

Program for a Joint Scientific Conference Between:

**56th Annual Rocky Mountain Bioengineering Symposium (RMBS)
-and-
38th IEEE Great Lakes Biomedical Conference (GLBC)**

Organizing Committee:

	RMBS	GLBC
Program Chairs:	Brian D. Stemper, PhD	Jeffrey LaMack, PhD
Program Co-Chairs:	Sajal Chirvi, PhD	Olga Imas, PhD

Dates: April 12-13, 2019
Location: Milwaukee School of Engineering
 1047 N Broadway
 Milwaukee, WI 53202

Friday, April 12, 2019

Time	Event	Presenter	Where
7:45-8:15	Registration with Continental Breakfast		Todd Wehr Lobby
8:15-8:25	Welcome from Program Chair	Brian Stemper	Todd Wehr
8:25-8:30	Welcome from MSOE President	John Walz	Todd Wehr
8:30-9:15	Kickoff Keynote Presentation	Aoy Tomita-Mitchell	Todd Wehr
9:15-10:45	Session 1: Gait and Rehabilitation		Todd Wehr
	<ul style="list-style-type: none"> • Design of Force Measurement System for Pedaling in MR Environment • Surface EMG based Fatigue Index Estimation for Biceps Brachii Muscle with Polynomial Wigner-Ville Marginal Spectrum • Wearable Sensor-based Gait Classification in Idiopathic Toe Walking Adolescents • Application of OpenSim for Visual Biofeedback Propulsion Training in Pediatric Manual Wheelchair Users • Customized Wearable Sensor-based insoles for Gait Re-Training in Idiopathic Toe Walkers • Role of the hip capsule on joint stability during external rotation 	<ul style="list-style-type: none"> Benjamin Rappaport Edward Jero Rahul Soangra Jacob Rammer Rahul Soangra Melinda Choi 	

10:45-11:00	Coffee Break		Todd Wehr Lobby
11:00-12:30	Session 2: Brain Injury / Concussion		Todd Wehr
	<ul style="list-style-type: none"> The Effect of Coaching and Player Position on Head Impact Exposure in Youth Football Players 	Eamon Campolettano	
	<ul style="list-style-type: none"> Consistency in Head Impact Exposure From Year to Year Among High School and Division III College Football Players 	Nicholas Stellpflug	
	<ul style="list-style-type: none"> Estimates of high-risk single and cumulative head impact exposures in American football and combat sports 	Adam Bartsch	
	<ul style="list-style-type: none"> Comparison of different measures for head impact exposure in concussed amateur football athletes 	Brian Stemper	
	<ul style="list-style-type: none"> In-Season Concussion Symptom Presentation in Men's and Women's Rugby 	Emily Kieffer	
	<ul style="list-style-type: none"> The contribution of sensorimotor memories to implicit motor learning after concussion 	Devon Lantagne	
12:30-1:45	Lunch featuring Keynote Presentation: "Developing and Ecosystem for Parallel Translation of Medical Devices: Perspectives from a Career in Industry, Government, and Academia"	Kip Ludwig	Todd Wehr
1:45-3:15	Session 3: Basic and Injury Biomechanics		Todd Wehr
	<ul style="list-style-type: none"> A Comparison of Strain Rate Dependency Between Human Prostate and Other Organs in Unconfined Compression 	Blake Johnson	
	<ul style="list-style-type: none"> Characterization of Porcine Soft Tissue Compression Properties for Human Models 	Devin Wozniak	
	<ul style="list-style-type: none"> Effect of Time on the Mechanical Properties of Swine Tissues 	Jared Koser	
	<ul style="list-style-type: none"> Preliminary Comparison of Projectile Size and Material for Penetration Thresholds in Porcine Leg Tissue 	Maria Paris	
	<ul style="list-style-type: none"> Development of an Experimental Apparatus to Produce Intervertebral Disc Herniation in a Human Cadaver Specimen using Repetitive Combined Compression and Flexion Loading 	John Derosia	
	<ul style="list-style-type: none"> Comparative Lumbar Spine Acceleration Data During Daily and Dynamic Activities, Tasks of Daily Driving, and Low Speed Lateral Vehicle Impacts 	Peggy Shibata	
3:15-3:30	Coffee Break		Todd Wehr Lobby
3:30-4:00	Rapid Communications (from posters)		Todd Wehr
	<ul style="list-style-type: none"> Kinematic model for assessment of in vivo hindfoot motion during gait using biplane fluoroscopy (Cross) A Comparison of Wearable Head Impact Sensors (Chiariello) Shape Analysis of Corpus Callosum in Alzheimer's Condition using Legendre and United Moment Shape Features (Dadsena) The Impact of Hydroxyapatite Sintering Temperatures on the Functional Capacity of Embryonal Lung Fibroblast (Benghuzzi) Recurrence Period Density Entropy- A Phase Space Method for Tracking Pivot Point of a Numerically Simulated Meandering Rotor (Muthyala) A Multiscale Frequency Analysis of Phonocardiogram Discriminates Normal and Extra Heart Sound (Muthyala) Multifractal analysis of uterine EMG signals for the assessment of progression of pregnancy in term condition using Hurst exponents (Namadurai) 		

- Morphomic and Material Properties of Female Human Foot-Ankle Specimens (Dausman)
- The Effect of Duration of Kinesiology Tape Application on Endurance of Vastus Lateralis During an Isotonic Fatiguing Knee Flexion/Extension Exercise (Wu)

4:00-5:30	Poster Viewing and Judging Session	Todd Wehr Lobby
5:30-6:30	Plenary Panel Session, in affiliation with HealthTechMKE <i>Founders Forum: What You Know Now that You Wish You Knew Then</i> Scott Bolte, Founder of Trailhead Clinical Strategies, LLC Lars Olson, Founder of Cortina Medical Devices, LLC, Associate Professor of Biomedical Engineering, Marquette University and Medical College of Wisconsin	Todd Wehr
6:30-8:30	Cocktail Reception with Heavy Hors d'oeuvres	Grohmann Museum

Saturday, April 13, 2019

Time	Event	Presenter	Where
7:45-8:15	Registration with Continental Breakfast		Todd Wehr Lobby
8:15-8:30	Welcome back, announcements	Stemper	Todd Wehr
8:30-10:45	Session 4: Extremity Biomechanics		Todd Wehr
	• Evaluation of Hand-rim and Wrist Joint Kinetics During Geared Manual Wheelchair Propulsion in Veterans with Spinal Cord Injury	Omid Jahanian	
	• A Novel Design of a Single Actuator Differential Mechanism to Control a Prosthetic Hand	Fadi Gerges	
	• A Finite Element Based Approach for Estimating the per Muscle Percent Contribution to Upper Limb Motion	Karan Devane	
	• Biomechanical Evaluation of Overhead Throwing in Able-Bodied and Wheelchair Lacrosse Players	Matthew Hanks	
	• Geometry Sensitivity in Finite Element Models of Long Bones in Osteogenesis Imperfecta	Jessica Fritz	
	• Morphometric Analysis of Hind Foot Ankle Bones	Sajal Chirvi	
	• Influence of Trabecular Density on Calcaneus Fracture in Axial Pendulum Impacts	Carolyn Hampton	
	• Design and Evaluation of a Novel Ankle Joint for an Ankle Foot Orthosis for Individuals with Drop-Foot	Eileen Baker	
	• Comparative Analysis of Anatomic Coordinate Systems to Calculate Hindfoot Kinematics Using Biplane Fluoroscopy	Karen Kruger	
10:45-11:00	Coffee Break		Todd Wehr Lobby
11:00-12:15	Session 5: Brain Injury / Concussion		Todd Wehr
	• A Methodology for Reconstructing Real-World Damage to Bicycle Helmets using Oblique Impacts	Megan Bland	

	<ul style="list-style-type: none"> Assessing the Interchangeability of Different Impact Devices to Replicate a Football Helmet Testing Protocol 	Teresa Reiber	
	<ul style="list-style-type: none"> Laboratory Validation of Helmeted and Non-Helmeted Wearable Sensors 	Alok Shah	
	<ul style="list-style-type: none"> Validation of a Helmet Shell-and-Liner Finite Element Model in Dynamic Frontal and Lateral Impacts 	Dale Johnson	
	<ul style="list-style-type: none"> Head Acceleration Measurements During Vehicle Driving Tasks and Lateral Impacts Relative to Head Accelerations During Daily and Dynamic Activities 	Peggy A. Shibata	
12:15-1:30	Lunch featuring Keynote 3	TBD	Todd Wehr
1:30-2:45	Session 6: Imaging, Biosensing and Automated vehicles		Todd Wehr
	<ul style="list-style-type: none"> Lane Change and Merging Related Crashes Have Diverse Outcomes: A CIREN Case Review 	Lauren Eichaker	
	<ul style="list-style-type: none"> Selection of Patient-Specific Boundary Condition Parameters with Application to Anomalous Aortic Origin of a Coronary Artery (AAOCA) under Resting and Stress Conditions 	Atefeh Razavi	
	<ul style="list-style-type: none"> Microwave ablation versus Plasmonic Nanoparticle Mediated Photothermal Therapy for Liver Tumors 	Mir Hadi Razeghi Kondelagi	
	<ul style="list-style-type: none"> High Resolution Lymphovascular Imaging with a Dual Camera NIR-SWIR Multispectral Imaging System 	Chris Hansen	
	<ul style="list-style-type: none"> Sodium Bicarbonate Remediation of Anthropogenic Contamination of Water at the GBNERR in Mississippi 	Ibrahim Farah	
2:45-3:00	Coffee Break		Todd Wehr Lobby
3:00-4:45	Session 7: Computational Bioengineering		Todd Wehr
	<ul style="list-style-type: none"> A Virtual Reality Game That Enhances Educational Outcomes For a Surface Energy Laboratory 	Aleksander Niemiec	
	<ul style="list-style-type: none"> Design of a Rapid-Prototyped Smart Robotic Exoskeleton for Power Wheelchair Users 	Bridget Schabron	
	<ul style="list-style-type: none"> Decreased functional connectivity in sensorimotor brain networks in persons with Multiple Sclerosis and upper extremity dysfunction 	Julie Wagner	
	<ul style="list-style-type: none"> A computational study assessing threshold criteria for the treatment of left main coronary artery bifurcation containing multiple stenosis 	Arash Ghorbanniahassankiadeh	
	<ul style="list-style-type: none"> Identification of Abnormality in Chest Radiographs using Level Set Segmentation and Scale Invariant Keypoints 	Satyavrat Govindarajan	
	<ul style="list-style-type: none"> Effect of Grey level Transformation technique on Keypoint based differentiation of Intermediate Indirect Immunofluorescence Images 	Kanchana Devanathan	
	<ul style="list-style-type: none"> Compressed Sensing MRI Reconstruction using Weighted Thresholding of Wavelet Tree Structure 	Srivarna Janney	
7:00-9:00	President's Banquet & Student Awards		Todd Wehr