SHUVODEEP DE, PhD

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Core Interests

Research: HPC-enabled AI/ML and scientific computing: Physics-informed machine learning (PINNs, surrogate modeling, graph neural networks), large-scale multiphysics simulation on leadership-class systems (ORNL Summit, Frontier), AI-driven materials and process discovery, and Bayesian/evolutionary optimization for high-dimensional engineering design. Applications span nonlinear and multiscale FEA, aeroelasticity, electrochemistry, and additive manufacturing.

Teaching: Statics, Dynamics, Vehicle Dynamics, Mechanics of Solids, Mechanical Vibrations, Machine Design, Thermodynamics, Computer-Aided Design & Digital Manufacturing, Applied Finite Element Analysis, Capstone Design.

Education

- **Doctor of Philosophy** – Mechanical Engineering (Computational), Virginia Tech, USA, 2017
- **Bachelor of Engineering** – Mechanical Engineering, Jadavpur University, India, 2012

Entrepreneurship

1. **U.S. Patent Application №US20230100909A1 – "Sequential Stylet"**
   Peck, M., Fakhari, A., **De, Shuvodeep**, Alias, D.
   Notice of Allowance, U.S. Patent and Trademark Office (2026).
2. **Co-founder (5% equity): FPA Bio** – Startup formed to commercialize the above patented technology in medical device systems for advanced intubation and airway management.

Work Experience

Lecturer — Texas State University (Mechanical 4.0), San Marcos, TX *Spring 2026–present*

- Co-advising senior design team (ME1.05 Chip Handling System, co-advised with Dr. James D. Banks) on a modular CNC chip-handling system for the Haas VF-2 CNC Mill, focusing on cross-contamination reduction, automated chip sorting, downtime minimization during material changes, and process efficiency. [Project page]
- Contributing to departmental ABET accreditation through curriculum documentation, assessment rubric development, and continuous improvement processes.
- Teaching and mentoring responsibilities detailed in *Teaching Portfolio*.

Research Scientist — Texas State University, San Marcos, TX *2024–2025*

- Improved battery electrode performance with carbon nano-materials using active learning.
- Optimized grip force via materials and controls in Gecko-inspired climbing robots.
- Advanced design and fabrication of piezoresistive strain sensors.

Adjunct Professor — Texas State University (Engineering Technology), San Marcos, TX *Fall 2024*

- Taught Applied Thermofluids (concurrent with Research Scientist appointment); teaching responsibilities detailed in *Teaching Portfolio*.

Postdoctoral Research Associate — Oak Ridge National Laboratory, Oak Ridge, TN *2022–2024*

- Developed HPC modeling frameworks for advanced manufacturing process simulation.
- Integrated computational and experimental research in a multidisciplinary HPC environment.

Bioinformatics Scientist — TGen, Phoenix, AZ *Nov 2021–Mar 2022*

- Developed HPC algorithms for long-read and short-read genome sequencing.

- Applied statistical modeling and machine learning to genomic data analysis.
- Enhanced biological data visualization using Python and R.

Postdoctoral Research Associate — University of Alabama, Tuscaloosa, AL *2019–2021*

- Developed multiphysics simulations of electrodeposition processes.
- Built Bayesian-optimized evolutionary algorithms for constrained/unconstrained problems.

Graduate Research Assistant / Part-time Faculty — Virginia Tech, Blacksburg, VA *2012–2019*

- Designed bio-inspired wing structures via Multidisciplinary Design Optimization.
- Implemented parallelized FEM optimization for large-scale aerospace structures.
- Teaching and mentoring responsibilities detailed in *Teaching Portfolio*.

Teaching Portfolio

Courses Taught

Texas State University

- **CAD and Digital Manufacturing** (Lab) – **5 sections taught**, Spring 2026
- **Mechanical Behavior of Materials** (Lab) – Spring 2026
- **Applied Thermofluids** – Fall 2024

Virginia Tech – Teaching/Research Assistant, 2012–2016

- *Undergraduate Mechanical Engineering:* Statics; Dynamics; Mechanics of Deformable Bodies; Fracture of Materials; Sustainable Energy Solutions.
- *Graduate Aerospace & Ocean Engineering:* Vehicle Structures; Stability of Structures.

Instructional Design & Course Development

- Developing interactive course modules integrating hands-on CAD/CAM and 3D-printing workflows into the digital manufacturing curriculum (Texas State, ongoing).
- Integrating AI tools into teaching workflows and content creation, including lecture material generation, problem-set design, rubric drafting, and personalized student feedback.
- Delivered Applied Thermofluids with project-based assignments and computational demonstrations in Python, MATLAB, and CAD/FEM tools, emphasizing real-world applications and Industry 4.0 contexts (Texas State, Fall 2024).
- Designed tutorials linking course concepts to manufacturing, simulation, and design optimization challenges; conducted grading, exam preparation, and office hours across multiple ME and AOE courses (Virginia Tech).

Mentoring & Student Advising

- **Faculty Adviser**, ASME Student Section – Texas State University (2025).
- Co-advising senior design team on ME1.05 Chip Handling System for the Haas VF-2 CNC Mill (Texas State, 2026–present). [Project page]
- Mentoring undergraduate research projects in sensor fusion, robotics, and applied machine learning (Texas State, ongoing).
- Mentored two graduate students at Virginia Tech on design optimization pipelines, CAD workflows, and geometry parameterization techniques.

ABET & Curriculum Service

- Contributing to departmental ABET accreditation at Texas State University through curriculum documentation, assessment rubric development, and continuous improvement processes.

Teaching Interests

Statics; Dynamics; Vehicle Dynamics; Mechanics of Solids; Mechanical Vibrations; Machine Design; Thermodynamics; Computer-Aided Design & Digital Manufacturing; Applied Finite Element Analysis; Capstone Design.

Grants & Industry-Sponsored Funding

Drove and contributed to externally funded industry and federal research programs (BASF, Metalsa, NASA, NSF SBIR), including projects progressing to SBIR/STTR Phase II funding (∼$750K) and patent-backed startup commercialization.

- **NASA SBIR/STTR** – M4 Engineering (with Virginia Tech subcontract).
  Phase II: ∼$749,816 (NNX15CD08C) • Phase I: ∼$124,393 (NNX14CD16P).
  Project: Aeroelastic Optimization and Curvilinear SpaRib Wing Design.
  Impact: Contributed to proposal development and technical concepts supporting progression from Phase I to Phase II funding (∼$750K); work focused on aeroelastic modeling and multidisciplinary optimization.
- **NSF SBIR Phase I Proposal** – FPABIO, LLC (Startup; Patent-Linked).
  Amount Requested: ∼$250K (typical Phase I).
  Project: Novel Sequential Stylet for Advanced Airway Management.
  Impact: Co-inventor on patent-backed technology (Notice of Allowance); contributed to SBIR proposal and technical development; resubmission in progress to secure federal funding.
- **Industry-Sponsored Research** – BASF.
  Project: Multiphysics Modeling of Copper Micro-Bump Electroplating.
  Impact: Developed physics-based electrochemical and transport models integrating additive kinetics, diffusion, and convection; delivered technical presentations supporting industry-sponsored research funding and process optimization.
- **Industry Project** – Metalsa (Commercial Vehicle Engineering).
  Project: Truck Chassis Design Optimization.
  Impact: Built parametric FEM + PSO-based optimization framework for structural weight reduction under multi-constraint conditions; contributed to externally funded industry research on vehicle structural performance and design automation.
- **DARPA SBIR/STTR Proposal** – M4 Engineering.
  Amount Requested: ∼$125K (Phase I) • Status: Unfunded.
  Project: Plug-and-Play Analysis and Simulation for CAD-to-CAE Automation.
  Impact: Contributed core technical concepts and proposal development (meshless methods, Nitsche-based coupling, multi-physics modeling); informed subsequent SBIR/STTR research efforts.

Awards & Honors

- Among best-performing Algorithm – IEEE CEC 2021
- Pratt Presidential Graduate Fellowship – Virginia Tech
- Summer Research Fellowship – JNCASR, India
- Top 0.2% – West Bengal JEE (∼80,000 candidates)

Professional Service

- **Editorial Board Member**: *AI and Innovations* (2026–present)
- **Co-Editor (forthcoming):** *Data-Driven Supply Chains: Machine Learning, Optimization, and Integration*, CRC Press / Taylor & Francis (with Ali W. Mohamed, Irfan Ali, and Yong Zhang)
- **Faculty Adviser**: ASME Student Section, Texas State University (2025)
- **Guest Editor**: *Lubricants* – Bioinspired Design for Friction Control (2025–present)
- **Co-organizer**: ASME SSDM 2025
- **Conference Reviewer**: ASME IMECE; NeurIPS 2024 Workshop
- **Guest Editor**: *Frontiers in Mechanical Engineering* – Lightweight Aerospace Structures (2022–2023)
- **Reviewer Board Member**: MDPI *Energies* (2022–present)
- **Session Chair**: AIAA SciTech 2019
- **Board Member**: Oak Ridge Postdoctoral Association (2022–2023)
- **Journal Reviewer** (200+ reviews): *Carbon*, *Advanced Engineering Materials*, *Frontiers in Robotics and AI*, *Frontiers in Mechanical Engineering*, *AIAA Journal*, *Structural and Multidisciplinary Optimization*, *The Aeronautical Journal*, *SWEVO*, *Journal of Materials Chemistry C*, *PCCP*, MDPI Journals (AI, Applied Sciences, Materials, Energies, Symmetry, Electronics, Biomimetics, Aerospace, Tomography, Mathematics, Algorithms, Healthcare, Axioms, Batteries, Sensors, Sustainability, Buildings), *AI and Innovations*

Professional Affiliations

- Nominated Full Member, Sigma Xi, The Scientific Research Honor Society
- American Society of Mechanical Engineers (ASME)
- Association for Computing Machinery (ACM)

Certifications

- ACM Certified Peer Reviewer
- Deep Learning Specialization (DeepLearning.AI) – Neural networks, CNNs, RNNs, sequence models, optimization
- AI for Mechanical Engineers Specialization (University of Michigan) – Applications of ML in simulation, design, and control
- Python Foundations (Great Learning) – Core programming, data structures, and scripting fundamentals for data science and ML workflows

Technical Skills

- **AI/ML & Applied Deep Learning:** PyTorch, TensorFlow, scikit-learn, XGBoost; physics-informed neural networks (PINNs), graph neural networks (PyTorch Geometric); large language models, transformers, retrieval-augmented generation (RAG), HuggingFace Transformers; surrogate modeling, active learning, Bayesian optimization, uncertainty quantification; experiment tracking (MLflow, Weights & Biases).
- **Computational Mechanics & Multiphysics:** Nonlinear finite-element analysis (contact, hyperelasticity, plasticity, large deformation, explicit dynamics); ABAQUS/CAE with user subroutines (UMAT, UEL, VUMAT), ANSYS, MSC Nastran, COMSOL Multiphysics, LS-DYNA; electrochemical/transport modeling; aeroelastic and thermomechanical simulation; FEniCS, MOOSE, PETSc.
- **HPC & Parallel Computing:** MPI, OpenMP, CUDA; SLURM job scheduling on leadership-class systems (ORNL Summit, Frontier); parallelized FEM and multiphysics pipelines; Singularity, Docker for reproducible HPC workflows; performance profiling and scaling studies.
- **Simulation-Driven Design & Optimization:** Multidisciplinary design optimization (MDO); evolutionary algorithms (differential evolution, PSO, GSK), surrogate-assisted and gradient-based optimization; CAD integration (SolidWorks, CREO); materials-informatics APIs (Materials Project, pymatgen).
- **Programming & Scientific Computing:** Python (NumPy, SciPy, pandas, Matplotlib, Jupyter), C++, Fortran, MATLAB, R; Linux/Bash, Git, LaTeX; numerical methods, algorithm development, system identification.
- **Experimental Characterization & Fabrication:** Additive manufacturing (Bambu Lab FDM 3D printers); CAM and CNC machining (MasterCAM, Tormach PCNC MiniMill); mechanical testing on universal testing machines (UTM), Digital Image Correlation (DIC), photoelastic stress analysis; materials characterization via optical microscopy, SEM, TEM, XRD; electrochemical characterization using rotating disc electrode (RDE) for electrodeposition studies.
- **Sensing, Experimentation & Control:** LabVIEW-based data acquisition and control; sensor integration and calibration; mechanical, tribological, thermal, and electrochemical testing.

AI Projects

- **SUBHO — Surrogate-Based Bayesian Hyperparameter Optimization:** Probabilistic surrogate framework for automated tuning of evolutionary algorithms (Differential Evolution); improves convergence and robustness in high-dimensional black-box optimization.
- **Imbalanced Loan-Default Classification (AllLife Bank):** Decision Tree with cost-complexity post-pruning on imbalanced data (∼9.6% positive class); achieved ∼99% test recall with interpretable decision rules.
- **FoodHub Transactional Analytics:** Multivariate analysis on 1,898 orders / 178 restaurants; surfaced demand concentration, pricing segmentation, and delivery bottlenecks.

Publications (H-index = 13)

Peer-Reviewed Articles

1. **Shuvodeep De**, Agnivo Gosai, Karun Thankachan, Ramadan A. ZeinEldin, Abdulaziz T. Almaktoom, Mustafa Bayram, and Ali Wagdy Mohamed, "From Lexicons to Large Language Models: A Comprehensive Survey of Sentiment Analysis Methods, Benchmarks, and Emerging Frontiers," *Computer Modeling in Engineering & Sciences (CMES)*, 2026, accepted (in press).
2. **Shuvodeep De**, Shuo Xu, Shalini J. Rukmini, Amiee Jackson, Peter L. Wang, Eric MacDonald, Xianhui Zhao, Chad Duty, Alex Roschli, Gianni Stano, Gianluca Percoco, Adam Stevens, "Advanced Manufacturing Methods for Flexible Strain Gauges," *Sensors International*, 2025, accepted.
3. **Shuvodeep De**, Giovanni Meli, Meysam Khaleghian, Anahita Emami, "Hybrid Auxetic Architectures: Integrating Curvature-Driven Design for Enhanced Mechanical Tunability and Structural Performance," *Advanced Engineering Materials*, 2025.
4. Ya Tang, Zhijing Zhan, **Shuvodeep De**, Umesh Marathe, Halil Tekinalp, Soydan Ozcan, Wen Dong, Qing Jin, Xianhui Zhao, and Yan Li, "Sustainable Bio-based Composites: From Raw Materials to Recycling," *Composites Part B: Engineering*, 2025, 113188.
5. A. Sasikumar, Logesh Ravi, Malathi Devarajan, Abdulaziz S. Almazyad, **Shuvodeep De**, Guojiang Xiong, Seyed J. Mousavirad, Ali W. Mohamed, "An Efficient Binary Salp Swarm Algorithm for User Selection in Multiuser MIMO Antenna Systems," *Scientific Reports*, 15, Article 16421 (2025).
6. Shuo Xu, **Shuvodeep De**, Meysam Khaleghian, Anahita Emami, "Wear Resistance of Additively Manufactured Footwear Soles," *Lubricants*, 13(2):89, 2025.
7. **Shuvodeep De**, Shuo Xu, Meysam Khaleghian, Anahita Emami, "Gecko-inspired Surface Microstructures: Friction Control and Adaptive Design for Space Environments," In *SSDM 2025*, Houston, TX.
8. **Shuvodeep De**, Shalini Jayaraman Rukmani, Xianhui Zhao, Cait Clarkson, Frederic Vautard, Samarthya Bhagia, Monojoy Goswami, Sana F. Elyas, Wei Zhao, Jeremy C. Smith, Arthur Ragauskas, Soydan Ozcan, Halil Tekinalp, Muqing Si, Jinrui Huang, Ximin He, "Additive Manufacturing with Cellulose-based Composites: Materials, Modeling and Applications," *Advanced Functional Materials*, 2024, 2414222.
9. Shuo Xu, **Shuvodeep De**, Meysam Khaleghian, Anahita Emami, "Tribological and Hydrodynamic Analysis in Additive Manufactured Outsoles," *Friction*, 2024.
10. **Shuvodeep De**, Wei Zhao, and Zhangxian Yuan, "Lightweight mechanical and aerospace structures and materials," *Frontiers in Mechanical Engineering*, 10 (2024):1459814.
11. **Shuvodeep De**, Karanpreet Singh, Junhyeon Seo, Rakesh K. Kapania, Erik Ostergaard, Nicholas Angelini, Raymond Aguero, "Lightweight Chassis Design of Hybrid Trucks Considering Multiple Road Conditions and Constraints," *World Electr. Veh. Journal*, 12(3), 2021.
12. **Shuvodeep De**, John White, Timothy Brusuelas, Cory Patton, Amanda Koh, Qiang Huang, "Electrochemical behavior of protons and cupric ions in water-in-salt electrolytes with alkaline metal chloride," *Electrochimica Acta*, 338:135852, 2020.
13. **Shuvodeep De**, William D. Sides, Timothy Brusuelas, Qiang Huang, "Electrodeposition of superconducting rhenium-cobalt alloys from water-in-salt electrolytes," *Journal of Electroanalytical Chemistry*, 860:113889, 2020.
14. **Shuvodeep De**, Mohamed Jrad, Rakesh K. Kapania, "Structural Optimization of Internal Structure of Aircraft Wings with Curvilinear Spars and Ribs," *Journal of Aircraft*, 56:707–718, 2018.
15. Subhodip Biswas, Debanjan Saha, **Shuvodeep De**, Adam D. Cobb, Swagatam Das, Brian Jalaian, "Improving Evolutionary Algorithms through Bayesian Hyperparameter Optimization," In *IEEE CEC 2020: Special Session & Competition on Single-Objective Bound-Constrained Optimization.* (Best-performing algorithm in CEC 2020; highly cited.)
16. **Shuvodeep De**, Karanpreet Singh, Junhyeon Seo, Rakesh K. Kapania, Erik Ostergaard, Nicholas Angelini, Raymond Aguero, "Unconventional Truck Chassis Design with Multi-functional Cross Members," In *SAE World Congress*, 2019, Issue 2019-01-0839.
17. **Shuvodeep De**, Karanpreet Singh, Junhyeon Seo, Rakesh K. Kapania, Erik Ostergaard, Raymond Aguero, "Structural Design and Optimization of Commercial Vehicles Chassis under Multiple Load Cases and Constraints," In *60th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference*, 2019, p. 0705.
18. **Shuvodeep De**, Karanpreet Singh, Berkan Alanbay, Rakesh K. Kapania, Raymond Aguero, "Structural Optimization of Truck Front-frame under Multiple Load Cases," In *ASME IMECE*, Pittsburgh, PA, 2018, Vol. 52187, pp. V013T05A039.
19. **Shuvodeep De**, Mohamed Jrad, Davide Locatelli, Rakesh K. Kapania, Myles Baker, "SpaRibs Geometry Pa-

rameterization for Wings with Multiple Sections using Single Design Space," In *58th AIAA/ASCE/AHS/ASC SDM Conference*, AIAA 2017-0570, Dallas, TX, 2017, p. 0570.

20. Mohamed Jrad, **Shuvodeep De**, Rakesh K. Kapania, "Global-Local Aeroelastic Optimization of Internal Structure of Transport Aircraft Wing," In *18th AIAA/ISSMO MAO Conference*, Denver, CO, 2017, p. 4321.
21. Joe H. Robinson, Steven Doyle, Grant Ogawa, Myles Baker, **Shuvodeep De**, Mohamed Jrad, Rakesh K. Kapania, "Aeroservoelastic Optimization of Wing Structure Using Curvilinear Spars and Ribs (SpaRibs)," In *17th AIAA/ISSMO MAO Conference*, AIAA 2016-3994, Washington, DC, 2016, p. 3994.

Journals Under Review

1. Abhijit Biswas, **Shuvodeep De**, Pulickel Ajayan, et al., "Thermally Stable Ablation-Resistive Low-Density SiC-BN Composites" (under review).
2. Anmol Dubey, **Shuvodeep De**, Atin Pramanik, Pulickel Ajayan, et al., "Machine Learning for Battery Electrolyte Design: From Molecular Descriptors to Self-Driving Laboratories" (under review).
3. **Shuvodeep De**, Shuo Xu, Meysam Khaleghian, Anahita Emami, "Adaptive Friction Through Gecko-Like Surface Microstructures: Design, Simulation, and Testing" (under review).
4. **Shuvodeep De**, Pial Das, Guru MadiReddy, Roman Savinov, Yashwant Bandari, Sougata Roy, "Wire Arc Additive Manufacturing of Nano-Treated Al6061 Alloy with Interlayer Temperature Control" (under review).

Book Chapters

1. **Shuvodeep De**, Breanna James, Jesse Ji, Sanjita Wasti, Shuyang Zhang, Surbhi Kore, Halil Tekinalp, Yan Li, Esteban E. Ureña-Benavides, Uday Vaidya, Arthur J. Ragauskas, Erin Webb, Soydan Ozcan, Xianhui Zhao, "Biomass-derived composites for various applications," *Advances in Bioenergy*, 2023.
2. Huixin Jiang, Hannah Snider, Xianhui Zhao, Saurabh Prakash Pethe, **Shuvodeep De**, Soydan Ozcan, Tolga Aytug, Kashif Nawaz, Kai Li, "Cellulose Nanofibrils Composite Films," *Building a Low-Carbon Society Through Applied Environmental Materials Science*, 2024.

Conference Abstracts and Presentations

1. Pial Das, Roman Savinov, Yashwant Bandari, **Shuvodeep De**, Sougata Roy, "Investigating the Process-Microstructure-Property Relationships of Large-Scale Deposition with Nano-Treated Al6061 Alloy via Wire Arc Additive Manufacturing," In *TMS 2025*, Las Vegas.
2. Pial Das, Roman Savinov, Yashwant Bandari, **Shuvodeep De**, Sougata Roy, "Exploring the Process-Microstructure-Property Relationship of Nano-treated Aluminum Alloy Deposited via Wire Arc Additive Manufacturing," In *TMS 2025*, Las Vegas.
3. **Shuvodeep De**, Shuo Xu, Meysam Khaleghian, Anahita Emami, "Gecko-inspired Surface Microstructures: Friction Control and Adaptive Design for Space Environments," presented at ASME SSDM 2025, Houston, TX.
4. Yousub Lee, Thomas Feldhausen, Mithulan Paramanathan, Dennis Brown, Rangasayee Kannan, Lauren Heinrich, James Haley, Peeyush Nandwana, Christopher Fancher, **Shuvodeep De**, Srdjan Simunovic, Brian Post, "Toward Control of Part Distortion and Quality for Hybrid Additive/Subtractive Manufacturing," In *MS&T 2023*.
5. **Shuvodeep De**, Pei Zhang, Luke Meyer, Andrzej Nycz, Joshua Vaughan, Ramanan Sankaran, Yousub Lee, "Interactive Distortion Compensation of Large-Size Component Fabricated by Wire-Arc Direct Energy Deposition," In *11th Annual ORPAX Symposium*.
6. **Shuvodeep De**, Sunyong Kwon, Dongwon Shin, Yousub Lee, "Prediction of Thermal Conductivity of Al-Alloys: Finite Element Simulations Combined with Statistical Analysis and Machine Learning," In *MS&T 2023*.
7. Yousub Lee, Andrzej Nycz, Srdjan Simunovic, Luke Meyer, **Shuvodeep De**, Chris Masuo, William Carter, Pei Zhang, Ramanan Sankaran, Joshua Vaughan, "Toward Control of Part Distortion and Residual Stress for Large-Scale Metal Additive Manufacturing," In *ICAM 2023*.
8. **Shuvodeep De**, Yichen Huang, Qiang Huang, "Prediction of Superconformal Cobalt Deposition in Nanotrench using Deep Learning," In *MLLDT 2021*.
9. **Shuvodeep De**, Qiang Huang, "Mathematical Modeling of Cyclic Voltammogram Curves of Copper Deposition Involving Multiple Additives," In *2021 ECS Meeting*.
10. Subhodip Biswas, Debanjan Saha, **Shuvodeep De**, Adam D. Cobb, Swagatam Das, Brian Jalaian, "Improving Evolutionary Algorithms through Bayesian Hyperparameter Optimization," presented at *IEEE CEC 2020*, Special Session & Competition on Single-Objective Bound-Constrained Optimization.
11. **Shuvodeep De**, Qiang Huang, "Estimation of Kinetic Parameters of Additives by Semi-Analytical Solution," *2020 ECS Meeting*.
12. **Shuvodeep De**, Karanpreet Singh, Junhyeon Seo, Rakesh K. Kapania, Erik Ostergaard, Nicholas Angelini, Raymond Aguero, "Unconventional Truck Chassis Design with Multi-functional Cross Members," presented at

SAE World Congress 2019, Detroit, MI.

13. **Shuvodeep De**, Karanpreet Singh, Junhyeon Seo, Rakesh K. Kapania, Erik Ostergaard, Raymond Aguero, "Structural Design and Optimization of Commercial Vehicles Chassis under Multiple Load Cases and Constraints," presented at the 60th AIAA/ASCE/AHS/ASC SDM (SciTech) 2019, San Diego, CA.
14. Qiang Huang, William D. Sides, **Shuvodeep De**, Yang Hu, "Electrodeposition of Cu, Co and Re from Water-in-Salt Electrolytes," In *2019 ECS Meeting*.
15. **Shuvodeep De**, Karanpreet Singh, Berkan Alanbay, Rakesh K. Kapania, Raymond Aguero, "Structural Optimization of Truck Front-frame under Multiple Load Cases," presented at ASME IMECE 2018, Pittsburgh, PA.
16. **Shuvodeep De**, Rakesh K. Kapania, "Algorithm for Extraction of Local Panels from Surface Finite Element Model and Application in Wing Design," In *WCCM XIII / PANACM II*, New York City, NY, 2018.
17. **Shuvodeep De**, Mohamed Jrad, Davide Locatelli, Rakesh K. Kapania, Myles Baker, "SpaRibs Geometry Parameterization for Wings with Multiple Sections using Single Design Space," presented at the 58th AIAA/ASCE/AHS/ASC SDM (SciTech) 2017, Dallas, TX.
18. Mohamed Jrad, **Shuvodeep De**, Rakesh K. Kapania, "Global-Local Aeroelastic Optimization of Internal Structure of Transport Aircraft Wing," presented at the 18th AIAA/ISSMO MAO Conference 2017, Denver, CO.
19. Joe H. Robinson, Steven Doyle, Grant Ogawa, Myles Baker, **Shuvodeep De**, Mohamed Jrad, Rakesh K. Kapania, "Aeroservoelastic Optimization of Wing Structure Using Curvilinear Spars and Ribs (SpaRibs)," presented at the 17th AIAA/ISSMO MAO Conference 2016, Washington, DC.
20. **Shuvodeep De**, Qiang Liu, Mohamed Jrad, Rakesh K. Kapania, "An Integrated Global/Local Optimization Framework for Subsonic Wing with Ribs having Holes," *AeroMat*, 2015.