** \$276,779  
**Percentage Responsibility:** 40%  
**Comments:** None

**Project Title:** Feature Extraction – GPS AJ Techniques  
**Sponsor:** Air Force Materials Command  
**PI:** Inder J. Gupta  
**RF Project:** 737661  
**Duration:** June 4, 1999 – September 05, 2001  
**Total Funding:** \$159,985  
**Percentage Responsibility:** 100%  
**Comments:** None

**Project Title:** TDOA Multipath Mitigation Study  
**Sponsor:** Lockheed Martin, Owego, NY  
**PI:** Inder J. Gupta  
**RF Project:** 737379  
**Duration:** April 1, 1999 to March 31, 2000  
**Total Funding:** \$115,952  
**Percentage Responsibility:** 100%  
**Comments:** None

**Project Title:** Spatial Processing for Multipath Mitigation in a TDOA Receiver  
**Sponsor:** Lockheed Martin, Owego, NY  
**PI:** Inder J. Gupta  
**RF Project:** 735573  
**Duration:** March 16, 1998 – April 30, 1999  
**Total Funding:** \$118,492  
**Percentage Responsibility:** 100%  
**Comments:** None

**Project Title:** Data Collection Support for TDOA Multipath Mitigation Study  
**Sponsor:** Lockheed Martin, Owego, NY

**PI:** Inder J. Gupta  
**Co-PI:** J.D. Young  
**RF Project:** 735820  
**Duration:** June 1, 1998 – December 31, 1998  
**Total Funding:** \$75,257  
**Percentage Responsibility:** 30%  
**Comments:** None

**Project Title:** Combined Signal/Spatial Processing for Interference Suppression in a GPS Receiver

**Sponsor:** GPS Joint Program Office (Lockheed Martin was Prime)

**PI:** Inder J. Gupta

**RF Project:** 735573

**Duration:** March 16, 1998 – January 31, 1999

**Total Funding:** \$118,492

**Percentage Responsibility:** 100%

**Comments:** None

**Project Title:** Study of Adaptive Performance of a F-16 GPS CRPA

**Sponsor:** Lockheed Martin Federal Systems, Owego, NY

**PI:** Inder J. Gupta

**RF Project:** 735360

**Duration:** January 28, 1998 – July 31, 1998

**Total Funding:** \$34,992

**Percentage Responsibility:** 100%

**Comments:** None

**Project Title:** TDOA Multipath Mitigation Study

**Sponsor:** Lockheed Martin federal Systems, Owego, NY

**PI:** Inder J. Gupta

**RF Project:** 734669

**Duration:** August 15, 1997 – December 31, 1997

**Total Funding:** \$47,100

**Percentage Responsibility:** 100%

**Project Title:** Global Positioning System Interference Suppression Study

**Sponsor:** GPS Joint Program Office (Lockheed Martin was Prime)

**PI:** Inder J. Gupta

**RF Project:** 733255

**Duration:** October 24, 1996 – July 1, 2007

**Total Funding:** \$130,000

**Percentage Responsibility:** 100%

**Comments:** None

**Project Title:** Multidisciplinary Research for Demining – Multi-Resolution Sensing

**Sponsor:** Army Research Office (Duke University was Prime)

**PI:** Inder J. Gupta  
**Co-PI:** Eric K. Walton  
**RF Project:** 733348  
**Duration:** Novemebr 1, 1996 – Novemebr 30, 1999  
**Total Funding:** \$167,509  
**Percentage Responsibility:** 80%  
**Comments:** Dr. Eric Walton was OSU PI on this MURI

**Project Title:** Data Compression and Reconstruction for SAR  
**Sponsor:** ERIM, Ann Arbor, MI  
**PI:** Inder J. Gupta  
**RF Project:** 731520  
**Duration:** July 08, 1995 – September 30, 1998  
**Total Funding:** \$110,427  
**Percentage Responsibility:** 100%  
**Comments:** None

**Project Title:** Adaptive Array Investigation  
**Sponsor:** IBM Corporation, Owego, NY  
**PI:** Inder J. Gupta  
**RF Project:** 728385  
**Duration:** September 10, 1993 – October 15, 1994  
**Total Funding:** \$25K  
**Percentage Responsibility:** 100%  
**Comments:** None

**Project Title:** Superresolution Image Processing  
**Sponsor:** US Air Force  
**PI:** Inder J. Gupta  
**Co-PI:** Walter D. Burnside  
**RF Project:** 727257  
**Duration:** February 02, 1993 February 16, 2004  
**Total Funding:** \$38,139  
**Percentage Responsibility:** 90%  
**Comments:** None

### **Projects as Co-PI**

**Project Title:** Additional Work on Feature Extraction  
**Sponsor:** Air Force Material Commands  
**PI:** Walter D. Burnside  
**Co-PI:** Inder J. Gupta  
**RF Project:** 742761  
**Duration:** May 28, 2002 – May 28, 2003  
**Total Funding:** \$100K  
**Percentage Responsibility:** 35%

**Comments:** None

**Project Title:** Design and Analysis of Northrop, Perry Compact Range

**Sponsor:** Quick Reaction Corporation, Gilroy, CA

**PI:** Eric K. Walton

**Co-PI:** Inder J. Gupta

**RF Project:** 729003

**Duration:** April 15, 1994 – December 31, 1994

**Total Funding:** \$45,000

**Percentage Responsibility:** 40%

**Comments:** None

**Project Title:** Imaging of the NASA Lewis Probe Data

**Sponsor:** NASA- Lewis Research Center

**PI:** Walter D. Burnside

**Co-PI:** Inder J. Gupta

**RF Project:** 727624

**Duration:** June 01, 1993 – December 31, 1994

**Total Funding:** \$25,041

**Percentage Responsibility:** 50%

**Comments:** None

**Project Title:** Autoregressive Imaging Research

**Sponsor:** Hughes Aircraft Company, El Segundo, CA

**PI:** Eric K. Walton

**Co-PI:** Inder J. Gupta

**RF Project:** 727721

**Duration:** July 1, 1993 – March 15, 1996

**Total Funding:** \$315,307

**Percentage Responsibility:** 40%

**Comments:** None