

Manish Paliwal, Ph.D., P.E.

Department of Mechanical Engineering
The College of New Jersey
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I. Academic and Professional Employment

- **The College of New Jersey, Ewing, NJ**

Department of Mechanical Engineering

Department Chair 07/2015 - Present
Professor 08/2016 - Present
Associate Professor 08/2011 - 07/2016
Assistant Professor 08/2006 - 07/2011

Department of Biomedical Engineering

Affiliated faculty 08/2011 - Present

- **Southern Illinois University School of Medicine, Springfield, IL**

Division of Orthopaedic Surgery

Research Assistant Professor 01/2006 - 08/2006
Post-Doctoral Fellow 02/2004 - 12/2005

- Supervised and facilitated biomechanical and clinical research.
- Oversaw research teams consisting of multiple faculty members, laboratory engineers, medical residents, and students. (Full Time)

- **Southern Illinois University at Carbondale, Carbondale, IL**

NSF Center for Advanced Friction Studies

Research Assistant 08/2001 - 12/2003

- Provided critical research expertise for the \$1 million-per-year research center funded by National Science Foundation, State of Illinois, and a 10-company consortium including Boeing, Honeywell, ABS, Link Engineering, Tribco Inc., and Messier-Bugatti. (Part-Time)

- **Reliance Industries Limited, Mumbai, India**

(A Fortune Global 500 Company)

Power Division

Assistant Manager (Project Development) 08/1997 - 07/2001
Graduate Management Trainee 08/1996 - 07/1997

- Performed system engineering, system integration, project planning, and project execution for wide variety of projects.
- Accomplishments included development of 1000 TPH Petcoke-based CFBC boiler, development of combustion by-product disposal and handling plan, and system development/integration of ammonia-based FGD system and CFBC technologies.

- Led collaborative technical discussions with Foster Wheeler Inc., New Jersey and Jacksonville Electric Authority (JEA), Florida.
- Performed technical evaluations of international vendors and designed systems.
- Served as crisis manager on Horizontal Directional Drilling (HDD) project in national capital region of Delhi, India.

II. Educational Background

A Degrees earned

- **Ph.D.**, Engineering Science, Southern Illinois University (SIU), Carbondale, IL 2003
- **M.Tech.**, Applied Mechanics, Indian Institute of Technology, Delhi, India 1996
- **B.E.**, Mechanical Engineering, JNV University, Jodhpur, India 1993

B Title of dissertation and name of supervisor

- **Ph.D. Dissertation Title:** Development of a friction layer model for the brake pad-rotor interface for noise and vibration
Advisors: Professors Ajay Mahajan and Peter Filip
- **M.Tech. Thesis Title:** Numerical Simulation of Viscoelastic Contact Problems
Advisor: Professor Anand Jagota

C Post-doctoral fellowship

SIU School of Medicine, Division of Orthopaedic Surgery, Springfield, IL 2/2004 - 12/2005

- Supervisors: Dr. Gordon D. Allan, M.D., Chair of the Orthopedic Surgery Division, SIU School of Medicine, Springfield, IL, and Dr. Peter Filip, Director, Center for Advanced Friction Studies, SIU at Carbondale, Carbondale, IL

III. Professional Licensure

- Professional Engineer (P.E.), licensed in the State of Maryland (#55416)

IV. Academic or Professional Honors, Prizes, and Awards

- TCNJ School of Engineering Research Prize 2017, 2018
- Support of Scholarly Activities (SOSA) Awards 3 FWH/Year 2008-2021
- Mentored Undergraduate Summer Experience (MUSE) Awards 2009-2012

- *Certificate of Outstanding Contribution in Reviewing* for the Elsevier Journal “Engineering Failure Analysis” 2017
- *Certificate of Appreciation for Service to the American Society of Mechanical Engineers (ASME)* for serving as **Chair, the Model Identification and Intelligent Systems Technical Committee**(2010-12); Awarded by the ASME Dynamic Systems and Control Division
- *Certificate of Appreciation for Service to the American Society of Mechanical Engineers (ASME)* for serving as **Student Travel Grants Coordinator** 2010-2012 to the ASME Dynamic Systems and Control Division; Awarded by the ASME Dynamic Systems and Control Division
- *Certificate of Appreciation for Service to the American Society of Mechanical Engineers (ASME):* **Publicity Chair, 2011 ASME Dynamic Systems and Control Conference** at Arlington, VA; Awarded by the ASME Dynamic Systems and Control Division
- *Certificate of Appreciation for Service to the American Society of Mechanical Engineers (ASME):* **Newsletter Editor** 2004-2006; Awarded by the ASME Dynamic Systems and Control Division
- *2009 Outstanding Professor Award:* Awarded by the Sigma Pi Fraternity International, Theta Delta Chapter, The College of New Jersey (April 13, 2009)
- **Elected Member** *Tau Beta Pi*, The Engineering Honor Society; Inducted into Tau Beta Pi’s New Jersey Delta Chapter at Princeton University; TBP is the oldest engineering honor society in the United States

V. Teaching Record

A Courses taught

Courses taught

1. **ENG 098 Fundamentals of Engineering Review**
Spring 2018, 2019, 2020
2. **ENG 099 Senior Professional Seminar**
Spring 2020
3. **ENG 142 M Fundamentals of Engineering Design**
Fall 2013, 2014
Spring 2015, 2018

4. **FSP Courses**
Fall 2014¹, 2015², 2018³, 2019⁴
5. **ENG 222 Statics**
Fall: 2006, 2007, 2008, 2010
6. **MEC/CIV 263 Mechanical Laboratory I**
Spring: 2007, 2008
7. **MEC/CIV 251 Strength of Materials**
Spring 2012, 2015, 2017, 2018, 2020, 2021
8. **MEC 311 Mechanical Design Analysis I**
Fall 2007, 2011, 2012, 2016
9. **BME/MEC 343 Biomechanics**
Spring: 2007, 2008, 2009, 2010, 2011, 2012, 2013
10. **MEC 431 Mechanical Design Analysis-II**
Fall 2006, 2008, 2009, 2020
11. **MEC 441 Vibration Analysis**
Fall 2013, 2019
Spring 2011, 2015
12. **MEC 460 Finite Element Analysis in Mechanical Design**
Fall 2009, 2010, 2011, 2012, 2013, 2015, 2017
Spring 2007, 2008, 2009
13. **BME 470 Special Topics in Finite Element Analysis**
Spring 2007
14. **MEC 481 Advanced Strength of Materials**
Spring 2019
15. **MEC 495 Senior Project I**
Fall 2011, 2012, 2013, 2014, 2015
Spring 2012
16. **MEC 496 Senior Project II**
Fall 2012
Spring 2013, 2014, 2015

Six Independent Study Courses

¹FSP 124 Hindu traditions & lessons derived for theory of justice

²FSP 164 Living Hinduism: Applied consciousness and influence on society and environment

³FSP 164 Living Hinduism: Applied consciousness and influence on society and environment

⁴FSP 164 Living Hinduism: Applied consciousness and influence on society and environment

17. **BME 492 Independent Study**
Spring 2008¹, 2010²
18. **BME 391 Independent Study**
Fall 2009³
19. **CIV 391 Independent Study**
Spring 2012⁴
20. **MEC 391 Independent Study**
Spring 2013⁵
Summer 2013⁶

B Contributions to the liberal learning program

- **Taught FSP courses with Community Engaged Learning (CEL) component**
FSP124 [2014]: Hindu traditions & lessons derived for theory of justice
FSP164 [2015, 2018, 2019]: Living Hinduism: *Applied consciousness and influence on society and environment*
- Organized a talk by Dr. Gauri Mahulikar, Professor and Dean of Faculty, Chinmaya University, Kerala, India to give a talk on “Indian Philosophy”, Jointly sponsored by the First Seminar Program (FSP), Department of Philosophy, and Department of Mechanical Engineering at TCNJ, September 17, 2019.
- Organized a talk by Mr. Chaitanya Charana Dasa, a motivational speaker and author, mentor, and engineer to speak on “*Why we are sometimes wise and sometimes otherwise*”, Jointly sponsored by the following student clubs: “Circle of Compassion”, and ”Humanitarian & Yoga Club” at TCNJ, April 3, 2018.
- *Reading Facilitator* for Summer Reading Programs since 2010.
- Delivered a talk on “*Krishna’s Counsel in the Time of War*”, “Closed Reading” sponsored by the Department of English, Spring 2015.

C Independent research, and independent studies

D.1. Independent Research

1. Patellofemoral Pain Syndrome

Student Collaborator: Adam Novotny

Spring 2017

¹Performance of modular cementless total joint replacement devices; Student: N. Premnath

²Tissue and Organ Biomechanics; Student: A. Hinkle

³FEA in Biomedical Engineering; Student: S. Al-Omaishi

⁴Finite Element Analysis of Mechanical Systems; Student: M. Horner

⁵Finite Element Analysis of Structures; Students: M. Berti, E. Parriott, K. Kilgannon, N. Izzo

⁶Orthopaedic Biomechanics; Student: R. Richardson

2. **Graphite flakes orientation in a used rotor**
Student Collaborator: Gabriel Oliveira Summer 2015
3. **PMMA in bone allograft fixation utilizing unicortical versus bicortical screws - A Finite Element Analysis**
Student Collaborator: Cunha, da L. H.P. Summer 2015
4. **Modeling of friction-induced squeak of Ceramic-on-Ceramic Hip Implants**
Student Collaborator: Mark Sidebottom 2013-2014
5. **MUSE 2012: Modeling of friction-induced squeak of Ceramic-on-Ceramic Hip Implants**
Student Collaborator: Mark Sidebottom Summer 2012
6. **MUSE 2011: Design criteria for preventing friction-induced squeak of Ceramic-on-Ceramic Hip Implants**
Student Collaborator: Mark Sidebottom Summer 2011
7. **MUSE 2010: Investigation of the effect of cement viscosity on functional loading**
8. **MUSE 2010: A Novel Method for Measuring the Micromechanics of Soft Tissue using Digital Image Correlation**
Student Collaborators: Daniel Lee and Mary McDonough Summer 2010
Faculty Collaborator: Dr. Karen Yan, Mechanical Engineering
9. **MUSE 2009: Evaluation of the effect of cement viscosity on cement mantle in TKA**
Student Collaborator: Eric Rohrs Summer 2009

D Senior Design Projects

37. **Modular Adaptable Desk (MAD)** 2021-22
Students: Ishan Lyn, Victoria Yuknek, Hannah Crosbiero
Co-advised with Prof. Sepahpour
36. **Ankle Foot Orthosis Design** 2021-22
Students: Christina Willilams, Julia Connelly, Tyler Booth
35. **Cargo-Rack Easy Access Design (CREADS)** 2021-22
Students: Joe Felipe, Leah Hill, and Jennifer Larocca
Coadvised with Dr. Shih
34. **pLift** 2020-21
Students: Corey Luthe, Mariah Schmelzle, Joseph Landeira

33. **Standup Wheel Chair - 2** 2020-21
 Students: David Thompson, Lisbeth Alvarez, Cynthia Ramirez, Omar Elashkar
32. **Chainless Bicycle** 2020-21
 Student: Christopher Marquez
31. **COVID Coaster** 2020-21
 Students: Elyse Nardozza, Nick Marcelli; CE students: Yariel Levin, Yamir Levin
 Co-advised with Dr. Al-Omaishi (Civil Engineering)
30. **I.C.E.: Ice Crushing Equipment** 2019-20
 Students: Patrick Lee, Matthew Huelbig, Tristan Schwarz
29. **Modcast** 2019-20
 Students: Justin Gordon, Zachary McCreery
28. **Wearable Leg Assist Device** 2018-19
 Students: Michael Di Nizo, Billy Graessle, Kyle Ondar, Trystan Irmiere
27. **TCNJ Mini Baja-2018** 2017-18
 Students: Michael Salek, Chris Stabile , Adam Novotny (ME), Jon Granaldi,
 Dylan Corl and Anthony Russo
 Co-advised with Dr. Norman Asper
26. **Human Powered Vehicle Challenge (HPVC)- 2018** 2017-18
 Students: Joshua D. Acker, Ari Goldovsky, Quentin Jay Klein, and John Weber
 Co-advised with Dr. Norman Asper
25. **TCNJ Mini Baja-2017** 2016-17
 Students: Marcus Lotierzo, Dan Walker, Sean Pease, Alex Mosesku, Matt Bascelli
 and Matt Carlson
 Co-advised with Dr. Norman Asper
24. **Grays Ferry Movable Bridge Redesign** 2016-17
 Students: Marcella Moran (Team leader), Christopher Guglielmo and Matthew
 Jones
 Co-advised with Dr. Andrew Bechtel (Civil Engineering)
23. **SAE Mini BAJA - 2016** 2015-16

- Co-advised with Dr. Chang
 Students: John Sperduto, Michael Sebok, Michael Rossini, Paul Kurimella, Louis Press, Tanner Muir
22. **SAE Mini BAJA** 2014-15
- Co-advised with Dr. Chang
 Students: Samantha Scutti, Zachary Krogstad, Robert Strang, Guy Brikman, John Renteria
21. **SAE Super Mileage** 2014-15
- Co-advised with Dr. Asper, Dr. Grega, and Prof. Sepahpour
 Students: Luke Capritti, James Faith, Tara Nealon, and Brian Rehberger
20. **Exoskeletal arm III** 2013-14
- Co-advised with Dr. BuSha, and Dr. Kim
 Students: Yara Hamid, Leah Scully, Miguel Colon (CE), Jonathan Lopez (CE), Trevor Reynolds (MEC)
19. **Bioabsorbable Polymeric Humeral Fracture Fixation Device** 2013-14
- Students: Hazlett, L., Becker, G., Calvis, A., Verzi, M.
18. **SAE Mini BAJA** 2013-14
- Co-advised with Dr. Chang
 Students: Michelle Duffy, Chris Atanacio, Robert Remeika, Daniel Nestman, Tyler Holmes
- Baja SAE Kansas 2014: The team placed 57th in 119 teams.
17. **SAE Super Mileage** 2013-14
- Co-advised with Dr. Facas, Dr. Asper, and Prof. Sepahpour
 Students: Jason Charne, Paige Corvino, Christopher Golon, JJ Heindel, Matthew Southard
16. **Fused Deposition Modeling BioPrinter** 2012-13
- Co-advised with Dr. Hall (BME)
 Students: Dana Mathews (Team Leader), Kendra Knowles, Brian Karl, Hayin Candiotti, Kyle Mohen (MEC)
15. **A Novel Inductive Biphasic Proximal Humerus Internal Fracture Fixator**
 2012-13

- Students: Erndt Marino,J., Ghodbane,S.A., Pachomski,C., White,D.
14. **uGrip II** 2012-13
- Students: Polhemus, A., Doherty, B., Mackiw, K., Patel, R.
13. **SAE Mini BAJA** 2012-13
- Co-advised with Dr. S.R. Chang
- Students: Brett Arnheiter, Matthew Rudeau, Kaitlin Kilgannon, Daniel Christiansen, Brendan Power
12. **uGrip** 2011-12
- Students: Erik Anderson; Joe Moloughney; Konstantin Ozerinsky; Ralph Saleh
- Body powered anthropomorphic prosthetic hand with force feedback and auto-rotation regimes was designed.
- Published and presented at the Northeast Bioengineering Conference (NEBEC), 2012 38th Annual Northeast; DOI: 10.1109/NEBC.2012.6206948; Publication Year: 2012 , Page(s): 33 - 34
11. **Alternative Wind Energy Production** 2011-12
- Co-advised with Dr. Grega
- Students: Hynes, Kevin; Talarico, David
- An adjustable flapping wing energy extraction device was designed.
- *Publication:* Talarico, David, and Kevin Hynes. "Bio-Inspired Wind Energy Harvester." ASME 2012 6th International Conference on Energy Sustainability collocated with the ASME 2012 10th International Conference on Fuel Cell Science, Engineering and Technology. American Society of Mechanical Engineers, 2012.
10. **Assistive Rehabilitation Arm Orthosis** 2010-11
- Students: Abbruzzese, K. ; Lee, D. ; Swedberg, A. ; Talasan, H.
- Designed and fabricated an Assistive Arm Orthosis device.
- Published in the proceedings of Bioengineering Conference (NEBEC), 2011 IEEE 37th Annual Northeast; DOI: 10.1109/NEBC.2011.5778534; Publication Year: 2011, Page(s): 1 - 2
9. **The Orthotic Hand-Assistive Exoskeleton** 2010-11
- Co-advised with Dr. BuSha (BME)
- Students: Michael Baker (ME), Mary Kate McDonough, Erin McMullin, Maria Swift

8. **Intuitive Leg Assist Device** 2010-11
 Students: Shah, B. ; McNally, D. ; Patel, K. ; Frone, S. ; Sutaria, S.
7. **An Improved Smart Ankle-foot Orthosis Design Using Dual Fluid Power Cylinders** 2009-10
 Students: Ricky Mehta, Eric Rohrs, Katarina Lipat, and Evan Reed
6. **EXO-LEG: A single-leg walking assist device** 2009-10
 Students: Thomas Coughlin, Jessica Knight, Salam Al-Omaishi, Alex Hinkle, and Matt VanCleve
5. **The Therapress 1600i: Accelerated Knee Rehabilitation** 2008-09
 Students: Andrew Geronimo, Michael Holyoak, Matthew Oliver, and Erik Scherm
4. **Design of a Dynamic Stabilization Device for Lumbar Spine** 2008-09
 Students: Allison Weiser and John Bryndza
3. **External Fixator Design for Femoral Fracture Reduction** 2007-08
 Students: Michael Cucinotta, Courtney LeBlon, and Nima Rahimi
2. **Fight Simulation Dummy** 2007-08
 Student: John LaRocco
1. **Design of Ankle Foot Orthosis** 2006-07
 Students: Ken Barry, Emily Paetzell, and Craig Cedermark

E TCNJ curricular grants awarded

- 2015 Blended/Online Course Development Grant (\$3000) 2015
- President's Initiative for Academic Excellence (PIAE) funds 2014-16, 2018-19

F Participation in workshops on Teaching

- ANSYS Mechanical Material Nonlinearities Training- Online - Mar 16-25, 2015
- Introduction to ANSYS Mechanical Online Training: March 30- April 10, 2015
- Solidworks Essentials training: July 8-11, 2013
- **Focus Group to assess the information needs** of the Engineering Faculty and Computer Science Faculty at TCNJ

- **Annual Instructional Technology Workshop:** (Organized by ITS @ TCNJ)
- **POD Network in Higher Education:** Getting Started Workshop for New Faculty Developers, Nov. 11-15, 2007, Seattle, WA.
- **National Science Foundation** Sponsored “Cyber-Enabled Discoveries and Innovations” Workshop on November 11, 2007 , Seattle, WA

VI. Scholarly Record

Student collaborators are marked with an asterix (*).

1. **Paliwal, M.**, “A Parametric Study: Influence Of Geometry And Material Properties On The Response Of The Femoral Head Through Biofluid”. In Proceedings of the ASME 2021 International Mechanical Engineering Congress and Exposition, Paper No. IMECE2021-70061. American Society of Mechanical Engineers, 2021.
2. Novotny, A.*; and **Paliwal, M.**, “Patellofemoral Pain Syndrome: Sensitivity Analysis Of Muscle Parameters For Expedited Recovery Utilizing An OpenSim Model For Lower Extremities.”. In Proceedings of the ASME 2018 International Mechanical Engineering Congress and Exposition, Paper No. IMECE2018-87042. American Society of Mechanical Engineers, 2018.
3. Sidebottom, M.*, Allan, DG., and **Paliwal, M.**. “Analysis of a retrieved squeaking ceramic-on-ceramic hip arthroplasty bearing.” *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, Vol. 231, No. 13, pp 2373–2383, 2017.
4. Novotny, A.*, and **Paliwal, M.** “Numerical Analysis on the Influence of Taper Junction Corrosion Profile With Emphasis on Ti-Alloy Modular Hip Arthroplasty.” In Proceedings of the ASME 2017 International Mechanical Engineering Congress and Exposition, Paper No. IMECE2017-71907. American Society of Mechanical Engineers, 2017.
5. **Paliwal, M.**, and Rajput, S. Numerical and stochastic analysis of corrosion in modular hip implants. *Journal of Mechanics in Medicine and Biology*, Vol. 16, No. 2, 2015.
6. Allan, DG, Chu, T., and **Paliwal, M.** Comparative failure analysis of allograft constructs stabilized with compression plates utilizing unicortical versus bicortical screws with or without PMMA. *Engineering Failure Analysis*, 53:69-77. 2015.
7. Rajput, S., and **Paliwal, M.**, “Mixture model for graphite flake orientation distribution in a used rotor”, In Proceedings of the ASME 2015 International Mechanical Engineering Congress and Exposition, Paper No. IMECE2015-50791, pp. V009T12A032, 6 pages; doi:10.1115/IMECE2015-50791, November 2015. American Society of Mechanical Engineers

8. Hazlett, L.*, Becker, G.*, Calvis, A.*, Verzi, M.*, and **Paliwal, M.**, “Design of Bioabsorbable Polymeric Humeral Fracture Fixation Device”, Paper# IMECE2014-39743, Proceedings of the 2014 ASME International Mechanical Engineering Congress and Exposition, November 14-20, 2014, Montreal, Canada.
9. Rajput, S., and **Paliwal, M.**, “Stochastic Modeling of Crevice Corrosion with emphasis on Titanium alloys modular total joint arthroplasty”, Paper# IMECE2014-37300, Proceedings of the 2014 ASME International Mechanical Engineering Congress and Exposition, November 14-20, 2014, Montreal, Canada.
10. **Paliwal, M.**, and Wickramasinghe, T.W., “Mathematical Analysis of the Motion of Fluid in between Ceramic-on-Ceramic Total Joint Arthroplasty Bearing Surfaces”, Paper# IMECE2014-37301, Proceedings of the 2014 ASME International Mechanical Engineering Congress and Exposition, November 14-20, 2014, Montreal, Canada.
11. Sidebottom, M.*, Allan, D.G., and **Paliwal, M.**, “Ceramic-on-Ceramic Hip Implants: Analysis of Friction induced squeal”, Paper# IMECE2014-36821, Proceedings of the 2014 ASME International Mechanical Engineering Congress and Exposition, November 14-20, 2014, Montreal, Canada.
12. Becker, G.*, Calvis, A.*, Hazlett, L.*, Verzi, M.*, and **Paliwal, M.**, “Bioabsorbable polymeric fracture fixation devices aim to reduce stress shielding in bone”, In Northeast Bioengineering Conference (NEBEC), 2014 40th Annual, pages 1–2, 2014. IEEE.
13. Cunha, da L. H.P.*, Gordon, A., and **Paliwal, M.**, “PMMA in bone allograft fixation utilizing unicortical versus bicortical screws - A Finite Element Analysis”, In Proceedings of the ASME 2015 International Mechanical Engineering Congress and Exposition, of IMECE, Paper No. IMECE2015-51836, pp. V003T03A027, 8 pages, doi:10.1115/IMECE2015-51836, November 2015. American Society of Mechanical Engineers
14. O’Laughlin, R.*, Abbruzzese, K.*, Lee, D.*, Allan, D. G., and **Paliwal, M.**, “Failure analysis of surrogate tibial constructs with medium and fast setting bone cements”. *Engineering Failure Analysis*, Vol. 32, pp 312-321, 2013.
15. **Paliwal, M.**, “Numerical analysis on stress induced corrosion with emphasis on Ti-Alloy total hip arthroplasty stem failure”, Paper# IMECE2013-63689, Proceedings of the 2013 ASME International Mechanical Engineering Congress and Exposition, November 15-21, 2013, San Diego, California, USA.
16. Candiotti, H.*, Karl, B.*, Knowles, K.*, Mathews, D.*, Hall, C., Mohen, K.*, **Paliwal, M.**, “Fused Deposition Modeling BioPrinter,” Bioengineering Conference (NEBEC), 2013 39th Annual Northeast, pp.177,178, 5-7 April 2013.
17. Polhemus, A.*, Doherty, B.*, Mackiw, K.*, Patel, R.*, **Paliwal, M.**, “uGrip II: A Novel Functional Hybrid Prosthetic Hand Design,” Bioengineering Conference (NEBEC), 2013 39th Annual Northeast, pp.303,304, 5-7 April 2013.

18. Erndt-Marino, J.*, Ghodbane, S.A.*, Pachomski, C.*, White, D.*, **Paliwal, M.**, “A Novel Inductive Biphasic Proximal Humerus Internal Fracture Fixator,” Bioengineering Conference (NEBEC), 2013 39th Annual Northeast, pp.239,240, 5-7 April 2013
19. Abbruzzese, K.*, O’Laughlin, R.*, Lee, D.*, Allan, D. G.*, and **Paliwal, M.**, “Effect of cement viscosity in total knee arthroplasty”, Paper# IMECE2012- 89094, Proceedings of the 2012 ASME International Mechanical Engineering Congress and Exposition, November 9-15, 2012, Houston, Texas, USA.
20. Sidebottom, M.*, and **Paliwal, M.**, ”Friction induced squeak of ceramic-on-ceramic hip implants: A stability design criterion”, Paper# IMECE2012- 87119, Proceedings of the 2012 ASME International Mechanical Engineering Congress and Exposition, November 9-15, 2012, Houston, Texas, USA.
21. **Paliwal, M.**, and Sepahpour, B., “A Revised Approach for Better Implementation of Capstone Senior Design Projects”, Paper # AC 2012-5442, 119th ASEE Annual Conference & Exposition, San Antonio, TX.
22. Abbruzzese, K.*, Lee, D.*, Swedberg, A.*, Talasan, H.*, Paliwal, M., ”An innovative design for an Assistive Arm Orthosis for stroke and muscle dystrophy”, 2011 IEEE 37th Northeast Bioengineering Conference, April 1-3, Troy, NY
(DOI: 10.1109/NEBC.2011.5778534)
23. **Paliwal, M.**, Allan, D. G., and Filip, P., “Failure analysis of three uncemented titanium-alloy modular total hip stems”. *Engineering Failure Analysis*, Vol. 17, Issue 5, pp 1230-1238, 2010.
24. Froelich, J., Idusuyi, O.B., Clark, D., Kogler, G., **Paliwal, M.**, Dyrstad, B., and Milbrandt, J., “Torsional stiffness of an intramedullary nail versus blade plate fixation for tibiototalcanal arthrodesis: A biomechanical study”. *The Journal of Surgical Orthopaedic Advances*, Vol. 19, Issue 2, pp 109-113, 2010.
25. Rohrs, E.*, Allan, D.G., and **Paliwal, M.**, “Finite Element Analysis of the influence of cement viscosity on cement mantle in Total Knee Arthroplasty” Paper # SBC2010-19550, ASME Summer Bioengineering Conference, June 16-19, 2010, Naples, FL
26. Mehta, R.*, Lipat, K.*, Rohrs, E.*, Reed, E.*, and **Paliwal, M.**, “An improved smart ankle-foot orthosis design using dual fluid power cylinders” Paper # DMD2010-3861, Design of Medical Devices (DMD) Conference, April 13-15, 2010, Minneapolis, Minnesota
27. Coughlin, T.*, Knight, J.*, Al-Omaishi, S.*, Hinkle, A.*, VanCleve, M.*, and **Paliwal, M.**, “EXO-LEG: A single leg walking assist device”, Paper # DMD2010-3859, Design of Medical Devices (DMD) Conference, April 13-15, 2010, Minneapolis, Minnesota
28. **Paliwal, M.**, Allan, D. G., and Filip, P., “Cementless modular total hip arthroplasty: a retrieval analysis”. *International Journal of Functional Informatics and Personalized Medicine*, Vol. 2, Issue 1, pp 45 - 56, 2009.

29. Allan, D. G., **Paliwal, M.**, and Filip, P., “Retrieval analysis of a trabecular metal patella in a post-patellectomised knee”. *International Journal of Functional Informatics and Personalized Medicine*, Vol. 1, Issue 3, pp 285-294, 2008.
30. LeBlon, C.E.*, Rahimi, N.S.*, Cucinotta, M.J.*, and **Paliwal, M.**, “An Improved External Fixator Design for Femoral Fracture Reduction”, Paper # BioMed-38087, Proceedings of BioMed2008, ASME 3rd Frontiers in Biomedical Devices Conference, Irvine, California, USA, June 18-20, 2008.
31. **Paliwal, M.**, Allan, D.G., and Filip, P., “Failure of three cementless modular total hip arthroplasty prostheses: A retrieval analysis”, ASME Paper IMECE2008-66998, Proceedings of the 2008 ASME International Mechanical Engineering Congress and Exposition, October 31- November 6, 2008, Boston, USA.
32. **Paliwal, M.**, Kern, B., and Allan, D.G., “Evaluation of the effect of cement viscosity on cement mantle in total knee arthroplasty”, ASME Paper IMECE2008-67967, Proceedings of the 2008 ASME International Mechanical Engineering Congress and Exposition, October 31- November 6, 2008, Boston, USA.
33. **Paliwal, M.**, Allan, D.G., and Filip, P., “Retrieval Analysis of a Cementless Modular Total Hip Arthroplasty Prosthesis”, Proceedings of the IEEE 7th International Conference on Bioinformatics and Biomedical Engineering, Harvard Medical School, Boston, Massachusetts, October 14-17, 2007, pp. 553-558.
34. Allan, D.G., **Paliwal, M.**, and Filip, P., “Trabecular Metal Patella Implanted into Soft-Tissue in a Post-Patellectomized Knee: A Case Report”, The IEEE 7th International Conference on Bioinformatics and Biomedical Engineering, Harvard Medical School, Boston, Massachusetts, October 14-17, 2007, pp. 559-562.
35. **Paliwal, M.**, Mahajan, A., Don, J., Chu, T., and Filip, P., “Investigation of high frequency squeal in a disc brake system using a friction layer-based coupling stiffness”. *Journal of Mechanical Engineering Science*, Vol. 219, Issue 6, pp 513-522, 2005.
36. **Paliwal, M.**, Mahajan, A., Don, J., Chu, T., and Filip, P., “Noise and vibration analysis in a disc brake system using a stick-slip friction model involving contact stiffness”. *Journal of Sound and Vibration*, Vol. 282, Issue 3-5, pp 1273-1284, 2005.
37. Filip, P., **Paliwal, M.**, and Mazanec, K., “Fatigue crack propagation in pseudoelastic TiNi smart microarticles”. *Zeitschrift für Metallkunde*, Vol. 95, Issue 5, pp 356-361, 2004.
38. **Paliwal, M.**, Mahajan, A., Don, J. and Filip, P., “Application of wavelet transforms in the analysis of high frequency squeal in a disc brake system” Braking 2004 - Vehicle Braking and Chassis Control, Edited by David Barton and Andrew Blackwood, Leeds, UK, July 7-9, 2004, pp. 133-142.
39. **Paliwal, M.**, Mahajan, A. and Filip, P., “Analysis of high-frequency squeal in a disc-brake system using a stick-slip friction model” Proceedings of the ASME IMECE Conference, Washington DC, Nov. 2003.

A Papers, posters, and abstracts at professional conferences

1. Novotny, A.*; and **Paliwal, M.**, “Influence Of Pit Geometry On The Stress Profile Of A Ti-Alloy Modular Hip Implant”. In Biomedical Engineering Society (BMES) 2017 Annual Meeting, Accepted for Poster presentation, October 2017. BMES
2. Sidebottom, M.*, **Paliwal, M.**, and D. Gordon Allan, “Influence of coupling stiffness on friction-induced squeak of Ceramic-on-Ceramic Hip Implants”, Poster # 1766, 2013 Annual Orthopaedic Research Society, January 26-29, 2013, San Antonio, Texas, USA.
3. Sidebottom, M.*, and **Paliwal, M.**, “Design criteria for preventing friction-induced squeak of Ceramic-on-Ceramic Hip Implants”, Poster presentation, Biomedical Engineering Society (BMES) 2011 Annual Meeting, October 12-15, 2011, Hartford, CT.
4. Abbruzzese, K.*, O’Laughlin, R.*, Lee, D.*, **Paliwal, M.**, Allan, D., “Investigation of the Effect of Cement Viscosity in Total Knee Arthroplasty using Digital Image Correlation” Poster # 1080, Orthopaedic Research Society (ORS) Annual Meeting, January 13-16, 2011, Long Beach, California.
5. Abbruzzese, K.*, O’Laughlin, R.*, Lee, D.*, **Paliwal, M.**, Allan, D G, “Investigation of the effect of cement viscosity in TKA using Digital Image Correlation”, Poster presentation, Biomedical Engineering Society (BMES) 2010 Annual Meeting, October 6 - 9, 2010, Austin, TX.
6. Lee, D.*, McDonough, M.*, **Paliwal, M.**, and Yan, K., “A Novel Method for Measuring the Micromechanics of Soft Tissue using Digital Image Correlation”, Poster presentation, Biomedical Engineering Society (BMES) 2010 Annual Meeting, October 6-9, 2010, Austin, TX.
7. Geronimo, A.*, Holyoak, M.*, Scherm, E.*, Oliver, M.*, and **Paliwal, M.**, “The Therapress 1600i: Accelerating Knee Rehabilitation”, Design of Medical Devices (DMD) Conference, April 14-16, 2009, Minneapolis, Minnesota.(J. Med. Devices, June 2009, Volume 3, Issue 2)
8. Bryndza, J.*, Weiser, A.*, and **Paliwal, M.**, “Design of a Dynamic Stabilization Spine Implant”, Design of Medical Devices (DMD) Conference, April 14-16, 2009, Minneapolis, Minnesota. (J. Med. Devices, June 2009, Volume 3, Issue 2)
9. Cucinotta, M.J.*, LeBlon, C.E.*, Rahimi, N.S.*, and **Paliwal, M.**, “A New External Fixator Design for Femoral Fracture Reduction”, Annual Design of Medical Devices (DMD) Conference, Minneapolis, Minnesota, April 15 - 17, 2008
10. Joy, E., **Paliwal, M.**, and Allan, D. G. “Cemented versus press-fit fixation in NexGen cruciate retaining total knee replacement” Paper # 226, 73rd Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), Chicago, IL, March 23-26, 2006.
11. **Paliwal, M.**, Allan, D.G., Barnhart, B., Trammell, R., “Serum Cobalt and Chromium Levels in Patients with Metal-on-Metal Resurfacing Hip Prostheses”, Podium presentation, 61st COA Annual Meeting, Toronto, Ontario, June 2-4, 2006.

12. **Paliwal, M.**, Joy, E., and Allan, D. G., “Prospective Evaluation of Cemented Versus Press-Fit Fixation in NexGen Cruciate-Retaining TKR”, Poster presentation, 61st COA Annual Meeting, Toronto, Ontario, June 2-4, 2006.
13. **Paliwal, M.**, Allan, D.G., “Short-Term Clinical Outcome of Patients Treated with a Metal-on-Metal Resurfacing Hip Replacement”, Poster presentation, 61st COA Annual Meeting, Toronto, Ontario, June 2-4, 2006.
14. Allan, D.G., Barnhart, B., **Paliwal, M.**, and Trammell, R., ‘Serum Cobalt and Chromium Levels in Patients with Metal-on-Metal Resurfacing Hip Prostheses’, Paper # 15, Mid-America Orthopaedic Association, Twenty-Fourth Annual Meeting, San Antonio, Texas, April 19-23, 2006.
15. Joy, E., **Paliwal, M.**, and Allan, D. G. “Cemented Versus Press-Fit Fixation in Nex-Gen Cruciate-Retaining Total Knee Replacement: A Prospective Evaluation.” Paper # 57, Mid-America Orthopaedic Association, Twenty-Fourth Annual Meeting, San Antonio, Texas, April 19-23, 2006.
16. Allan, D.G., **Paliwal, M.**, and Filip, P., “Augmented Tantalum Patella in Total Knee Arthroplasty”, Poster # 26, Mid-America Orthopaedic Association, Twenty-Fourth Annual Meeting, San Antonio, Texas, April 19-23, 2006.
17. Allan, D.G., **Paliwal, M.**, “Short-Term Clinical Outcome of Patients Treated with a Metal-on-Metal Resurfacing Hip Replacement”, Poster # 27, Mid-America Orthopaedic Association, Twenty-Fourth Annual Meeting, San Antonio, Texas, April 19-23, 2006.
18. Allan, D.G., and **Paliwal, M.**, “AcuMatch Highly Modular Femoral Stem in Revision Total Hip Arthroplasty: A Prospective Evaluation”, Poster # 28, Mid-America Orthopaedic Association, Twenty-Fourth Annual Meeting, San Antonio, Texas, April 19-23, 2006.
19. Allan, D.G., **Paliwal, M.**, and Filip, P., “Analysis of Retrieved Modular Prostheses”, Poster # 29, Mid-America Orthopaedic Association, Twenty-Fourth Annual Meeting, San Antonio, Texas, April 19-23, 2006.
20. Wolters, B., **Paliwal, M.**, Lebedowska, M., and Allan, D. G. “Comparison of femoral canal preparation techniques in THA: ‘Reamer and Broach’ versus ‘Broach only’ techniques.” Proceedings of Mid-America Orthopaedic Association, 2005 Annual Meeting, Florida, April 20-24, 2005.
21. Wolters, B., **Paliwal, M.**, Lebedowska, M., and Allan, D. G. “Comparison of femoral canal preparation techniques in total hip arthroplasty.” Proceedings of 5th Combined Meeting of the Orthopaedic Research Societies of the USA, Canada, Japan and Europe, Banff, Alberta, Canada, October 10-13, 2004.
22. **Paliwal, M.**, Mahajan, A., Don, J. and Filip, P., “Application of Wavelet Transforms in the analysis of High Frequency Squeal in a Disc Brake System” Proc. of SES2003, 40th Annual Technical Meeting, Society of Engineering Science, University of Michigan, Ann Arbor, October 12-15, 2003.

VII. Professional, Intellectual, Creative Development

A Mechanical Engineering Professional Development

- International Mechanical Engineering Congress & Exposition, Salt Lake City, Utah
November 11 - 14, 2019
- ASME International Mechanical Engineering Education Leadership Summit, New Orleans, LA
March 20-23, 2019
- International Mechanical Engineering Congress & Exposition, Pittsburgh, PA
November 9–15, 2018
- ASME International Mechanical Engineering Education Leadership Summit, San Diego, CA
March 14-17, 2018
- International Mechanical Engineering Congress & Exposition, Tampa, FL
November 3–9, 2017
- ASME International Mechanical Engineering Education Leadership Summit, Washington, DC
April 17–20, 2017
- NE Mechanical Engineering Chairs Summit
 - Columbia University, NY
August 16-17, 2018
 - Boston University, Boston, MA
August 17-18, 2017
 - University of Pennsylvania, Philadelphia, PA
July 29-30, 2016

B ABET Accreditation Workshops/Symposiums

- ABET Symposium - April 12-13, 2018
- ABET Workshop - August 3-6, 2015

VIII. Record of Service

A Service to Profession

A.1. American Society of Mechanical Engineers (ASME)

- **Workshop Co-Organizer** (with Dr. Jefferey Shield, University of Nebraska, Lincoln): ASME ME Department Heads/Chairs' Executive Committee (MEDHEC) New Faculty Workshop. April 7, 2021

- **Executive Committee Member,**
ASME Mechanical Engineering Heads Committee 2019-21
- **Chair, (Nominated and elected by peers), Technical Committee on Modeling, Identification, and Intelligent Systems (MIIS), American Society of Mechanical Engineers (ASME)** 2010-12
- **Publicity Chair** for the 2013 ASME Dynamic Systems and Control Conference (International Conference) at Stanford University, CA.
- **Publicity Chair** for the 2011 ASME Dynamic Systems and Control Conference (International Conference) in Arlington, VA.
- **Students Travel Grants Administrator,** Dynamic Systems and Control Division (2010-12)
- **Invited sessions organizer,** “Application of Modeling, Identification, and Intelligent Systems in Biomedical Engineering”, 2010 Dynamic Systems and Control Conference, Cambridge, MA.
- **Member,** Ad-hoc Committee to form bylaws for MIIS TC of Dynamic Systems and Control Division (2009-2010).
- **Secretary** (Nominated and elected by peers), Technical Committee on Modeling, Identification, and Intelligent Systems, American Society of Mechanical Engineers (ASME), (2008-2010).
- **Symposium organizer** on topic “Application of Modeling, Identification, and Intelligent Systems in Biomedical Engineering”, at the 2007 ASME International Mechanical Engineering Congress and Exposition (IMECE). Organized three sessions.
- **Chair,** ASME IMECE 2015 conference session on Topic “Modeling and Mechanics” in Track 12 (Mechanics of Solids, Structures, and Fluids).
- **Chair,** ASME IMECE 2004-2008 conference sessions organized by the Technical Committee on Intelligent Systems, Dynamic Systems and Control Division
- **Chair,** ASME IMECE 2008 conference session organized by Bioengineering Division
- **Newsletter Editor** for ASME Dynamic Systems and Control Division (DSCD) MIIS Technical Committee (2007-2008)
- **Publicity & Newsletter Editor** for ASME Dynamic Systems and Control Division (DSCD) (2004-06).

A.2. National Science Foundation (NSF)

- **Grant Proposal Review Panelist** Summer 2012
+ Reviewed proposals for Control Systems Program

B Service to College

Committee on Faculty Affairs (CFA)

Member 2020 -

Committee on Academic Programs (CAP)

Co-Chair 2016 - 17

Member 2015 - 17

Committee on Strategic Planning and Priorities (CSPP)

Co-Chair 2014 - 15

Vice-Chair 2013 - 14

Member 2012 - 15

Committee on Student and Campus Community (CSCC)

Chair 2011 - 12

Vice-Chair 2010 - 11

Member 2009 - 12

TCNJ Faculty Senate Executive Board 2013 - 16

Institutional Review Board (IRB)

- Member, Institutional Review Board 2009-12
- Co-chair, eIRB, IRB Subcommittee 2009-12

Middle States Commission on Higher Education (MSCHE)

- **Co-chair**, Working group on Institutional Assessment, Accountability and Effectiveness (standards 2, 3, and 7) for Middle States Commission on Higher Education (MSCHE) Institutional Re-accreditation (2013-14). Wrote the draft section on Standard 7. Co-chaired with Lloyd Ricketts, Treasurer, TCNJ

Other service

- **Member, Teaching/Learning Imitative Ad Hoc Committee 2007-08**
- **Member, Honors and Scholars Program Council (HSPC) 2007-09**
- **TCNJ recruitment:** Participated and addressed a meeting of school counselors in a Recruitment event at West Point, NY

C Service to the School of Engineering

- Member, Mechanical Engineering Faculty Search Committee 2019-20
- Member, Program Standards Committee 2019-20
- Member, Safety Committee 2018-19
- Member, Department of Civil Engineering Promotion and Reappointment Committee (PRC) 2016-17
- Coordinator of Departmental Senior Project Coordinators in the School of Engineering 2015-16
- Member, Program Standards Committee 2015-16
- Member, TCNJ School of Engineering Task Force on Industry Interaction 2013-15
 - + **Authored a white paper:** Created an initial document titled “On promoting industrial-academic partnership”, that contained a summary of the major issues as well as some institutions for benchmarking - this document is being used as a starting reference for the task force.
- School of Engineering Academic Integrity Officer (AIO) 2012-16
 - + Successfully resolved over half-a-dozen cases
 - + Advised/consulted with faculty on the policy
- Founding Advisor to the TCNJ Tau Beta Pi (TBP) Chapter (NJ-Z), Engineering Honors Society 2009-Present
 - + Select candidates for invitation for initiation
 - + Advise and participate in the initiation ceremonies twice a year
- Member, Civil Faculty Search Committee 2011-12
- Member, BME Faculty Search Committee 2011-12
- Member, BME Faculty Search Committee 2010-11
- Member, Committee on ABET Best Practices 2010-11
- Member, BME Faculty Search Committee 2009-10
- Chair, BME Faculty Search Committee 2008-09
- Member, ad-hoc Design and Research Track committee 2009-10

D Service to Department

- Coordinator, ENG098 Fundamentals of Engineering Review 2018-Present
- ME Senior Project Coordinator 2011-15
 - + Taught senior classes
 - + Scheduled and organized senior design project presentations
 - + Provided consent to register students
 - + Collected and provided data for accreditation (ABET)
 - + Liaison between Dean, faculty, students, technician, and machine shop supervisor.
- Webmaster for the Department of Mechanical Engineering 2009-11
- Member, ME Department Projects Committee 2007-09
- Member, ME Curriculum Development Committee 2007-09
- Member, ECE/ME Retention/ Grievance Committee 2006-09

E Service to the Community

- Reviewed book manuscript for "Wisdom from The Ramayana: On Life and Relationships", by Chaitanya Charan, Publisher: Fingerprint! Publishing, ISBN-10: 9388144821, 2018
- Volunteer for the Department of World Languages and Culture (WLC) at TCNJ: Test students in their Hindi language proficiency.
- Serve as judge for Hindi Poetry Competition organized by HindiUSA foundation.
- Volunteer for Isha Foundation, a non-profit organization
- Volunteer for Chinmaya Foundation, a non-profit organization

F Service as a referee of scholarly work

- Served as reviewer for the following journals:
 - Journal of the Mechanical Behavior of Biomedical Materials
 - Case Reports in Orthopaedics
 - Engineering Failure Analysis
 - Journal of Vibration and Control
 - International Journal of Nano and Biomaterials (IJNBM)
 - Journal of Biomedical Materials Research - Part B

- Served as reviewer for the following conferences:
 - American Society of Mechanical Engineers (ASME) International Mechanical Congress & Exposition
 - I have been reviewing papers for this conference since 2004*
 - Design of Medical Devices Conference, 2010

IX. Consulting: Failure analyses of medical devices

- Erwin Law Firm, TN (expert witness)
- Gertler Law Firm, LA (expert witness)
- Burger Law Firm, MO (expert witness)

—**End of the CV**—