

## CURRICULUM VITAE

**1. NAME:** Anoop Chawla

**2. CURRENT POSITION and ADDRESS:**

Henry Ford Chair and Professor,  
Department of Mech. Engineering  
Indian Institute of Technology,  
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**3. PERMANENT ADDRESS:**

c/o Shri MM Chawla.  
A 491, Shahpura  
Bhopal 462016, INDIA

**4. DATE OF BIRTH:** 28th August, 1964.

**5. ACADEMIC QUALIFICATIONS:**

1. PhD, Indian Institute of Technology Kanpur, 1993, Broad Area / Keywords: *Artificial Intelligence, Model based reasoning*, Topic of the thesis: *Model Building Approach to configurational design: Relating multilevels of knowledge*, Under the supervision of: Prof R Sangal, Department of Computer Science and Engineering.
2. Btech (Mechanical Engineering), Indian Institute of Technology, Delhi, 1985 CGPA 9.49 on a 10 pt scale.

**6. WORK EXPERIENCE:**

1. Professor, Department of Mechanical Engineering, Indian Institute of Technology Delhi, Hauzkhas, New Delhi, October 2006 onwards.
2. Associate Professor, Department of Mechanical Engineering, Indian Institute of Technology Delhi, Hauzkhas, New Delhi, January 2000 to October 2006.
3. Visiting Faculty, Department of Computer Science and Engineering, University of Illinois at Urbana Champaign, Aug 1999 to December 1999.
4. Assistant Professor, Department of Mechanical Engineering, Indian Institute of Technology Delhi, Hauzkhas, New Delhi, May 1993 to January 2000.
5. Assistant Engineer, at the CAD unit of Tata Iron and Steel Co Ltd, Jamshedpur, from July 1985 to December 1990.

## **6A. Administrative Experience**

1. Incharge, Design Group, Mechanical Engineering Department. 2007 onwards
2. Program coordinator, Mtech (Design of Mechanical Equipment), 2002-2005.
3. In charge of various labs in Dept of Mech Engg, IIT Delhi.
4. Chairman, Timetabling Committee, IIT Delhi. 1998-1999.
5. Secretary Faculty Board, Mech Engg Dept., IIT Delhi. 1997 – 1999.
6. President, Mechanical Crasfts Society, IIT Delhi, 1996 – 1999.
7. Chairman, Grades and Registration, IIT Delhi, 1996 – 1998.
8. Member Library Computerization Minotoring Committee, IIT Delhi, -96
9. Sectretary, Department Research Committee, ME Dept IIT Delhi. 1995 - 1997.
10. Warden, Karakoram Hostel, IIT Delhi, 1995 - 1998

## **7. AREAS OF INTEREST:**

My areas of interest include Impact Biomechanics, Modeling in CAD / CAM / CAE, Artificial Intelligence, Computer Graphics and Design Methodology, and. Some of the detailed topics are as follows:

1. Impact Biomechanics, FE Modeling of the human body under dynamic conditions, Modeling of vehicles for safety in crashes.
2. Modeling in CAD / CAM / CAE: Modeling using Finite elements and rigid body dynamics, Computer integrated manufacturing, Design Methodology.
3. Computer Graphics and related areas: Surface and solid modeling Computational geometry, and Computer aided design.
4. Artificial Intelligence related areas: Knowledge based systems, Model based reasoning, Knowledge acquisition, Machine learning, object oriented programming, Knowledge Based systems applications in engineering (in design, in engineering diagnostics, in manufacturing etc).

## **8. MEMBERSHIP OF PROFESSIONAL BODIES:**

- i. Fellow, Institution of Engineers, India
- ii. Fellow, Institute of Electronics and Telecommunication Engineers of India.
- iii. Member, Americal Society of Mechanical Engineers
- iv. Member, Society of Automotive Engineers
- v. Member Indian Society of Mechcnical Engineers(ISME)
- vi. Editor, Indian Journal of Biomechanics

## **9. COURSES TAUGHT:**

### Undergraduate Level:

- i. Computer Aided Mechanical Design (Btech ME elective, 400 level)
- ii. Knowledge Based Systems Applications in Mechanical Engineering (Btech ME / MF elective, 400 level)
- iii. Computer Integrated Manufacture (shared) (Btech MF core, 400 level)

- iv. Machine Design (shared) (Btech ME core, 300 level)
  - v. Machine Design Lab (shared) (Btech ME core, 300 level)
  - vi. Mechanical Vibrations (shared) (Btech ME / MF elective, 400 level)
  - vii. Instrumentation and Control, (Btech ME core, 300 level)
  - viii. Graphic Science (I & II), (shared) (Btech all disciplines, core, 100 level)
  - ix. Machine Design (Core for ME and PF, 200 level)
  - x. Computer Graphics (300 level, for Computer Science and other engineering students at the University of Illinois at Urbana Champaign)
  - xi. File Systems (300 level, for non-Computer Science students at the University of Illinois at Urbana Champaign)
- (ME: Mechanical Engineering; MF: Manufacturing Science and Engineering)

Post Graduate level:

- i. Computer Graphics (Mtech equiv, Advanced level course in Computer science organized by Institute of Electronics and Telecommunication Engineers, India)
- ii. Artificial Intelligence (Mtech equiv, Advanced level course in Computer science organized by Institute of Electronics and Telecommunication Engineers, India)
- iii. Computer Aided Mechanical Design (core course of MTech- Design of Mechanical Equipment).
- iv. Computer Graphics (for Computer Science and other engineering students at the University of Illinois at Urbana Champaign)
- v. File Systems (for non-Computer Science students at the University of Illinois at Urbana Champaign)

Industry oriented courses

- i. An Introduction to Finite Elements (shared)
- ii. CAD / CAM (shared)
- iii. Vehicle Crashworthiness and Safety Standards (shared)
- iv. International course on prevention and control of traffic accidents and injuries (Selected lectures on use of computer modeling for safe design of vehicles)
- v. Training in CAD / CAM / CAE using Pro/Engineer.
- vi. Co-coordinator of QIP course on CAD

**10. INFRASTRUCTURE DEVELOPMENT RELATED WORK:**

- i. Setup a new lab for work in the area of vehicle crash simulation.
- ii. Set up a new lab for work in the area of “AI / Simulation / Robotics / CAD / CAM”
- ii. Set up a new lab for teaching CAD / Computer Graphics to over 85 persons simultaneously : Computer Aided Graphics Instruction Lab.

**11. CONFERENCES / SEMINARS / WORKSHOPS ORGANIZED:**

- i. Member Program Committee, 3<sup>rd</sup> Indian International Conference on Artificial Intelligence (IICAI-07) to be held in Pune in December 2007
- ii. Member Review Committee, International Conference on Cognitive Systems, held in New Delhi December 2005.

- iii. Member National Advisory Committee and Review Committee, Advances in Mechanical Engineering Conference, held at Jamia Millia Islamia, January 2006.
- iv. Member Organizing Committee, National Conference of machines and mechanisms, NACOMM, December 2003.
- v. Co-coordinator of QIP course on CAD, December 1997.
- vi. Member Organizing Committee, 11<sup>th</sup> ISME Conference, 3-5<sup>th</sup> February, 1999, IIT New Delhi.
- vii. Member Organizing Committee, Indian Conference on Computer Vision, Graphics and Image Processing, December 21-23 1999, IIT New Delhi.
- viii. Organized a "Technology Appreciation Seminar in CAD" on October 10, 1998.
- ix. Vice chairman of the 4th AI in Design Conference held at Lisbon, Portugal, from 20-23 July 1998.
- x. Member, Organizing Committee, IUTAM-IITD International Winter School on Optimum Dynamic Design (INSODYD), December 15-19, 1997, IIT Delhi.
- xi. Vice chairman of the 3rd AI in Design Conference held at Stanford, USA, from 24-27 June 1996.
- xii. Member of advisory committee of the 2nd AI in Design Conference held at CMU, Pittsburg, in June 1994.
- xiii. Coordinator of workshop on "Systems approach to manufacturing competitiveness - Scope for Industry Institute interaction", Department of Mechanical Engineering, IIT Delhi, 1994.

## **12. AWARDS WON:**

- i. Jawahar Lal Nehru Memorial Prize given by Institute of Engineers, 2007 for the paper titled "Mechanical Properties of the Human Body Soft Tissues in the Head, Neck and Spine".
- ii. The AICTE career award for young scientists for the year 1998.
- iii. The NK Iyengar memorial medal for the paper titled "Expert System for DFM of Die Cast Components" published in the Institution of Engineers Journal, Vol 78, February 1998.

## **13. LIST OF PATENTS:**

- i. A Folding/Unfolding Transport Container and A Method of Folding and Unfolding a Transport Container (Folding Container), Filed in India. Also filed in USA, EU, China, Japan, Singapore, Hongkong.
- ii. An Apparatus and A Method for Folding and Unfolding a Foldable Transport Container (PCT/IN2008/000157), Filed in India. Also filed in USA, EU, China, Japan, Singapore, Hongkong.
- iii. A folding mechanism for folding flat structures, filed in India.
- iv. Hinge Joint System, Provisional application filed in India.
- v. Locking System for Hinges, Provisional application filed in India.

## 14. LIST OF PUBLICATIONS:

### List of papers in journals: (Accepted / Published)

1. A Soni, A Chawla, S Mukherjee, R Malhotra, Effect of muscle contraction on the lower limb response in low speed car-pedestrian lateral impact - simulations for a walking pedestrian, Vol 14, No 4, International Journal of Crashworthiness, pp 1754-2111
2. S Mukherjee, Chawla A, A road crash reconstruction technique, Vol 91, July 2010, Institute of Engineers Journal, pp 3-8.
3. A Soni, A Chawla, S Mukherjee, R Malhotra, Effect of muscle contraction in high speed car-pedestrian impact - simulations for walking posture, Accepted for International Journal of Vehicle Safety.
4. Jani D, Chawla A, Mukherjee S, Goyal R, Nataraju V, Repositioning the Human Body Lower Extremity FE Model, SAE International Journal of Passenger Cars – Mechanical Systems, Volume 2 No 1, pp 1024-1030, October 2009.
5. Soni A, Chawla A, Mukherjee S, Malhotra R, Response of tonic lower limb FE model in various real life car-pedestrian impact configurations – a parametric study for standing posture, Int. J. Vehicle Safety, Vol. 4, No. 1, 2009, pp 14-28.
6. Soni A, Chawla A, Mukherjee S, Malhora R, Response of lower limb in full scale car-pedestrian low speed lateral impact- Influence of muscle contraction, International Journal of Crashworthiness, Vol. 14, No. 4, August 2009, 339–348.
7. Chawla A, Mukherjee S and Karthikeyan B, Characterization of human passive muscles for impact loads using genetic algorithm and inverse finite element methods, Biomechanics and modelling in mechanobiology, Volume 9, Issue 1, page 67-76.
8. Chawla A, Mukherjee S and Iyer SK, Use of optimization to position dummies in crash simulations, Institute of Engineers Journal, Vol 89, July 2008, pp 42-46.
9. Subhash Wadhwa, Bibhushan, Jitendra Madaan and Anoop Chawla, An object-oriented framework for modelling control policies in a supply chain, Accepted for publication in Int J of Value Chain Mngmt
10. Chawla A, Mukherjee S, Soni A and Malhotra R, Effect of active muscle forces on knee injury risks for pedestrian standing posture at low speed impacts, Vol 9, No. 6, 2008, Traffic Injury and Prevention, pp 544-551.
11. Chawla A, Soni A and Mukherjee S, Effect of active muscles on knee ligament forces during impact, Journal of Biomechanics, Vol 39, Suppl 1, 2006, P-S160.
12. Karthikeyan B, Chawla A and Mukherjee S, Inverse finite element characterization of soft tissues using genetic algorithm, Journal of Biomechanics, Vol 39, Suppl 1, 2006, P-S491.
13. Karthikeyan B, Mukherjee S, Chawla A, Malhotra R, Inverse Finite Element Characterization of Soft Tissues Using Impact Experiments and Taguchi Methods, Transactions Journal of Passenger Cars – Mechanical Systems, SAE 2006, SAE paper No 2006-01-252.

14. Chawla A, Mukherjee S and Snarma A, An algorithm for optimized generation of a finite element mesh for folded airbags, International Journal of Crashworthiness, Vol 10, No 3, 2005, pp 2459-266.
15. Mukherjee S, Chawla A, Karthikeyan B, A review of the mechanical properties of human body soft tissues in the head, neck and spine, Institute of Engineers Journal, Vol 87, November 2006, pp 10-24.
16. Mukherjee S, Chawla A, Karthikeyan B, A review of the mechanical properties of human body soft tissues in the chest, abdomen and upper extremity, Institute of Engineers Journal, Vol 87, November 2006, pp 3-9
17. S. Mukherjee, A. Chawla, J. Jangra, Issues in ALE simulation of airbags, to appear in the International Journal of Crashworthiness??
18. Chawla A, Mukherjee S, Mohan D and Nayak A, Investigating the rollover propensity of a 15 seater mini bus, The International Journal of Vehicle Safety, Vol 2, Nos ½, 2007.
19. Mukherjee S, Chawla A, Nayak A and Mohan D, Rollover crashworthiness of a rural transport vehicle using Madymo, Intenational Journal of Crashworthiness, 2006, Vol 11 No 5, pp 495-503.
20. Mukherjee S, Chawla A, and Iyer SK, Positioning of motorcycle dummies in crash simulations, Intenational Journal of Crashworthiness, Vol 11 No 4, pp337-343, 2006.
21. Mukherjee S, Chawla A, Mohan D, Chandrawat S and Kumar V, Predicting throw distance variations in Bicycle crashes, International Journal of Vehicle Safety, Vol 1, No 4, 2006.
22. Mukherjee S, Chawla A, Karthikeyan B, Soni A, Mohan D, Finite element crash simulations of the human body: Passive and active muscle modeling, Saadhana, Vol 32, No 4, pp 409-426, August 2007
23. Chawla A, Mukherjee S, Chawla A and Mohan D, Motorcycle safety device investigation: A case study on airbags, Saadhana, Vol 32, No 4, pp 427-444, August 2007.
24. Mukherjee S, Gawade T, Chawla A and Mohan D Three-wheeled scooter taxi: A safety analysis, Saadhana, Vol 32, No 4, pp 459-478, August 2007.
25. A. Chawla, Sandeep Kadam, Singh S .P, Dynamic modelling based optimal design of a crash helmet, Computer-Aided Design and Applications, Vol. 3, Nos. 1-4, 2006, to be published, <http://www.cadanda.com>
26. Darpe A K, Gupta K, Chawla A, Dynamics of a Bowed Rotor with a Transverse Surface Crack, accepted for publication in Journal of sound and vibration
27. Chawla A, Mukherjee S, and Sharma A, Development of FE meshes for folded airbags, International Journal of Crashworthiness, 2005, Vol 10, No 3, pp 259-266.
28. Chawla A, Bhosale PV, Mukherjee S, Modeling of Passenger side Airbag mesh, SAE Paper No 2005-26-059.
29. Chawla A, Mukherjee S, Mohan D, Bose D, Rawat P, Nakatani T and Sakurai M, FE Simulations of motorcycle car frontal crashes, validations and observations, International Journal of Crashworthiness, 2005, Vol 10, No 4, pp 319-326.

30. A. Chawla, S. Mukherjee, D. Mohan, Dipan Bose, Prakash Rawat, M. Sakurai, T. Nakatani, FE Simulations of Car – Motor cycle frontal crashes, Jari Research Journal, 2004, Vol 26 No 10, pp 37-43.
31. Chawla A, Mukherjee S and Sharma A, Mesh Generation for folded airbags, Computer Aided Design and Applications, Vol 1 No 1-4, P269-276, 2004.
32. Darpe AK, Gupta K, Chawla A, Transient response and breathing behaviour of a cracked Jeffcott rotor, JOURNAL OF SOUND AND VIBRATION 272 (1-2): 207-243 APR 22 2004
33. Darpe AK, Gupta K, Chawla A, Coupled bending, longitudinal and torsional vibrations of a cracked rotor, JOURNAL OF SOUND AND VIBRATION 269 (1-2): 33-60 JAN 6 2004
34. A.K.Darpe, K.Gupta and A.Chawla, Experimental Investigation of the response of a cracked rotor to periodic axial excitation, Journal of Sound and Vibration, Vol 260 (2003), p 265-286.
35. A.K.Darpe, K.Gupta and A.Chawla, Dynamics of a two crack rotor, Journal of Sound and Vibration, Vol 259, No 3, 2003 pp 229-235.
36. Dileep Kumar, A Chawla, S Mukherjee, T Nakatani and M Ueno, Prediction of Crushing behaviour of honeycomb structures, International Journal of Crashworthiness, Vol 8, No 3, 2003, pp 229-235.
37. J. S. Rao, Ashish K Darpe, A. Chawla, Kapil Bharati, D.A.Roy, C.K. Pithawa, Umesh Chandra, A. Rama Rao, N.P.S. Gill, " Development Of Online Diagnostic System Software For Turbogenerator Set Of Kakrapara Atomic Power Station", Advances in Vibration Engineering, Vol 1, no 4, 2003, p 305-321.
38. AK Darpe, A Chawla and K Gupta, Analysis of the response of a cracked Jeffcott rotor to axial excitation, Vol 249 No 3, Journal of Sound and Vibration, 2002.
39. Rao JS, Pathak A, Chawla A, Blade life: A comparison by cumulative damage theories, JOURNAL OF ENGINEERING FOR GAS TURBINES AND POWER-TRANSACTIONS OF THE ASME 123 (4): 886-892 OCT 2001
40. NAKATANI T, SAKURAI M, CHAWLA A and MUKHERJEE S, A methodology for Motorcycle-vehicle Crash Simulation-Development of Motorcycle Computer Simulation Model, Jari research Journal, Vol.23, No.10, p28-35, 2001
41. Chawla A, Mukherjee, S, Mohan D, Singh M, Sakurai M and Nakatani T, "A Methodology for car – motorcycle crash simulation, Jari Research Journal, 2001, Vol 23, No 2, pp 18-21.
42. A Chawla, Dinesh Mohan, Vivek Sharma and Janusz Kajzer, Safer Truck front design for pedestrian impacts, Journal of crash prevention and injury control, March 2000, Vol 2(1), pp 33-43.
43. KR Bhupal Reddy, D Prasad Raju, S Wadhwa and A Chawla, Applications of Simulated annealing to the cell formation, Industrial Engineering Journal, Vol XXIX, No 8, August 2000, pp 2-26.
44. KR Bhupal Reddy, S Wadhwa and A Chawla, Application of back propagation artificial neural networks in cellular manufacturing, Journal of Production Engineering, Institution of Engineers (I), v80, November 1999, pp.43-46. \*\*\*Awarded Certificate of Merit\*\*\*

45. A Chawla, K Raviraju and Amit Gupta, Expert System for DFM of Die Cast Components, Journal of Mechanical Engineering, Institution of Engineers, India, Vol 78, February 1998.
46. A Chawla, D Mohan and V Sharma, Computer simulation of bus roll over crashes, Indian Journal of Transport Management, March, 1998, Vol. 22(3), pp 135-142.
47. D Mohan, J Kajzer, KS Bawa Bhalla and A Chawla, Impact Modeling Studies for a three wheeled scooter taxi, Journal of Accident analysis and Prevention, Vol 29, No 2, 1997, PP161-170.

#### Submitted

1. Chawla A, Mukherjee S, Hassan AH, Grover V, Ng E, Car Accident Reconstruction and Head Injury Correlation, submitted to Institute of Engineers Journal of India.
2. Soni A, Mukherjee S, Chawla A, Effects of boundary conditions in dynamic tests for pedestrian safety – A FE simulation study, submitted to the International Journal of Vehicle Safety.
3. Soni A, Chawla A, Mukherjee S, Malhotra R, Effect of impactor mass on the response of knee joint during FE simulations, submitted to the Indian Journal of Biomechanics.
4. Mukherjee S, Chawla A, Karthikeyan B, A review of the mechanical properties of human body soft tissues in the lower extremity, **submitted to** the Institute of Engineers Journal
5. Karthikeyan B, Chawla A and Mukherjee S, Malhotra R, Determining strain rate dependency in human muscles by using quasi-static and impact experiments, submitted to the Journal of Biomechanics.
6. Karthikeyan B, Chawla A and Mukherjee S, Malhotra R, Determining strain rate dependency in human muscles by using quasi-static and impact experiments, submitted to the Journal of Biomechanics
7. Karthikeyan B, Chawla A and Mukherjee S, Material Characterization of Soft Tissues Under Impact, Submitted to the International Journal of Vehicle Safety.
8. Mukherjee S, Chawla A, Karthikeyan B, A review of the mechanical properties of human body soft tissues in the lower extremity, **submitted to** the Institute of Engineers Journal

#### List of papers in Conferences: (Accepted / Published)

1. D Jani, A Chawla, S Mukherjee, R Malhotra, R Goyal, R Khatri, N Vusirikala, S Jayaraman, Repositioning the human body fe model at the hip (femuropelvic) joint, IRCOBI 2010.
2. R Marathe, A Chawla, S Mukherjee, R Malhotra, Prediction of lumbar spine posture for repositioning of spinal fe model, IRCOBI 2010
3. A Soni, A Chawla, S Mukherjee, R Malhotra, Lateral bending moment threshold of the knee joint – effects of active muscles, IRCOBI 2010.

4. A Chawla, WJA Mike, S Mukherjee, Predicting Fracture in Human Bones under Impact, World Congress on Biomechanics, 2010.
5. A Soi, A Chawla, S Mukherjee, R Malhotra, Repositioning methodology for fe-hbm pelvis flesh to account for upper extremity posture change, submitted to the SAE World Congress 2011.
6. Mike WJA, S Mukherjee, A Chawla, Reconstructing fracture progression in impact, ESAR Conference 2010.
7. Teja K, S Mukherjee, A Chawla, Elastic response of bones at varying strain rates, ESAR Conference 2010
8. Jain A, Mukherjee S and Chawla A, "Parameter Estimation for a CMM for bones" Proceedings of the 4th National Conference on Instrumentation and Control Engineering ICECON '09, Dec 2009, pg 71-74.
9. A Chawla, S Mukherjee, H Warhatkar, R Malhotra, "Dynamic characterization of bovine medial Collateral ligaments" IRCOBI Conference Proceedings. International Research Council on the Biomechanics of Injury, York, Sep 2009, pp 109-113,
10. Anurag Soni, Anoop Chawla, Sudipto Mukherjee, Rajesh Malhotra, "Effect of muscle contraction in high speed car pedestrian impact –Simulations for walking posture", IRCOBI Conference Proceedings. International Research Council on the Biomechanics of Injury, York, Sep 2009, pp 237-250
11. Dhaval Jani, Anoop Chawla, Sudipto Mukherjee, Rahul Goyal, V Nataraju "Human body FE model repositioning: a step towards posture Specific – human body models (PS-HBM)", IRCOBI Conference Proceedings. International Research Council on the Biomechanics of Injury, York, Sep 2009, pp 327-340
12. Anurag Soni, Anoop Chawla, Sudipto Mukherjee, Rajesh Malhotra "Effect Of Muscle Contraction In Low Speed Car-Pedestrian Impact – Simulations For Walking Posture", 21st ESV, Stuttgart, June 2009, Paper Number 09-0366-O
13. Anurag Soni, Anoop Chawla, Sudipto Mukherjee, Rajesh Malhotra , "Sensitivity Analysis of Muscle Parameters and Identification of Effective Muscles in Low Speed Lateral Impact", Paper 2009-01-1211, SAE World Congress, Detroit, Apr 2009
14. Dhaval Jani, Anoop Chawla, Sudipto Mukherjee, Rahul Goyal, V Nataraju "Repositioning the Human Body Lower Extremity FE Model", Paper 2009-01-0922, SAE World Congress, Detroit, Apr 2009
15. Hemant Warhatkar, Anoop Chawla, Sudipto Mukherjee, Rajesh Malhotra , " Experimental Study of Variation between Quasi-Static and Dynamic Load Deformation Properties of Medial Collateral Knee Ligaments" Paper 2009-01-0392, SAE World Congress, Detroit Apr 2009.
16. Soni, A., Chawla, A., Mukherjee, S and Malhotra R. 2008, "Response of lower extremity in car-pedestrian impact-influence of muscle contraction. IRCOBI Conference Proceedings. International Research Council on the Biomechanics of Injury, Zurich, pp. 469-472.
17. Mukherjee S, Chawla A, Mohan d, Singh M, and Dey R, Effect of Vehicle design on Head Injury Severity and throw distance variations in bicycle crashes,

Proceedings of the Enhanced Safety of Vehicles Conference 2007, Lyon, France, June 2007.

18. Soni A, Chawla A, Mukherjee S, Effect of Muscle Contraction on knee loading for a standing pedestrian in lateral impacts, Proceedings of the Enhanced Safety of Vehicles Conference 2007, Lyon, France, June 2007.
19. Chawla A, Mukherjee S, Soni A, Malhotra R, Effect of active muscle forces on knee injury risks for pedestrian standing posture at low speed impacts, Proceedings of the IRCOBI 2007 conference, September 2007, Masstricht, Holland
20. M. Singh, R. Dey, S. Mukherjee, D. Mohan, A. Chawla, Effect of vehicle design in bicycle frontal crashes, Proceedings of the IRCOBI 2007 conference, September 2007, Masstricht, Holland
21. Chawla A, Soni A and Mukherjee S, Effect of active muscles on knee ligament forces during impact, accepted for World congress of Biomechanics 2006.
22. Karthikeyan B, Chawla A, Mukherjee S, Inverse finite element characterization of soft tissues using genetic algorithm, accepted for World congress of Biomechanics 2006.
23. S. Mukherjee, A. Chawla, D. Mohan, V. Agrawal and S. Chadrawat, Throw distance in bicycle frontal crashes, accepted for IRCOBI 2006.
24. A. Chawla , S. Mukherjee, R Marathe, B Karthikeyan, R Malhotra, Determination of Strain rate dependence of human body soft tissue properties using a SHPB accepted for IRCOBI 2006.
25. Chawla A, Sandeep K and Singh SP, Dynamic modeling based optimum design of a crash helmet, Proceedings of CAD '06 conference held in Bangkok in June 2006.
26. Chawla A, Sharma G and Mukherjee S, A technique for developing FE meshes for human bones from CT / MRI scan data, Proceedings of CAD '06 conference held in Bangkok in June 2006.
27. Sharma A, Chawla A, Mukherjee S, A tool for developing FE meshes for folded airbags, Proceedings of CAD '06 conference held in Bangkok in June 2006.
28. B.Karthikeyan, A. Chawla, S. Mukherjee and A. Soni, Effect of Impactor mass in free fall impact tests on isolated passive muscle tissue, to appear in Proceedings of 12th International Conference on BioMedical Engineering (ICBME 2005), Singapore..
29. Karthikeyan B, Mukherjee S, Chawla A, Malhotra R, Inverse Finite Element Characterization of Soft Tissues Using Impact Experiments and Taguchi Methods, Proceedings of SAE 2006 World Congress.
30. Soni A, Chawla A and Mukherjee S, Effect of Active Muscle Forces on the Response of knee Joint at Low Speed Lateral Impacts, Proceedings of SAE 2006 World Congress
31. Marathe R, Mukherjee S, Chawla A, and Malhotra R, Strain rate dependence of human body soft tissues using SHPB, First International Conference on Mechanics of biomaterials and tissues, ICOMBT 2005.
32. Chawla A, Mukherjee S, Mohan D and Jain S, Validation of the cervical spine model in Thums, Proceedings of ESV 2005, held in Washington DC, June 2005,

Paper No 05-0184-O.

33. S. Mukherjee, A Chawla, A. Nayak and D. Mohan, Rollover crash analysis of the RTV using Madymo, Proceedings of ESV 2005, held in Washington DC, June 2005, Paper No 05-0186-O.
34. Rogers N, Zellner J, Chawla A and Nakatani T, Methodologies for motorcyclist injury prevention by use of computer simulations, Proceedings of ESV 2005, held in Washington DC, June 2005. Paper No 05-0311-W.
35. Mukherjee S, Chawla A, Jangra J, Studies in Motor cycle airbags, proceedings of IRCOBI September 2005.
36. Mukherjee S, Chawla A, Nayak A and Mohan D, Rollover crash analysis of the RTV using Madymo, accepted for SIAT'05, to be held in Pune, in January 2005.
37. Chawla, Bhosale P and Mukherjee S, Modeling of foldig of passenger side airbag mesh, SIAT'05, held in Pune, in January 2005.
38. A Chawla, S Mukherjee, D Mohan and A Parihar, Validation of lower extremity model in Thums, Proceedings of IRCOBI 2004, Graz, Austria, 2004.
39. Rogers N, Zellner J, Chawla A and Nakatani T, Methodologies for motorcycle injury prediction by means of computer simulations, Proceedings of IRCOBI 2004, Graz, Austria, 2004.
40. A Chawla, S Mukherjee, D Mohan and Jain S, Validation of the cervial spine model in Thums, Proceedings of the Canadia Multidisciplinary Road Safety Conference, Ottawa, Canada, June 2004.
41. Chawla A, Mukherjee S and Sharma A, Mesh Generation of folded airbags, Proceedings of the International CAD conference, May, 2004, Pattaya, Thailand.
42. Mukherjee S, Chawla A, Human Tolerance and Crashworthiness, Seminar on World Health Day, April 14, 2004.
43. A. Chawla, S. Mukherjee, J.S. Rao and Ashish K. Darpe, Development of an Online Diagnostic System Software For Turbogenerator Set of GGSSTPP Power Station Ropar, Workshop on condition monitoring, Chandigarh, January 2004.
44. Modelling of body parts consisting of bones as well as soft tisse: An experimental and finite element study, S. Mukherjee\*, A. Chawla, D. Mohan and M. Metri, Proceedings of IRCOBI 2003.
45. Chawla A, Mukherjee S and Sharma A, A tool for developing FE meshes for folded airbags, Proceedings of NACOMM, 2003, New Delhi India.
46. Chawla A, Mukherjee S and Sharma A, FE mesh generation for folded cloth – an application in airbags, proceedings of Workshop on textile ropes and cordages, December 2003, Delhi, India.
47. Chawla A, Mukherjee S and Sharma A, Development of FE mesh for folded airbags, Proceedings of ChinePAM 2003, Shanghai, China.
48. Darpe A, Gupta K and Chawla A, Response of a rotor with an unstable propagating crack, Proceedings of Implast 2003.
49. Chawla A, Mukherjee S, Mohan D, Rajiv Kr, Tushar Gawade, FE Simulation studies of a three wheeled scooter taxi, Proceedings of China PAM 2002, Beijing, 2002.
50. Chawla A, Mukherjee S, Mohan D, Singh Jasvinder P, Nadeem Rizvi, Crash

- Simulations of a three wheeled scooter taxi, Proceedings of ESV 2003, may, 2003, Magoya, Japan.
51. Chawla A, Mukherjee S, Mohan D, Bose D,, Sakurai M, Nakatani T, FE simulations of car – MC frontal crashes – validations and observations, Proceedings of ESV 2003, May 2003, Nagoya, Japan.
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  64. A Chawla and S Mukherjee, Graphics Science in Engineering Education, Proceedings of the 11<sup>th</sup> ISME conference, held in Delhi from 3-5, 1999.
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66. A Chawla, D Mohan and V Sharma, Computer simulation of bus roll over crashes, Proceedings of IMECE-98.
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  78. A Chawla and Amit Gupta, Use of IT tools for DFM of Die Cast Components, Proceedings of the National Conference on Information Technology for Industrial and Organization Development, held in October 1997, in Delhi.
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  83. Chawla A and Sangal R, Functional Reasoning in Configurational Design, Proceedings of the 2nd AI in Design Conference, 1992.
  84. Chawla A and Sangal R, Abduction in Design, Proceedings of the 4th UNB AI Symposium, University of New Brunswick, Canada, 1991.
  85. Chawla A and Sangal R, Capturing Design Knowledge, Proceedings of the Knowledge Acquisition Workshop, Banff, Canada, 1991.
  86. A Chawla and S Ray, Design and drafting on PC based systems, Proceedings of the 23<sup>rd</sup> Annual convention of the Computer Society of India, held from January, 6-9, 1988 in Madras.

## **15. PROJECTS / CONSULTANCIES COMPLETE**

S. No.	Title	PI / Co-PI	Dept.	Client	Value (Rs.lacs)	FITT Project Number	Starting Date	Ending Date
<b>Financial Year 2010-11 (upto August, 2010)</b>								
1	Injury Biomechanics and Impact Simulations using MADYMO™	PI	ME	M/s Maruti Suzuki India Ltd., Gurgaon	3	FT/03/1516/X	11-Jun-10	2 months
2	Safety Modeling and Epidimeological research	PI	ME	Volvo Research Foundation	600			
3	Technological Evaluation of RTVs	PI	ME	Transport department of governement of Delhi	2			
4	Development of a full scale version of a folding container	PI	ME	Simpri Investments Ltd	2.5			
5	Some Medico-Technical Issues – 1. Determining Mechanical Properties of Ligaments and ii. Development of stereo-cameras for operative / anatomic video sequences	PI	ME	Indain Council of Medical Research	18 blacs			
6	Studies of Road Traffic Crashers and Injuries in UK	PI	ME	UK India Educational and Research Initiative	GBP 108,000			
<b>Financial Year 2009-10</b>								
1	Occupant Protection on Railway Rolling Stock – Simulation, Modelling Techniques and Usage of Dummies	PI	ME	M/s Rites Ltd, Gurgaon	9.50	FT/03/1464/09	30-Jun-09	9 months
2	Dynamic Characterization of the humerous, scapula and clavicle bones of the shoulder complex	PI	ME	M/s Mercedes-Benz Research and Development India	58.02	FT/03/1474/09	15-Aug-09	8 months

				Pvt Ltd., Bangalore				
<b>Financial Year 2008-09</b>								
1	Development of Optimization Techniques for Product Design (Phase-II)	PI	ME	M/s Mitsubishi Heavy Industries Ltd., Japan	9.19	FT/5/121/7	Jan-08	Mar-08
2	Dynamic Characterization of bones of shoulder complex	PI	ME	M/s Mercedes-Benz Research & Development India Pvt Ltd., Bangalore	32.04	FT/03/1410/08	1-May-08	27-Nov-09
3	Finite Element Modeling of Lateral Impact of Pneumatic Tires	PI	ME	M/s General Motors India Ltd., Bangalore	8.51	FT/05/152/08	22-Dec-08	20-Nov-09
<b>Financial Year 2007-08</b>								
1	Development of Optimization Techniques for Product Design	PI	ME	M/s Mitsubishi Heavy Industries Ltd, Japan	3.11	FT/05/121/2007	1-Oct-07	Mar-08
2	Development of an HBM Positioning Tool	PI	ME	M/s General Motors India Ltd., Bangalore	58.87	FT/05/129/07	22-Dec-07	24 months
3	Development of a full scale version of a folding container with donors on the side panel	PI	ME	M/s Simpri Investments Limited, Hongkong	2.50	FT/5/89/5	1-Feb-06	16-Mar-07
<b>Financial Year 2006-07</b>								
Nil								
<b>Financial Year 2005-06</b>								
1	Checking Patent Violation of Drums	PI	ME	M/s. BSA Poly Container, Mumbai	1.36	FT/03/1289/05		

2	Development of Technology to get Dynamic Compressive Properties of Tissues	PI	ME	M/s. General Motors India Ltd., Bangalore	46.01	FT/05/92/5	1-May-05	30-Jun-07
3	Devt of CAD Models of a spray tooth brush	PI	ME	M K Singh	0.20	FT/03/1315/06		
<b>Financial Year 2004-05</b>								
1	Technology Development of a Note Counting Machine	PI	ME	Mindmill Software Ltd	0.50	FT/05/77A/04	10-Jul-04	18-Nov-04
2	Tech Devt for Collecting bone & tissue properties & Devt of human body FE Model	PI	ME	JARI, Japan	13.56	FT/05/87/05	1-Aug-04	Nov-06
3	Structural & Thermal Analysis of Large Appert. Silicon Mirror upon high power laser rediation	Co-PI	ME	LASTEC	8.40	FT/05/80/05	31-Jan-05	30-Jun-06
4	Development of a model for a folding container	PI	ME	SIMPRI Investments	5	FT/05/89/05	15-Mar-05	10-Oct-05
<b>Financial Year 2003-04</b>								
1	Door Clip for Child Safety	PI	ME	M/s Sam Innovation, New Delhi	1.02	FT/03/1263		
2	Development of Automated Note Vending Machine	Co-PI	ME	M/s Mind Mill Software Ltd	4	FT/05/77/04	15-Dec-03	12-May-05
<b>Financial Year 2001-02</b>								
1	Sensitivity analysis for Car-Motorcycle side impact crashes using PAMCRASH	PI	ME	Japan Automobile Research Institute	12.47	FT/03/507/99	1-Jul-01	Aug-02
<b>Financial Year 2000-01</b>								
1	Consultancy for NOIDA	PI	ME	NOIDA	0.45	FT/03/775/00	Aug-00	5 months

2	Consultancy in conducting CAD training courses at the Computer Aided Graphics Instructional Lab (CAGIL) of Deptt. Of ME, IIT Delhi (Phase-III)	PI	ME	M/s IIS Scientific Computing Ltd., New Delhi	1.50	FT/03/429/98	20-Aug-00	1-Apr-01
3	Consultancy to NOIDA	PI	ME	NOIDA	2	FT/03/879/00	Dec-00	6 months
4	Rail Wheel Dynamics	PI	ME	RDSO, Lucknow	10.60	FT/03/818/00	6-Oct-00	18-Mar-04
5	Sample Studies on Car-Motorcycle Simulations Using Pamcrash	PI	ME	Japan Automobile Research Institute, Japan	1.84	FT/03/507/99	1-Jul-01	Aug-02
6	Crash Simulation of the Car-Motorcycle crash using PAMCRASH (Phase-II)	PI	TRI PP	Japan Automobile Research Institute, Japan	14.35	FT/03/507/99	1-Jul-01	Aug-02
<b>Financial Year 1999-2000</b>								
1	Consultancy in Conducting CAS Training Courses at the Computer Aided Graphics Instructional Lab (CAGIL) of Deptt of ME, IITDelhi (Phase-II)	PI	ME	M/s IIS Scientific Computing Ltd., New Delhi	1.25	FT/03/429/98	20-Aug-00	1-Apr-01
2	Crash Simulation of the Car-Motorcycle Crash Using PAMCRASH	PI	ME	Japan Automobile Research Institute, Japan	15.76	FT/03/507/99	1-Jul-01	Aug-02
3	Shortlisting of Junior Engineers	PI	ME	NOIDA	2	FT/03/489/99		
<b>Financial Year 1998-99</b>								
1	Consultamcy in conducting CAD train-	PI	ME	M/S IIS-XOX, New Delhi	0.10	FT/03/429/98	20-Aug-00	1-Apr-01
	ing courses at the CAGIL of Deptt. of							
	ME, IIT Delhi							

**Older Completed Projects**

1	Setting up of Computer Aided Graphics Instruction Lab	Co-PI	ME	ICICI	80			
2	Development work on TG sets of 220MW NPPs in the areas of a. Fatigue analysis of Lp blades and b. On line diagnostic System	PI	ME	BRNS	15			
3	Design of a Creep Testing Machine for Fibre Ropes	Co-PI	ME	AICTE	5			
4	Development of Simulators to assist proactive shopfloor control	Co-PI	ME	DOE	34			
5	An automated approach to manufacturability based design of die cast components	PI	ME	DST	1.50			
6	Modernisation of Design Engineering Laboratory	Co-PI	ME	MHRD	15			
7	Knowledge Based Environment for Engineering Design	PI	ME	IIT	0.50			
8	Safety of Front Seat Passengers: Analysis of Vehicle Performance	Co-PI	ME	TELCO	5			
9	Safer Truck Fronts: Phase I	Co-PI	ME	Volvo Truck Corporation	US\$30,000.00			
10	Prediction of Safety of head and neck from bullet impact without penetration on a helmet	Co-PI	ME	Delhi Police	1.70			
11	Modeling of car-motor cycle crashes	PI	ME	JARI	US\$37000			

12	Consultancy in conducting training courses using Pro / Engineer	PI	ME	IIS Scientific Computing	1.50			
13	CAD / CAM Courses using Pro Engineer	Co-PI	ME	Hero Global Design Systems	6.57			
14	Development of instrumentation systems and related technology for condition monitoring of	PI	ME	DST	26			
15	Sample studies regarding car-mc simulation – II	PI	ME	JARI	1.62			
16	CAD / CAM Courses using Pro Engineer	Co-PI	ME	Hero Global Design Systems	5.25		Jul-01	3 months
17	Three Wheeler Crash worthiness Phase I	Co-PI	ME	Bajaj Auto	5 + US\$2000			
18	Development of methodology for modeling of airbags	PI	ME	JARI	US \$ 30000			
19	Development of airbag modles for OOP study	PI	ME	JARI	US\$ 30000			
20	Development of an automated Security system for vehicle entry – exit control consisting of vehicle authorization system and under carriage vehicle inspection system	PI	ME	Department of Information Technology, R&D Division	132			
21	Modernization of Mechanism Lab	PI	ME	MHRD	5			
22	Development of airbag module models	PI	ME	JARI	US\$30000			
23	Development of FE models for human body parts for impact	PI	ME	MHRD	5			

	simulation							
24	Obtaining low-speed impact properties of soft tissues	PI	ME	MHRD	11			
25	Technology Development for collecting Bone and Tissue properties, and development of human body FE model – Phase II	PI	ME	JARI	US\$6000 0			
26	Technology Development for bone and tissue properties and development of human body FE model – Phase III	PI	ME	JARI	US\$3000 0			
27	Measuring Impact properties of human body parts	PI	ME	DST	24			
28	Development of technology to get dynamic compressive Properties of tissues	PI	ME	General Motors	50			
29	Study of scientific investigation and analysis of road accidents in Delhi	PI	ME	Ministry of shipping, road transport and highways, Government of India	16.20			

## 16. BTECH PROJECTS SUPERVISED:

### Work Under progress:

### Thesis Already Submitted:

1. Jyoti Singh and Shirish Upadhyaya, Near Real Time Tracking of anatomical axis of lower limb, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, May, 2007.
2. Akash Agarwal and Aseem Suri, Computer Assist in Knee Osteotomy, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, May, 2007.
3. Tanpreet Singh and Vijay Jain, FE Simulations to study the kinematics of the knee joint after surgery, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, May, 2006.
4. Suman Chndrawat and Varun Agarwal, Simulations of bicycle crashes on Indian Roads, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, May, 2005.
5. Saurav Raaj, Sunil Kaler, Bicycle crash Modeling, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2004.
6. Amitayush Bahari, Anant Sudarshan, An orthopaedic model of the human index finger, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2004.
7. Kumar Rajiv and Swaminathan TN, FE Based Crash Modelling of a three wheeler, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2000.
8. Kartik MV; Bhargava P, Impact Behaviour of Visoelastic materials: Simulation and Experimental Validation, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2003.
9. Choudhari Amit Kumar; Garg Ankur, FE modelling of Human neck, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2002.
10. Kumar Rajiv; Swaminathan T.N., Finite element based crash simulation of TSTs using pamcrash, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2002.
11. Sharma A., Automation of The LBW Decision in Cricket, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2002.
12. Jain G, Study of Crash of A Three Wheeled Scooter Taxi with A Leg Impactor, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2002.
13. Kapoor A., Modelling of a Bicycle Crash with a Wall using MADYMO, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2001.
14. Maini G.S., Design of A Weld Joint on An I-Girder in WeighBridges, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2001.
15. Gupta N.N., Dynamics of Rail-Wheel Interaction, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2001.
16. Bose D, Finite Element Analysis of Child Restraint System in CAR Crash simulation, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2001.

17. Bhatia P., Study of Crash (in Case of Vehicle Accidents) Simulation using MADYMO, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2000.
18. Lahoti Ujwal and Jain Gaurav, Impact simulations of auto parts, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2000.
19. Pundeer Anurag and Kumar Praveen, Motorbike – car crash modelling using Pamcrash, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 1999.
20. Wadhwa Aashish and Garg tarun, Feature Based Design System for shop floor scheduling, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 1999.
21. Singh Ravi and Srivastava Chitranshu, Finding equivalent beam elements for a box beam, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2000.
22. Bose Diapn and Gupta Rahul, Finite Element Analysis of child restraint system in car crash simulations, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2001.
23. Gupta Nitin Navish and Govil Rohit, Dynamics of rail-wheel interaction, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 2001.
24. Saini Parul Joy and Yadav Sumit, Modelling of helmets, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 1998.
25. Arora Vikram and Maurya Shyam Roop, Design of Plastic components, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 1998.
26. Sharma Vivek, Crash modeling of Bus Body Structure, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 1997.
27. Mehta Amit and Vishwanath Donti, Three Dimensional Crash modeling of Indian two wheelers using computer simulation, Btech (Mech Engg) Thesis, Department of Mechanical Engineering, IIT Delhi, 1997.
28. Bansal A and Vajpayee S, 3D crash modeling of an Indian bus using computer simulation techniques, Btech (Mech Engg) thesis, Department of Mechanical Engineering, IIT Delhi, 1996.
29. Ghosh S, Expert System to automate decision making in a manufacturing unit, Btech (Mech Engg) thesis, Department of Mechanical Engineering, IIT Delhi, 1996.
30. Singh S and Bawabhalla KS, Three Dimensional crash modeling of vehicles on Indian Roads, Btech (Mech Engg) thesis, Department of Mechanical Engineering, IIT Delhi 1995.
31. Jain V and Agarwal P, Development for Expert system for Design of watches, Btech (Mech Engg) thesis, Department of Mechanical Engineering, IIT Delhi, 1995.
32. Kapoor N and Singh D, Expert System Development for Fabric Design, Btech (Textile Engg) thesis, Department of Mechanical Engineering, IIT Delhi, 1994.
33. SK Mangla and Verma S, Knowledge Based Reasoning Model for Fault Diagnosis, Btech (Mech Engg) thesis, Department of Mechanical Engineering, IIT Delhi, 1994.
34. Bairwa GL, A Knowledge Based Approach to Mechanical Design, Btech (Comp Sc) thesis, Department of Computer Science and Engineering, IIT Delhi, 1994

35. Chandana AK and Sharma Sameer, Safety and related manufacture of a three wheeler scooter rickshaw, Btech (Mech Engg) thesis, Department of Mechanical Engineering, IIT Delhi 1994.

### **17. MSc / MTech PROJECTS SUPERVISED:**

#### Work Under progress:

#### Thesis already submitted:

1. Varun Grover, Car Accident Reconstruction and head injury correlation, May 2008.
2. Shehroz Dost, Deveopment of a wrist bone drilling simulator using a 6-axis parallel manipulator, May 2008.
3. Pathan SS, Tracking the mechanical and anatomical axis during knee surgery, May 2007
4. Baviskar T.S., Developing Methodologies for damage based accident investigation involving two wheelers, May 2007
5. Umale S.S., Developing a virtual environment of drilling a bone in wrist surgery, May 2007
6. Misra K.L., Material characterization of live body organs using inverse FEM Analysis, May 2007
7. Adity Shekhar, Estimating properties of human body bones by doing three point bending tests and inverse mapping from FE simulations, May 2006.
8. Pawan Kumar, Investigating the simplification of ISO 13232, May 2006.
9. Babu Jadhav, Development of Human dummy models for crash simulation (MS(res))
10. Ashok Biradar, Evaluation of effectiveness of leg guard bars in an Indian Motor cycle using Computer Simulations, Mtech (Design of mech equipment) thesis, department of mechanical engineering, May 2005.
11. Ratnakar R.S., Material Chrcatarization of Soft Tissues in Compression and Impact, Mtech (Design of mech equipment) thesis, department of mechanical engineering, May 2005.
12. S Gondu, Material characterization of soft tissues under tension, Mtech (Design of mech equipment) thesis, department of mechanical engineering, May 2005.
13. Abhijeet Parihar, Validation of human body FE models for different impact conditions (human knee) , Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2004.
14. Ashish Nayak, Crash Analysis of RTV using Madymo, Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2004.
15. Lala Ram Patel, Road Accident Reconstruction, Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2004.
16. Sidhartha Jain, Validation of human body FE models for different impact conditions (human neck) , Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2004.

17. Walesh Kumar, FE modeling of rupture of materials under impact loading, Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2004.
18. Girish Sharma, FE Meshing of human bones from MRI Data, Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2004.
19. Dileep Kr, Modeling of honey comb structures used in car-side impact tests, Mtech (Design of mech equipment) thesis, department of mechanical engineering, , Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2001.
20. Gavhane S.A., Child dummy model development for study of car - child pedestrian impact, , Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2003.
21. Mallikarjuna Metri, Development of FE model for human forearm and estimation of mechanical properties of tissues thereof, , Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2002.
22. Shiv K Iyer, Modeling of MATD dummies for MC crash modeling, Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2001.
23. Sandeep, Optimization of helmet, Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2001.
24. S Vulli, Modeling of car floor panel for crash simulations, Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2000.
25. Deepak Chougule, A study of leg impact implication on bumper design, Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2000.
26. K Mani, FE based simulations of car-motor cycle frontal crashes – an initial study, Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2000.
27. Mahesh Hamne, Numerical analysis of applicability of pultruded FRP profiles compared to aluminum profiles, Mtech (Production Engineering) thesis, department of mechanical engineering, 2001, (under the DAAD exchange program).
28. R Sreenivas, Dynamic analysis of misaligned rotor systems MS(Res) thesis, department of mechanical engineering, 2000.
29. Vijay Sridhar, CAD Modeller for Madymo - II, Advanced Level Course in Computer Science, Institute of electronic and Telecommunication Engineers, India, 2001.
30. Parab Milind, Modelling of car – motor cycle crashes using PAM CRASH, Mtech (Design of mech equipment) thesis, department of mechanical engineering, 2000.
31. Mane NH, Modelling of bullet penetration in helmet, Mtech (Design of mech equipment) thesis, department of mechanical engineering.
32. Ch Rajaiha, Design of an on-line expert system for condition monitoring of 220MW TG sets, MTech (Design of mech equipment) thesis, department of mechanical engineering, 1998.
33. Yatinder Saxena, CAD Modeller for Madymo - I, Advanced Level Course in Computer Science, Institute of electronic and Telecommunication Engineers, India, 1998.
34. Nagaraju B, Design of a test-rig used to study the effect of misalignment of the vibration of a rotor, MTech (Design of mech equipment) thesis, department of mechanical engineering, 1998.

35. Pimparkar Vanita, Development of a system handling room allotment problem, Advanced Level Course in Computer Science, Institute of electronic and Telecommunication Engineers, India, 1998.
36. Gajanan SP, A CLIPS based expert system for the condition monitoring of AI-20D aircraft engine, Advanced Level Course in Computer Science, Institute of electronic and Telecommunication Engineers, India, 1998.
37. Pathak A Abhijit, Life estimation of a turbine blade by cumulative damage theories, MTech (Design of mech equipment) thesis, department of mechanical engineering, 1998.
38. Mohan Rao KL, Dynamic Analysis of helmet structure, MTech (Design of mech equipment) thesis, department of mechanical engineering, 1998.
39. Naidu Narasimharao, Development of an expert system for design of manufacturability of welded components, MTech (Design of mech equipment) thesis, department of mechanical engineering, 1997.
40. Warhatkar Hemant, Design of a screw extruder for food products, MTech (Design of mech equipment) thesis, department of mechanical engineering, 1997.
41. Samal JK, Reasoning with 2D shapes - a special case, Mtech (Computer Applications) thesis, Department of Mathematics, IIT Delhi, 1997.
42. Sarkar Bidyut, Design and fabrication of a creep testing equipment for industrial rope, MTech (textile technology) thesis, Department of textile technology, IIT Delhi, 1997.
43. Ramesh DRV, Rendering of B spline surfaces, Mtech (Computer Applications) thesis, Department of Mathematics, IIT Delhi, 1997.
44. Varshneya Amit, Development for an ORACLE based software for maintenance and assembly line planning, Mtech (Computer Applications) thesis, Department of Mathematics, IIT Delhi, 1996.
45. Ch Phanikumar, Computer Aided Design of die casting dies, Mtech (Design) Thesis, department of Mechanical Engineering, IIT Delhi, 1996.
46. Kishore NV, Transient Dynamic and Failure Analysis of composite plates under impact, Mtech (Design) thesis, Department of Mechanical Engineering, IIT Delhi, 1996.
47. Gurpreet Singh, Object Oriented Planner for Mechanical Design, Advanced Level Course in Computer Science, Institute of electronic and Telecommunication Engineers, India, 1996.
48. Mrithyunjaya Kr and Botke Prashant, Interactive system for fractal image encoding - decoding, Mtech (Computer Applications) thesis, Department of Mathematics, IIT Delhi, 1996.
49. Jain R, Development of a pre processor for MADYMO, Msc Thesis (Mathematics and Computer Application), Department of Mathematics, IIT Delhi, 1995.
50. Amit Gupta, Development of an Expert System for DFM of Die casting components, Mtech (design) Thesis, Department of Mechanical Engineering, IIT Delhi, 1995.
51. Pushkar Singh, Design of Surface modeller and generation of tool path for milling machines, Mtech (computer applications) thesis, Department of Mathematics, IIT Delhi, 1995.
52. Vijay Pratap Singh, Modeling of turbulent gaseous motion using fractals, Mtech (Computer Applications) thesis, Department of Mathematics, IIT Delhi, 1995.

53. Srivastava VK, Development of a computer aided facility for analysis of metal transfer in welding, Mtech (Production engineering) thesis, Department of Mechanical Engineering, IIT Delhi, 1995.
54. C Duttagupta, Development of an off line expert system for condition monitoring of AI20D aircraft system, Mtech (Design) Thesis, Department of Mechanical Engineering, IIT Delhi, 1994.
55. P Subbaram, Development of Constructive Solid Geometry Modeler, Mtech (Computer Applications) Thesis, Department of Mathematics, IIT Delhi, 1994.

## **18. PhD THESIS SUPERVISED**

### Already Submitted

1. Ashis Darpe, Dynamics of cracked rotors, (Co supervisor, Prof K Gupta)
2. K Bhupal Reddy, Lead time reduction in flexible manufacturing environments, (Co-supervisor, Prof S Wadhwa)
3. Bibhushan, Design and development of virtual enterprises in competitive supply chain environment, (Co supervisor, Prof S Wadhwa).
4. Kartikeyan, Dynamic Impact Properties of Human soft tissues, (Co-Supervisor, Dr S Mukherjee).
5. Anurag Soni, Muscle contribution in knee kinematics, (Co-Supervisor, Dr S Mukherjee).

### Under Progress

1. Prashant Bhosale, Airbags in 100 cc Indian Motor cycles, (Co-Supervisor, Dr S Mukherjee).
2. Mike WJ Arun, Understanding fracture Behaviour of Bones (Co-Supervisor Dr S Mukherjee)
3. Hemant Warhatkar, Simulating knee osteotomy surgeries, (Co-Supervisor, Dr S Mukherjee).
4. Dhaval Jani, Repositioning of Human Body FE Model, (Co-Supervisor, Dr S Mukherjee).
5. Lalaram, Issues in Human Body Modeling, (Co-Supervisor, Dr S Mukherjee).
6. Amrit lal, Issues in Crash Reconstruction, (Co-Supervisor, Dr S Mukherjee).