CURRICULUM VITAE

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1. EDUCATION

Ph.D., Mechanical Engineering, The University of Iowa, Iowa City, IA, Dec. 2007

M. Eng., Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, China, Feb. 2003

B. Eng., Engineering Mechanics, Shanghai Jiao Tong University, Shanghai, China, Jul. 2000

2. PROFESSIONAL EXPERIENCE

New Jersey Institute of Technology, Newark, NJ

09/2018–present **Associate Professor** of Biomedical Engineering, Director of BioDynamics Laboratory

CFD Research Corporation (CFDRC), Huntsville, AL

01/2014–08/2018 **Manager**, Human Performance and Biodynamics (HPB) Group

01/2012–08/2018 **Principal Research Scientist**, Computational Medicine and Biology (CMB) Division

07/2009–12/2011 **Senior Research Scientist**, CMB Division

08/2007–06/2009 **Research Scientist**, CMB Division

The University of Iowa, Iowa City, IA

06/2007–07/2007 **Instructor** for the "Dynamics" course, Department of Mechanical & Industrial Engineering

08/2004–05/2005 **Teaching Assistant**, Department of Mechanical & Industrial Engineering

08/2003–08/2007 **Research Assistant**, Virtual Soldier Research (VSR) Program, Center for Computer Aided Design (CCAD)

Shanghai Jiao Tong University, Shanghai, China

09/2000–02/2003 **Research Assistant**, Institute of Biomedical Manufacturing and Life Quality Engineering, Department of Mechanical Engineering

3. JOURNAL PUBLICATIONS

1. Akbaş, K., Mummolo, C., and **Zhou, X.**, "Characterization of Human Balance through a Reinforcement Learning-based Muscle Controller", PLOS ONE, in press, 2025
2. Rodríguez-Jorge, D., Zhang, S., Huang, J., Lopez-Sanchez, I., Srinivasan, N., Zhang, Q., **Zhou, X.**, and Su., H, "Biomechanics-Informed Mechatronics Design of Comfort-Centered Portable Hip Exoskeleton: Actuator, Wearable Interface, Controller Evaluation", IEEE Transactions on Medical Robotics and Bionics, in press, 2025

3. Yu, S., Liu, L., Zhang, S., Di Lallo, A. Zhu, J., Wu, Q., Zuo, G., **Zhou, X.**, and Su, H., "Controlling Negative and Positive Power for Efficiency Enhancement and Muscle Strain Mitigation During Squatting with a Portable Knee Exoskeleton", Annals of Biomedical Engineering (2025). https://doi.org/10.1007/s10439-025-03696-0
4. Luo, S., Jiang, M., Zhang, S., Zhu, J., Yu, S., Silva, I., Wang, T., Rouse, E., Zhou, B., Yuk, H., **Zhou, X.**, and Su, H., "Experiment-free exoskeleton assistance via learning-in-simulation", **Nature**, 630, pp. 353–359, 2024.
5. Ratnakumar, N., Akbaş, K., Jones, R., You, Z., and **Zhou, X.**, "Predicting sit-to-stand motions with a deep reinforcement learning based controller under idealized exoskeleton assistance". Multibody System Dynamics. 2024, pp. 1-18.
6. Jones, R., Ratnakumar, N., Akbas, K., and **Zhou, X.**, "Delayed Center of Mass Feedback in Elderly Humans Leads to Greater Muscle Co-Contraction and Altered Balance Strategy under Perturbed Balance: a Predictive Musculoskeletal Simulation Study", PLOS ONE, 19(5): e0296548. https://doi.org/10.1371/journal.pone.0296548, 2004.
7. Luo, S., Androwis, G., Adamovich, S., Su, H., Nunez, E. and **Zhou, X.**, "Robust Walking Control of a Lower Limb Rehabilitation Exoskeleton Coupled with a Musculoskeletal Model via Deep Reinforcement Learning", Journal of NeuroEngineering and Rehabilitation, 20, Article number 34, pp.1-16, 2023.
8. Ou, J., Hong, S.H., Kyzer, T., Yang, H., **Zhou, X.**, and Wang, Y., "A Low-cost Indoor Positioning System based on Data-driven Modeling for Robotics Research and Education", Robotica, 2023, 1-20, doi: 10.1017/S0263574723000589.
9. Yu, S., Yang, J., Huang, T., Zhu, J., Tsai, C.Y.，Knezevic, S., Spungen, A.M., **Zhou., X.** and Su, H., "Artificial Neural Network-Based Activities Classification, Gait Phase Estimation, and Prediction", Annals of Biomedical Engineering, pp.1-22, 2023, https://doi.org/10.1007/s10439-023-03151-y.
10. Luo, S., Androwis, G., Adamovich, S., Su, H., Nunez, E. and **Zhou, X.**, "Reinforcement Learning and Control of a Lower Extremity Exoskeleton for Squat Assistance", Frontiers in Robotics and AI, 8, pp.218, 2021.DOI:10.3389/frobt.2021.702845
11. **Zhou, X.** and Zheng, L., "Model-based Comparison of Passive and Active Assistance Designs in an Occupational Upper Limb Exoskeleton for Overhead Lifting", IISE Transactions on Occupational Ergonomics and Human Factors, Manuscript ID: UEHF-2021-0012, 2021, 1-19
12. Schneider, T., Panozzo, D., and **Zhou, X.**, "Isogeometric High Order Mesh Generation", Computer Methods in Applied Mechanics and Engineering, vol. 386, 2021, 114104.
13. Pickle, N., Zehnbauer, T., Harrand, V., Zientara, G., Sanford, D., **Zhou, X.**, and Roos, P.E., "Automated Medical Avatar Animation for Warfighter Mission Simulation", Journal of Trauma and Acute Care Surgery, 2021, 91(2S):S107-S112,2021.
14. Kannan R., Singh N., Przekwas, A., **Zhou, X.**, Walenga, R., and Babiskin, A., "A Quasi-3D Model of the Whole Lung: Airway Extension to the Tracheobronchial Limit using the Constrained Constructive Optimization and Alveolar Modelling, using a Sac-Trumpet Model", Journal of Computational Design and Engineering, 2021, https://doi.org/10.1093/jcde/qwab008.
15. **Zhou**, **X.** and Chen, X., "Design and Evaluation of Torque Compensation Controllers for a Lower Extremity Exoskeleton", Journal of Biomechanical Engineering, 143(1), pp. 011007, 2021.
16. Roos, P.E., Vasavada, A., Zheng, L. and **Zhou, X.**, "Neck Musculoskeletal Model Generation through Anthropometric Scaling", PLOS One, 15.1:e0219954 , 2020, https://doi.org/10.1371/journal.pone.0219954

17. Liu, X., Hubbi, B., and **Zhou, X.**, "Spatial Coordinate Corrected Motion Tracking for Optical Coherence elastography", Biomedical Optics Express, 10(12):6160-6171, 2019.
18. Yang, X., Huang T., Hu H., Yu S., Zhang, S., **Zhou, X.**, Carriero, A., Yue, G., and Su, H., "Spine-Inspired Continuum Soft Exoskeleton for Stoop Lifting Assistance", IEEE Robotics and Automation Letters, 4(4):4547-4554, 2019.
19. Motiwale S., Subramani, A., Kraft, R., **Zhou, X.**, "A Non-Linear Multi-Axial Fatigue Damage Model for the Cervical Intervertebral Disc Annulus", Advances in Mechanical Engineering, 10(6):1-16, 2018.
20. **Zhou**, **X.**, Sun, K., Roos, P.E., Li, P., Corner, B., "Anthropometry Model Generation Based on ANSUR II Database", International Journal of the Digital Human, 1(4): 321-343, 2016.
21. Dura-Bernal, S., **Zhou, X.**, Neymotin, S.A., Przekwas, A., Francis, J.T., Lytton, W.W., "Cortical Spiking Network Interfaced with Virtual Musculoskeletal Arm and Robotic Arm", Frontiers in Neurorobotics, 9:13, 2015.
22. **Zhou, X.,** Whitley, P., and Przekwas, A., "A Musculoskeletal Fatigue Model for Prediction of Aviator Neck Maneuvering Loadings," Int. J. Human Factors Modelling and Simulation, 4:1-29, 2014.
23. **Zhou, X.** and Przekwas, A., "A Fast and Robust Whole-body Control Algorithm for Running," Int. J. Human Factors Modelling and Simulation, 2(1-2): 127-148, 2011
24. **Zhou, X.**, Raghavan, M.L., Harbaugh, R.E., and Lu, J., "Patient-Specific Wall Stress Analysis in Cerebral Aneurysms Using Inverse Shell Model", Annals of Biomedical Engineering, 38(2): 478-489, 2010
25. Lu, J and **Zhou, X.**, "Cylinder Element: Isogeometric Model of Continuum Rod", Computer Methods in Applied Mechanics and Engineering, 200(1-4): 233-241, 2010.
26. **Zhou, X.** and Lu, J., "Estimation of Vascular Open Configuration Using Finite Element Inverse Elastostatic Method", Engineering with Computers, 25:49-59, 2009
27. Lu, J., **Zhou, X.,** and Raghavan, M.L., "Inverse Method of Stress Analysis for Cerebral Aneurysms", Biomechanics and Modeling in Mechanobiology, 7(6): 477-486, 2008
28. **Zhou, X.** and Lu, J., "Inverse Formulation for Geometrically Exact Stress Resultant Shells", International Journal for Numerical Methods in Engineering, 74(8): 1278-1302, 2008
29. Lu, J., **Zhou, X.,** and Raghavan, M.L., "Computational Method of Inverse Elastostatics for Anisotropic Hyperelastic Solids", International Journal for Numerical Methods in Engineering, 69(6): 1239-1261, 2007
30. Lu, J., **Zhou, X.**, and Raghavan, M.L., "Inverse Elastostatic Stress Analysis of Pre-deformed Biological Structures: Demonstration Using Abdominal Aortic Aneurysms", Journal of Biomechanics, 40: 693-696, 2007
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32. **Zhou, X.** and Lu, J., "Biomechanical Analysis of Skeletal Muscle in an Interactive Digital Human System", SAE Transactions: Journal of Passenger Cars - Mechanical Systems, 114: 2921-2929, 2005
33. **Zhou, X.,** Wang, Y., and Wang, C., "Three-Dimensional Finite Element Study on Middle Face Advancement with Distraction Osteogenesis" (in Chinese), Journal of Biomedical Engineering (China), 21(2): 292-296, 2004
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4. BOOK CHAPTERS

1. **Zhou, X.**, Mont, A., and Adamovich, S., "Evaluation of a 1-DOF Hand Exoskeleton for Neuromuscular Rehabilitation", In: Ateshian, Myers, and Tavaras (eds) Computer Methods, Imaging and Visualization in Biomechanics and Biomedical Engineering, Lecture Notes in Computational Vision and Biomechanics 36, Springer, ISSN 2212-9391, pp. 384-397, 2020
2. Kraft, R.H., Fielding, R.A., Lister, K., Shirley, A., Marler, T., Merkle, A.C., Przekwas, A.J., Tan, X.G., and **Zhou,X.**, "Modeling Skeletal Injuries in Military Scenarios", Chapter 3 in Studies in Mechanobiology, Tissue Engineering and Biomaterial, pp. 3-35, 2016, Springer, Cham.

5. PEER REVIEWED CONFERENCE PAPERS

1. Xu, S., Jones, R., Ratnakumar, N., Akbas, K., Powell, J., Zhuang, Z., and **Zhou, X.**, "Impact of Self-Contained Breathing Apparatus (SCBA) Weights on Firefighter's Kinematics During Simulated Firefighter Tasks", In International Conference on Applied Human Factors and Ergonomics and the Affiliated Conferences (AHFE) 2024, pp. 1-7, 2024.
2. Marena, M., Ratnakumar, N., Jones, R., **Zhou, X.**, Das, S. and Shen, B., "Predicting Metabolic Rate for Firefighting Activities with Worn Loads using a Heart Rate Sensor and Machine Learning". In 2023 IEEE 19th International Conference on Body Sensor Networks (BSN), pp. 1-4, 2023.
3. Akbas, K. and **Zhou, X.**, ""State-space Characterization of Human Balance through a Reinforcement Learning Based Muscle Controller", International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC-CIE), paper number: IDETCDETC2023-114841, pp. 1-7, 2023.
4. Ratnakumar, N., Devulapalli, V., Deepak, N., & **Zhou, X.,** "Prediction of Walking Kinematics and Muscle Activities under Idealized Lower Limb Exoskeleton Assistances". In Proceedings of the 7th International Digital Human Modeling Symposium (DHM 2022) (Vol. 7, No. 1), pp. 1-9, **Best Paper** award.
5. Enrique, C., Vinnikov, M., and **Zhou, X.**, "Augmented Reality Anatomy Visualization for Surgery Assistance with HoloLens", ACM International Conference on Interactive Media Experiences. pp. 329-331, 2021.
6. Ratnakumar, N. and **Zhou, X.**, "Optimized Torque Assistance during Walking with an Idealized Hip Exoskeleton", International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC-CIE), paper number: IDETC2021-71376, pp. 1-10, 2021.
7. **Zhou, X.**, "Predictive Human-in-the-loop Simulations for Assistive Exoskeletons", International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC-CIE), paper number: IDETC2020-22668, pp. 1-7, 2020.
8. Liu, X., Liu, Y., Hubbi, B., **Zhou, X.** and Peters, S., "Spatial Coordinate Corrected Motion Tracking for Optical Coherence Elastography". In Optical Elastography and Tissue Biomechanics VII (Vol. 11242, p. 1124218). International Society for Optics and Photonics, 2020, February, doi: 10.1117/12.2546070.
9. Luo, S., Edmonds, M., Yi, J., **Zhou, X.**, Shen, Y., "Spline-based Modeling and Control of Soft Robots", IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM), Boston, MA, pp. 482-487, 2020.

10. **Zhou, X.**, Chen, X., Roos, P.E., Phillip Whitley, "Effects of Head Supported Mass on Predicted Neck Musculoskeletal Loadings during Walking and Running", International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC-CIE), paper number: IDETC2019-97389, pp. 1-7, 2019.
11. Yang, H.Q., **Zhou, X.**, Harris, R.E., and Yang, S., "An Open Source, Geometry Kernel Based High-Order Element Mesh Generation Tool", AIAA Scitech 2019 Forum, AIAA SciTech Forum, (AIAA 2019-1719) https://doi.org/10.2514/6.2019-1719, pp. 1-26, 2019.
12. **Zhou, X.**, Roos, P.E., Chen, X., "Modeling of Muscle Atrophy and Exercise Induced Hypertrophy". In: Cassenti D. (eds) Advances in Human Factors in Simulation and Modeling. Advances in Intelligent Systems and Computing, vol 591. Springer, Cham, pp. 116-127, 2017.
13. Whitley, P.E., Roos, P.E., **Zhou, X.**, "Comparison of Gender Specific and Anthropometrically Scaled Musculoskeletal Model Predictions Using the Sorensen Test", In: Cassenti D. (eds) Advances in Human Factors in Simulation and Modeling. Advances in Intelligent Systems and Computing, vol 591. Springer, Cham, pp. 469-477, 2017.
14. Motiwale, S., Subramani, A.V., **Zhou, X.**, Kraft, R.H., "Damage Prediction for a Cervical Spine Intervertebral Disc", Proceedings of ASME 2016 International Mechanical Engineering Congress and Exposition, Volume 3: Biomedical and Biotechnology Engineering, Paper No. IMECE2016-67711, pp. V003T04A043--V003T04A043, Phoenix, Arizona, USA, November 11–17, 2016
15. Makwana, A.R., Krishna, A.R., Yuan, H., Kraft, R.H., **Zhou, X.,** Przekwas, A. and Whitley, P., "Towards a Micromechanical Model of Intervertebral Disc Degeneration under Cyclic Loading", Proceedings of ASME 2014 International Mechanical Engineering Congress and Exposition, Paper No. IMECE2014-39174, pp. V003T03A012--V003T03A018, Montreal, Quebec, Canada, November 14–20, 2014
16. Dura-Bernal, S., Chadderdon, G. L., Neymotin, S.A., **Zhou, X.,** Przekwas, A., Francis, J.T., and Lytton, W.W., "Virtual Musculoskeletal Arm and Robotic Arm Driven by a Biomimetic Model of Sensorimotor Cortex with Reinforcement Learning", Proceedings of 2013 IEEE Signal Processing in Medicine and Biology Symposium (SPMB), pp. 1-5, Brooklyn, NY, December, 2013
17. **Zhou, X.**, Whitley, P., Przekwas, A., "A Fatigable Musculoskeletal Model for Prediction of Neck Maneuvering Loadings on Aviators", Proceedings of 2nd International Digital Human Modeling Symposium, Paper No. 83, pp. 1-7, Ann Arbor, MI, June 11-13, 2013
18. Wilkson, P., **Zhou, X.**, Przekwas, A., Buhrman, J., and Cheng, H., "Virtual Body Generator for Anthropometry and Physiology Based Modeling", SAE Digital Human Modeling for Design and Engineering, Paper No. 2009-01-2280, pp. 1-9, Goteborg, Sweden, June 9-11, 2009
19. J. Lu, X. Zhao, and **X. Zhou**. "Nondestructive identification of Pointwise Elastic Properties in Nonlinear Membrane Structures", Proceedings of 2008 NSF Engineering Research and Innovation Conference, Knoxville, Tennessee, January 2008
20. Yang, J., Marler, T., Beck, S., Kim, J., Wang, Q., **Zhou, X.**, Pena Pitarch, E., Farrell, K., Patrick, A., Potratz, J., Abdel-Malek, K., Arora, J., and Nebel, K., "New Capabilities for The Virtual-Human Santos™", SAE 2006 World Congress, Paper No. 2006-01-0697, pp. 1-11, April 3–6, 2006.
21. **Zhou, X.** and Lu, J., "NURBS-Based Galerkin Method and Application to Skeletal Muscle Modeling", In Proceedings of the 2005 ACM Symposium on Solid and Physical Modeling (SPM05), ACM Press, pp. 71-78, 2005.

6. EXTENDED CONFERENCE ABSTRACTS

1. Dura-Bernal, S., Chadderdon, G.L., Neymotin, S.A., **Zhou, X**., Przekwas, A., Lytton, W.W, "Reinforcement Learning in a Biomimetic Model of Sensorimotor Cortex Controlling a Virtual Musculoskeletal Arm", The 1st Multidisciplinary Conference on Reinforcement Learning and Decision Making, Oct 25-27, 2013, Princeton University, Princeton, New Jersey, USA.
2. Przekwas, A., **Zhou, X.**, Tan, X.G., Chen, Z.J., Reeves, D., and Chancey, V.C., "High-Fidelity and Compact Modeling for Bone Conduction Communication Systems", Proceedings of 2009 ASME International Mechanical Engineering Congress & Exposition (IMECE 2009), Paper No. IMECE2009-12954, pp. 485-486, Lake Buena Vista, FL, Nov., 2009
3. Przekwas, A., Tan, X.G., Chen, Z.J., **Zhou, X.**, Reeves, D., Wilkerson, P., Yang, H.Q., Harrand, V., and Chancey, V.C., "Techniques in Finite Element Modeling of Helmeted-Head Biomechanics", Proceedings of 2009 ASME International Mechanical Engineering Congress & Exposition (IMECE 2009), Paper No. IMECE2009-12955, pp. 443-446, Lake Buena Vista, FL, Nov., 2009
4. Przekwas, A., Tan, X.G., Chen, Z.J., **Zhou, X.**, Reeves, D., Wilkerson, P., Yang, H.Q., Harrand, V., and Chancey, V.C., "Computational Modeling of Helmet Structural Dynamics During Blunt Impacts", Proceedings of 2009 ASME International Mechanical Engineering Congress & Exposition (IMECE 2009), Paper No. IMECE2009-12958, pp. 447-449, Lake Buena Vista, FL, Nov., 2009
5. Przekwas, A., Chancey, C., Tan, X.G., Chen, Z.J., Wilkerson, P., **Zhou, X.,** Harrand, V., Imielinska, C., and Reeves, D., "Development of Physics-Based Model and Experimental Validation of Helmet Performance in Blast Wave TBI", Proceedings of ASME Summer Bioengineering Conference, Paper No. SBC2009-206839, pp. 607-608, Lake Tahoe, CA, June 17-21, 2009

7. CONFERENCE ABSTRACTS/POSTERS

1. Jones, R., Zheng, L., Ratnakumar, N., Hwang, J., and **Zhou, X.**, "Analyzing the impact of passive exoskeleton assistance on lifting dynamics through musculoskeletal modeling". 50th Northeast Bioengineering Conference. Hoboken, NJ, April 4-5, 2024.
2. Akbaş, K., Ratnakumar, N., Jones, R., Daneault, JF., Mummolo, C., and **Zhou, X.**, "Experimental Approach to Quantifying Postural Stability in the Center of Mass State Space." 50th Northeast Bioengineering Conference. Hoboken, NJ, April 4-5, 2024.
3. You, Z., Ratnakumar, N., and **Zhou, X.**, "Exploring Lower Limb Sagittal Angles for Enhanced Human Activity Recognition", 50th Northeast Bioengineering Conference. Hoboken, NJ, April 4-5, 2024.
4. Tohfafarosh, M., Ratnakumar, N., Jones, R., You, Z., and **Zhou, X.**, "Data Driven Prediction of Vertical Ground Reaction Forces in Stance Motions using a Custom Pressure Insole", 50th Northeast Bioengineering Conference. Hoboken, NJ, April 4-5, 2024.
5. Kwon, S., Ratnakumar, N., Jiang, Z., You, Z., **Zhou, X.**, and L. Dong., "A Self-Powered Flexible Wearable Sensor for Activity Recognition", IEEE-EMBS 19th International Conference on Body Sensor Networks: Sensor and Systems for Digital Health. Boston, MA, Oct 9-11, 2023.
6. You, Z., Ratnakumar, N., Shen, B., and **Zhou, X.,** "Minimalist Activity Recognition with Inertial Measurement Units." IEEE-EMBS 19th International Conference on Body Sensor Networks: Sensor and Systems for Digital Health. Boston, MA, Oct 9-11, 2023

7. **Zhou, X.**, Zientara, G., Konopacki, A., Pavloff, A., and Redd, L., "Holographic Trauma Wound Generation and Visualization with Fast Physics Models", Military Health System Research Symposium (MHSRS), Kissemee, FL, August 14-17, 2023
8. Xu, S., Jones, R., Ratnakumar, R., **Zhou, X.**, Powell, J., and Zhuang, Z., "A new method to evaluate the effect of self-contained breathing apparatus (SCBA) weight on firefighter musculoskeletal joint kinematics and kinetics", AHFE 2023 International Conference, San Francisco, CA, July 20-24, 2023
9. Jones, R., Ratnakumbar, N., Akbas, K., and **Zhou, X.**, "Longer Center of Mass Feedback Delay Increases Muscle Activation in Major Stabilizing Muscles During Perturbed Balance", Northeast Bioengineering Conference (NEBEC), Drexel University, Philadelphia, PA, 2023
10. Ratnakumbar, N., Zurzolo, L., Jones, R., Adamovich, S., and **Zhou, X.**, "Head Tracking Performance of the HoloLens2 during Rehabilitative Games: a Pilot Study", Northeast Bioengineering Conference (NEBEC), Drexel University, Philadelphia, PA, 2023
11. Kubra Akbas and **Zhou, X.**, "Center of Mass State-Space Characterization of Postural Balance Using Reinforcement Learning", Northeast Bioengineering Conference (NEBEC), Drexel University, Philadelphia, PA, 2023
12. **Zhou, X.**, Zientara, G., Pavloff, A., and Redd, L., "Development of an Augmented Reality Triage Aid with Anatomical Hologram and Trauma Wound Visualization", Military Health System Research Symposium (MHSRS), Kissemee, FL, September 12-15, 2022
13. Luo, S., Swami, C.P., **Zhou, X.**, and Su, H., "Deep-Neural Network Reinforcement Learning-based Robust Control of Lightweight and Compliant Lower-Limb Exoskeletons for Versatile Walking", ICRA 2022 workshop
14. **Zhou, X.** and Ratnakumar N. "Exoskeleton Hip Assistance during Walking: Assisting Flexion or Extension?", 42nd Annual Meeting of the American Society of Biomechanics, Abstract ID: 647, August 4-7, 2020
15. Pickle, N., Zehnbauer, T., **Zhou, X.**, Sanford, D., Hoyt, R., Zientara, G.P., and Roos, P.E., "A Software Platform for Dynamic Simulation of Anatomically Realistic Warfighter Avatars During Military-Relevant Tasks", Military Health System Research Symposium (MHSRS), Kissemee, FL, August 19-22, 2019
16. Roos, P.E., Mituniewicz, A., Zehnbauer, T., Wang, S., Zheng, N., **Zhou, X.**, "Helmet Motion during Walking and Running and Its Effects on Head-Helmet Interaction Forces", XXVII Congress of the International Society of Biomechanics (ISB2019) and the 43rd Annual Meeting of the American Society of Biomechanics (ASB2019), Calgary, July 31-Aug 4, 2019
17. Liu, X., Hubbi, B., **Zhou, X.**, and Peters, S. "Spatial coordinate corrected motion tracking for optical coherence elastography, SPIE Photonics West, Optical Elastography and Tissue Biomechanics VII, San Francisco, CA, February 1-2, 2020,
18. **Zhou, X.**, Nunez, E., Adamovich, S., and Androwis, G., "Modeling and Validation of a Novel Robotic Lower Extremity Exoskeleton for Neurorehabilitation", 41st Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), Berlin, Germany, July 23-27, 2019.
19. **Zhou, X.**, Mont, A., and Adamovich, S., "Evaluation of a 1-DOF Hand Exoskeleton for Neuromuscular Rehabilitation", 16th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and the 4th Conference on Imaging and Visualization (CMBBE 2019), Columbia University, New York City, 14 – 16 August 2019

20. **Zhou, X.**, Mont, A., and Adamovich, S., "Modeling and Evaluation of an Admittance Controlled Hand Exoskeleton for Neuromuscular Rehabilitation", 45th Annual Northeast Bioengineering Conference, Rutgers University, New Brunswick, NJ, March 20-22, 2019
21. **Zhou, X.**, Chen, X., "Design and Evaluation of Controllers for an Elastically Strapped Lower Extremity Exoskeleton", International Mechanical Engineering Congress & Exposition, IMECE, Pittsburgh, PA, Nov. 9-15, 2018
22. **Zhou, X.** and Chen, X., Roos, P.E., and Whitley, P., "Computational Prediction of Neck Musculoskeletal Loading in Walking and Running with Head Supported Mass", International Mechanical Engineering Congress & Exposition, IMECE, Pittsburgh, PA, Nov. 9-15, 2018
23. **Zhou, X.**, Roos, P.E., Chen, X., and Whitley, P., "Health Hazard Assessment of Neck Musculoskeletal Injury due to Head Supported Mass", Military Health System Research Symposium, MHSRS, Kissimmee, FL, USA, Aug. 20-23, 2018.
24. Whitley, P., Roos, P.E., and **Zhou, X.**, "Acute Low Back Pain Prediction using a Bioenergetics-coupled Musculoskeletal Model", Aerospace Medical Association (AsMA) 89th Annual Scientific Meeting, Dallas, TX, May 2018.
25. Roos, P.E., Zheng, N., Zehnbauer, T., Mituniewicz, A., Whitley P., and **Zhou, X.**, "Validation of a Neck Model with Muscle Fatigue using the Sorensen Test", 42th Annual Meeting of the American Society of Biomechanics, Rochester, MN, USA, August 8–11, 2018.
26. Roos, P. E., **Zhou, X.**, "Anthropometric Scaling of Musculoskeletal Models", 41th Annual Meeting of the American Society of Biomechanics, Boulder, CO, USA, August 8–11, 2017.
27. Roos, P. E., **Zhou, X.**, Whitley, P., "Influence of Computational Methods on Glenohumeral Joint Reaction Forces", 40th Annual Meeting of the American Society of Biomechanics, Raleigh, NC, USA, August 2nd – 5th, 2016
28. Roos, P. E., **Zhou, X.**, Liu, W., "Knee Joint Reaction Forces in Tai Chi Gait versus Normal Gait", 40th Annual Meeting of the American Society of Biomechanics, Raleigh, NC, USA, August 2nd – 5th, 2016
29. Dura-Bernal, S., **Zhou,X.**, Chadderdon, G.L., Lytton, W.W., and Przekwas, A., "Interfacing a biomimetic model of sensorimotor cortex with a musculoskeletal model and a robotic arm", 43rd annual meeting of the Society for Neuroscience, Nov. 9-13, 2013, San Diego, CA
30. Dura-Bernal**,** S.**, Zhou,X.**, Neymotin, S.A., Kerr C., Chadderdon, G.L., Przekwas,A., Francis, J.T., and Lytton, W.W., "Learning to control a virtual musculoskeletal arm using a biomimetic model of sensorimotor cortex', 2013 IMAG Multiscale Modeling (MSM) Consortium Meeting, October 2-3, NIH Campus, Bethesda, MD
31. **Zhou, X.** and Przekwas, A., "A Robust Real-Time Control Algorithm for Whole-body Running," Proceedings of 2011 ASME Summer Bioengineering Conference (SBC), Paper No. SBC2011-53458, pp. 275-276, Farmington, PA, June, 2011
32. **Zhou, X.,** Lu, J., and Przekwas, A., "The Effect of Stress-Free Configurations on FSI Analysis of Cerebral Aneurysms", the 10th U.S. National Congress for Computational Mechanics (USNCCM), Columbus, OH, July 16-19, 2009
33. **Zhou, X.** and Lu, J., "Inverse Formulation for Geometrically Exact Stress Resultant Shell", Computational Mechanics, Proceedings of "International Symposium on Computational Mechanics", Beijing, China, July 30–August 1, 2007

34. **Zhou, X.** and Lu, J., "Stress Analysis of Human Upper Limb Muscles in an Interactive Digital Human System", 7th World Congress on Computational Mechanics (WCCM VII), Los Angeles, CA, July, 2006
35. Lu, J., **Zhou, X.,** and Raghavan, M.L., "Method of Inverse Elastostatics for Patient-Specific Stress Analysis in Biological Systems". 7th World Congress on Computational Mechanics (WCCM VII), Los Angeles, CA, July 16-22, 2006
36. **Zhou, X.** and Lu, J., "Biomechanical Analysis of Skeletal Muscle in an Interactive Digital Human System", SAE Digital Human Modeling for Design and Engineering Conference (DHM), Iowa City, IA, June, 2005
37. Lu, J., **Zhou, X.,** Raghavan, M.L., Hou, W., and Yang, W., "Prediction of Aneurysm Stress Based On Deformed Geometry Using Inverse Finite Element Formulation", ASME Summer Bioengineering Conference, Vail, CO, June 22-26, 2005
38. Lu, J., **Zhou, X**., and Raghavan, M.L., "Stress Analysis in Biological Structures Based on Deformed Configuration", US National Congress on Computational Mechanics, Bioengineering Symposium, 2005
39. Lu, J., Zhou, X., and Raghavan, M.L., "In Vivo Stress in Aneurysms: An Inverse Approach", BMES 2005 Annual Meeting, Sep. 28- Oct.1, Baltimore, MD, 2005
40. **Zhou, X.** and Lu, J., "Deformable Solid Modeling Using NURBS-Based Finite Element Method", 116th Annual Meeting of the Iowa Academy of Science, The University of Northern Iowa, Cedar Falls, IA, USA, April 2004
41. Wang, Y., **Zhou, X.**, Wang, C., and Mu, X., "Study of the Resistance Center of Middle Face Advancement with LeFort I Distraction Osteogenesis", Proceedings of 7th National Conference on Orthodontics (in Chinese), Xi'an, China, 2004
42. **Zhou, X.,** Yu, L., and Wang, C., "The Effect of Objective Functions on an Optimization Model of Muscle Forces Applied to Human Mandible", Proceedings of 21st Century Biomedical Engineering Conference (in Chinese), Beijing, China, 2001

8. HONORS AND AWARDS

Best Paper Award, "*Prediction of Walking Kinematics and Muscle Activities under Idealized Lower Limb Exoskeleton Assistances*",7th International Digital Human Modeling Symposium (DHM 2022), Iowa City, IA, 2022

Outstanding Presentation Award, "*A Fatigable Musculoskeletal Model for Prediction of Neck Maneuvering Loadings on Aviators*", 2nd International Digital Human Modeling Symposium, Arbor, MI, June 11-13, 2013

Graduate Student Travel Awards for the ACM Symposium on Solid and Physical Modeling, 2005

Graduate with Honor, Shanghai Jiao Tong University, 2003

9. PROFESSIONAL ACTIVITIES

Reviewer:

Acta Biomaterialia
Applied Sciences
ASME Journal of Engineering and Science in Medical Diagnostics and Therapy
Communications in Nonlinear Science and Numerical Simulation
Computer Animation and Virtual Worlds
Critical Reviews in Biomedical Engineering
Frontiers in Neurorobotics

Gait & Posture
Heliyon
IDETC-CIE, International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, 2019-2023
IEEE/ASME Transactions on Mechatronics
IEEE Transactions on Artificial Intelligence
IEEE Transactions on Automation Science and Engineering
IEEE Transactions on Biomedical Engineering
IEEE Transactions on Cybernetics
IEEE Transactions on Human-Machine Systems
IEEE/ASME Transactions on Mechatronics
IEEE Transactions on Neural Systems & Rehabilitation Engineering
IIE Transactions on Occupational Ergonomics and Human Factors
International Conference on Intelligent Robots and Systems (IROS)
International Journal of Vehicle Design
International Journal of Advanced Robotic Systems
International Journal of Robotics and Automation
International Journal of Human Factors Modelling and Simulation (IJHFMS)
International Journal of Humanoid Robotics
Journal of Biomechanical Engineering
Journal of Computing and Information Science in Engineering
Journal of Human Factors and Ergonomics in Manufacturing & Service Industries
Journal of Mechanisms and Robotics
Journal of NeuroEngineering and Rehabilitation
Mathematical Biosciences and Engineering
PLOS ONE
Robotica
Scientific Reports
Sensors
The 22nd World Congress of the International Federation of Automatic Control (IFAC WAC 2023)

Session Organizer

ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC-CIE) 2020, 2021, 2022, 2023, 2024 Conference

Guest Editor:

Special Issue on "Dynamics in Digital Human Modelling and Simulation" of IJHFMS, 2010

Academic Editor:

PLOS ONE Editorial Board, 2024-present

10. INVITED PRESENTATIONS

"Control of Exoskeleton with Reinforcement Learning and Sim-to-real Transfer", Department of Mechanical Engineering, The City University of New York (CUNY), November 21, 2024

"Optimizing Exoskeleton Assistance with Neuromusculoskeletal Simulations and Reinforcement Learning", Department of Mechanical and Aerospace Engineering Seminar, Rutgers University, Piscataway, NJ, September 25, 2024

"Evaluation of the Impact of Heavy Loads and Wearable Assistive Devices on the Performance of Occupational Workers", National Institute for Occupational Safety and Health (NIOSH) Seminar, Pittsburg, PA, June 13, 2024

"Predicting Optimized Exoskeleton Assistance to Walking and Its Effects on Neuromusculoskeletal Adaptation", NJIT, Department of Mechanical and Industrial Engineering, 2022

"Optimizing Exoskeleton Assistance from the Perspectives of Neuromusculoskeletal Biomechanics", Lehigh University, Department of Bioengineering, 2021

"Neuromusculoskeletal Biomechanics and Its Applications on Assistive Device Design and Rehabilitation", Biomedical Engineering Seminar, SUNY Downstate Health Sciences University, Brooklyn, NY, October 16, 2019

"Personalized Human Modeling: from Anthropometry and Anatomy to Biomechanics and Physiology", Department of Mechanical Engineering, Texas Tech University, Lubbock, TX, October 7, 2019

"From Human-in-the-Loop Simulations to the Design of Robotic Assistive Devices", Department of Mechanical Engineering, City College of New York, October 3, 2019

"Design and Evaluation of Exoskeletons with Neuromusculoskeletal Modeling", 16th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and 4th Conference on Imaging and Visualization, August 14-16, 2019, New York City, USA,

"Modeling and Evaluation of Exoskeletons and Exosuits for Rehabilitation and Occupational Tasks", National Institute for Occupational Safety and Health (NIOSH), Morgantown, WV, June 24, 2019

"Modeling of Wearable Robots for Assistance to Human Musculoskeletal Motions", Soft Robotics and Robot Learning Workshop, City University of New York (CUNY), NYC, June 06, 2019

"Human-in-the-loop Controller Evaluation for Assistive Exoskeletons", Mechanical and Aerospace Engineering Department Seminar, Tandon School of Engineering, New York University, April 25, 2019

"Modeling and Evaluation of an Admittance Controlled Hand Exoskeleton for Neuromuscular Rehabilitation", 45th Annual Northeast Bioengineering Conference (NEBEC), Rutgers University, New Brunswick, NJ, March 20-22, 2019

"Warfighter Biodynamics, Fatigue and Injury Protection: Modeling Perspectives", SUNY Downstate Medical Center, November 2013

"Virtual Human Modeling for Warfighter Protection and Performance", Mississippi State University, September 2011

11. SPONSORED RESEARCH

At NJIT

1. **Title:** AI-Powered Lower Extremity Rehabilitation Exoskeleton Control for Personalized Assistance

– **Role:** PI **Award Period:** 02/2025 – 02/2026 **Award Amount:** $50K

– **Funding Source:** New Jersey Health Foundation

2. **Title:** AI-Powered Rehabilitation Exoskeleton Control for Human Mobility Restoration
- **Role:** PI **Award Period:** 04/2025 – 04/2026 **Award Amount:** $50K
- **Funding Source:** NJIT Grace Hopper AI Research Institute Seed Grant Program
3. **Title:** Rehabilitation Engineering Research Center (RERC) on Advancing Rehabilitation Technologies for Ambulation, "Development and Implementation of a Personalized Controller for Lower Extremity Robotic Exoskeletons Using Machine and Deep Reinforcement Learning"
- **Role:** Co-I **Award Period:** 09/2024 – 08/2029 **Award Amount:** $300.5K
- **Funding Source:** US Dept of Health & Human Services (HHS), National Institute on Disability, Independent Living and Rehabilitation Research (NIDILRR) (90REGE0025-01-00)
- **Lead PI Institute:** Kessler Foundation, total funding $ 4,624K
4. **Title:** Development of Mixed Reality Environments for Brain Imaging and Neuromodulation Applications in Neurorehabilitation
- **Role:** Co-PI **Award Period:** 07/2024 – 06/2025 **Award Amount:** $5K
- **Funding Source:** NJIT Faculty Seed Grant FY24
5. **Title:** Assessing the Impact of Passive Exoskeletons on Manual Material Handling on Construction Elevators
- **Role:** PI **Award Period:** 09/2023 – 03/2025 **Award Amount:** $39.2K
- **Funding Source:** National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC) (75D30123P17823)
6. **Title:** Initial Evaluation on Exoskeleton Support for Older Warehouse Workers
- **Role:** PI **Award Period:** 07/2024 – 02/2025 **Award Amount:** $24K
- **Funding Source:** National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC) (75D30124P18941)
7. **Title:** Isogeometric Mesh Generation and Deformation for Fluid-Structure Interaction Problems in Mobility Applications
- **Role:** PI **Award Period:** 07/2022 – 07/2024 **Award Amount:** $330K
- **Funding Source:** Army CCDC Army Research Laboratory STTR Phase II (W911NF-20-P-0008)/Subcontract
8. **Title:** Evaluation of Self-contained Breathing Apparatus (SCBA) Design and Weight on Firefighter Musculoskeletal Loadings
- **Role:** PI **Award Period:** 09/2020 – 06/2024 **Award Amount:** $193.6K
- **Funding Source:** National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC) (75D30120P08812)
9. **Title:** Digital Engineering - Toolkit to Produce Common Adaptive Mesh for Virtual Reality-based Multidisciplinary Interactive Design of Naval Aircraft
- **Role:** PI **Award Period:** 06/2023 – 12/2023 **Award Amount:** $42K
- **Funding Source:** Navy STTR Phase I (N6833523C0421)/Subcontract
10. **Title:** Augmented Reality Triage Aid for Medics: Visualization of Trauma and Decision Support for Combat Casualty Care
- **Role:** PI **Award Period:** 09/2021 – 09/2023 **Award Amount:** $932.9K
- **Funding Source:** US Army Medical Research and Development Command (USAMRDC)(W81XWH2230005).
11. **Title:** Biomechanical Modeling and Simulation of Human-Exoskeleton Interaction

- **Role:** PI **Award Period:** 06/2022 – 08/2023 **Award Amount:** $15K
- **Funding S**ource: National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC) (75D30122P14469)

12. **Title:** Development of Optimal Exoskeleton Control Strategies and Its Evaluation: a Subject-Specific Muscle-tendon Dynamics Approach
- **Role:** Co-PI **Award Period:** 07/2022 – 06/2023 **Award Amount:** $5K
- **Funding Source:** NJIT Faculty Seed Grant FY22

13. **Title:** Isogeometric Mesh Generation and Deformation for Fluid-Structure Interaction Problems in Mobility Applications
- **Role:** PI **Award Period:** 01/2020 – 07/2020 **Award Amount:** $66.5K
- **Funding Source:** Army CCDC Army Research Laboratory STTR Phase I (W911NF-20-P-0008)/Subcontract

14. **Title:** Dynamic Warfighter Avatars with Complete Anatomy
- **Role:** PI **Award Period:** 10/2018 – 08/2020 **Award Amount:** $150K
- **Funding Source:** Army Research Institute of Environmental Medicine (USRIEM) SBIR Phase II (W81XWH-18-C0100)/Subcontract

15. **Title:** Augmented Reality Surgical Visualization
- **Role:** PI **Award Period:** 08/2019 – 01/2020 **Award Amount:** $47K
- **Funding Source**: Defense Health Agency (DHA) SBIR Phase I (W81XWH-19-C-0133)/Subcontract

16. **Title:** Design and Evaluation of Balance Controllers for a Lower Leg Exoskeleton for Rehabilitation
- **Role:** PI **Award Period:** 07/2019 – 06/2020 **Award Amount:** $10K
- **Funding Source:** NJIT Faculty Seed Grant FY20

At CFDRC

Serving as PI or Co-PI:

1. **Title:** Burn Injury Assessment Tool with Morphable 3d Human Body Models-Phase II
- **Role:** Co-PI **Award Period:** 06/2017 – 10/2019 **Award Amount:** $1M
- **Funding Source:** Army Institute of Surgical Research SBIR (W81XWH-17-C-0018)

2. **Title:** Dynamic Warfighter Avatars with Complete Anatomy - Phase I
- **Role:** PI **Award Period:** 10/2017 – 04/2018 **Award Amount:** $150K
- **Funding Source:** Army Research Institute of Environmental Medicine (USRIEM) SBIR (W81XWH-17-C-0108)

3. **Title:** Shoulder Injury Risk and Exertion Assessment Tool - Phase II
- **Role:** Co-PI **Award Period:** 07/2015 – 12/2017 **Award Amount:** $1M
- **Funding Source:** Army Defense Health Program (DHP) SBIR (W81XWH-14-C-0034)

4. **Title:** A Neck Injury Assessment Tool for Prolonged Wear of Head Supported Mass - Phase II
- **Role:** PI **Award Period:** 04/2015 – 09/2017 **Award Amount:** $1M
- **Funding Source:** Army Defense Health Program (DHP) SBIR (W81XWH-14-C-0003)

5. **Title:** Burn Injury Assessment Tool with Morphable 3d Human Body Models - Phase I
- **Role:** Co-PI **Award Period:** 09/2015 – 04/2017 **Award Amount:** $150K
- **Funding Source:** Army Institute of Surgical Research SBIR (W81XWH-15-C-0148)

6. **Title:** Whole-body Anthropometric Design Models for Protective Equipment Design - Phase II

- **Role:** PI **Award Period:** 06/2014 – 12/2016 **Award Amount:** $1M
- **Funding Source:** Army Natick Soldier Systems Center SBIR (W911QY-14-C-0030)

7. **Title:** Fast, Anatomy and Physiology Based Computational Tool for RF-Induced Thermal Response - Phase II
- **Role:** Co-PI **Award Period:** 04/2014 – 07/2016 **Award Amount:** $1M
- **Funding Source:** Air Force Research Lab (AFRL) Bioeffects Division SBIR (FA8650-14-C-6514)

8. **Title:** A Neck Injury Assessment Tool for Prolonged Wear of Head Supported Mass - Phase I
- **Role:** PI **Award Period:** 01/2014 – 10/2014 **Award Amount:** $150K
- **Funding Source:** Army Defense Health Program (DHP) SBIR (W81XWH-14-C-0003)

9. **Title:** Shoulder Injury Risk and Exertion Assessment Tool - Phase I
- **Role:** Co-PI **Award Period:** 01/2014 – 10/2014 **Award Amount:** $150K
- **Funding Source:** Army Defense Health Program (DHP) SBIR (W81XWH-14-C-0034)

10. **Title:** An Interactive Software Tool for Design and Evaluation of Body Wearable Devices - Phase I
- **Role:** PI **Award Period:** 12/2013 – 06/2014 **Award Amount:** $100K
- **Funding Source:** Army Research Institute of Environmental Medicine (USARIEM) SBIR (W81XWH-14-C-0050)

11. **Title:** Whole-body Anthropometric Design Models for Protective Equipment Design - Phase I
- **Role:** PI **Award Period:** 10/2012 – 06/2014 **Award Amount:** $150K
- **Funding Source:** Army Natick Soldier Systems Center SBIR (W911QY-13-P-0002)

12. **Title:** An Interactive Voxel Model Posing and Anthropometric Morphing Tool - Phase I
- **Role:** PI **Award Period:** 06/2013 – 03/2014 **Award Amount:** $150K
- **Funding Source:** AFRL Bioeffects Division SBIR (FA8650-13-M-6446)

13. **Title:** Fast, Anatomy and Physiology Based Computational Tool for RF-Induced Thermal Response - Phase I
- **Role:** Co-PI **Award Period:** 06/2012 – 03/2013 **Award Amount:** $150K
- **Funding Source:** AFRL Bioeffects Division SBIR (FA8650-12-M-6339)

14. **Title:** Integrated Warfighter-Centric Simulation Tools for Protective Equipment Design (PPE) - Phase I
- **Role:** PI **Award Period:** 06/2011 – 01/2012 **Award Amount:** $80K
- **Funding Source:** ONR SBIR (N00014-11-M-0286)

15. **Title:** A Software Tool for Predicting Neck Loads and Fatigue During Military Mission Tasks - Phase I
- **Role:** PI **Award Period:** 10/2010 – 04/2011 **Award Amount:** $70K
- **Funding Source:** Office of Naval Research (ONR) SBIR (N00014-10-M-0447)

16. **Title:** An Integrated Optimization System for Lightening the Load of Warfighters - Phase II
- **Role:** PI **Award Period:** 09/2009 – 03/2011 **Award Amount:** $500K
- **Funding Source:** ONR STTR (N00014-09-C-0622)

17. **Title:** High-fidelity Modeling Tools for Bone Conduction Communication Systems - Phase II
- **Role:** Co-PI **Award Period:** 09/2007 – 01/2010 **Award Amount:** $750K
- **Funding Source:** Army Aeromedical Research Lab (USAARL) STTR (W81XWH-06-C-0385)

18. **Title:** An Integrated Optimization System for Lightening the Load of Warfighters - Phase I
- **Role:** PI **Award Period:** 06/2008 – 08/2009 **Award Amount:** $100K
- **Funding Source:** ONR STTR (N00014-08-M-0271)

Serving as Co-Investigator:

1. **Title:** Smartphone Application for Mask Sizing and Projecting Quantitative Fit - Phase II
   - **Role:** Co-Investigator **Award Period:** 09/2017 – 09/2019 **Award Amount:** $1M
   - **Funding Source**: Chemical and Biological Defense (CBD) SBIR (W911SR-17-C-0060)
2. **Title:** Minimization of Chronic Back Pain in Military Pilots and Vehicle Occupants - 2nd Phase II
   - **Role:** Co-Investigator **Award Period:** 09/2016 – 12/2018 **Award Amount:** $1M
   - **Funding Source:** Naval Air (NAVAIR) Warfare Center Aircraft Division SBIR (N68335-13-C-0062)
3. **Title:** A Software Tool for High-Order Element Mesh Generation - Phase I
   - **Role:** Co-Investigator **Award Period:** 06/2017 – 12/2017 **Award Amount:** $125k
   - **Funding Source:** NASA Glenn Research Center SBIR (NNX17CC33P)
4. **Title:** An Integrated Multiscale-Multiphysics Modeling and Simulation of Ocular Drug Delivery with Whole-Body Pharmacokinetic Response
   - **Role:** Co-Investigator **Award Period:** 09/2014 – 08/2017 **Award Amount:** $450K
   - **Funding Source:** FDA U01 (1U01FD005219-01)
5. **Title:** High Fidelity Computational Models for Aggregated Tissue Interaction in Surgical Simulations - Phase I
   - **Role:** Co-Investigator **Award Period:** 08/2016 – 03/2017 **Award Amount:** $150K
   - **Funding Source:** Army Medical Research and Materiel Command (MRMC) STTR (W81XWH-16-C-0094)
6. **Title:** Smartphone Application for Mask Sizing and Projecting Quantitative Fit - Phase I
   - **Role:** Co-Investigator **Award Period:** 07/2016 – 01/2017 **Award Amount:** $150K
   - **Funding Source:** CBD SBIR (W911SR-16-C-0024)
7. **Title:** Minimization of Chronic Back Pain in Military Pilots and Vehicle Occupants - Phase II-E
   - **Role:** Co-Investigator **Award Period:** 01/2016 – 06/2016 **Award Amount:** $100K
   - **Funding Source:** NAVAIR Warfare Center Aircraft Division SBIR (N68335-13-C-0062)
8. **Title:** Minimization of Chronic Back Pain in Military Pilots and Vehicle Occupants - Phase II
   - **Role:** Co-Investigator **Award Period:** 03/2013 – 03/2015 **Award Amount:** $750K
   - **Funding Source:** NAVAIR Warfare Center Aircraft Division SBIR (N68335-13-C-0062)
9. **Title:** A Mechanism-Based Computational Tool to Optimize Pulmonary Drug Delivery - Phase I
   - **Role:** Co-Investigator **Award Period:** 09/2013 - 02/2015 **Award Amount:** $150K
   - **Funding Source:** NIH National Institute of General Medical Sciences (NIGMS) R43 (1R43GM108380-01)
10. **Title:** Blast Wave and Acoustic Hearing Loss Injury Prevention and Protection
    - **Role:** Co-Investigator **Award Period:** 10/2009 – 09/2012 **Award Amount:** $1.18M
    - **Funding Source:** ONR BAA (N00014-09-C-0747)
11. **Title:** Mechanobiology of Diffuse Axonal Injury: Mechanisms and Opportunities for Early Neuroprotection
    - **Role:** Co-Investigator **Award Period:** 12/2010 - 05/2012 **Award Amount:** $1M
    - **Funding Source:** Congressionally Directed Medical Research Programs (CDMRP) BAA (W81XWH-11-2-0057)
12. **Title:** Minimization of Chronic Back Pain in Military Pilots and Vehicle Occupants - Phase I
    - **Role:** Co-Investigator **Award Period:** 03/2011 – 09/2011 **Award Amount:** $100K
    - **Funding Source:** NAVAIR Warfare Center Aircraft Division SBIR (N68335-13-C-0062)
13. **Title:** Computational Modeling Tools for Acoustic Test Fixture Manikin Design - Phase I
    - **Role:** Co-Investigator **Award Period:** 01/2009 – 07/2009 **Award Amount:** $70K
    - **Funding Source:** Army Research Laboratory (ARL) SBIR (W911QX-09-C-0040)

14. **Title:** An Integrated Modeling Framework for Predictive Airman Performance - Phase II
- **Role:** Co-Investigator **Award Period:** 04/2007 – 08/2009 **Award Amount:** $750K
- **Funding Source:** AFRL (Wright-Patterson) SBIR (FA8650-07-C-6760)

15. **Title:** Image/Model Based System for Optimized Helmet Design - Phase II
- **Role:** Co-Investigator **Award Period:** 09/2006 - 09/2008 **Award Amount:** $750K
- **Funding Source:** Army MRMC SBIR (W81XWH-05-C-0148)