

# RESEARCH SYMPOSIUM

## Using Artificial Intelligence to Enable Human Performance Research

### Panelists:

- Jason Avedesian, Assistant Coach, Athletics and Adjunct Professor, Bioengineering
- Sarah Bauer Floyd, Assistant Professor, Public Health Sciences
- Reed Gurchiek, Assistant Professor, Bioengineering
- Shuchun Sun, PhD candidate, Bioengineering
- Tong Ye, Associate Professor, Bioengineering

### Moderators:

- Hai Yao, Professor and AVP for Biomedical Research
- Windsor Sherril, Professor and AVP for Health Research

This panel will provide exemplars in Human Performance Research, enabling a key health research focus area of the Clemson Elevate Strategic plan. The impact of using artificial intelligence (AI) to enable human performance research is profound and multifaceted. By leveraging AI algorithms to analyze vast amounts of data, Clemson researchers can gain insights into human performance and musculoskeletal disease management. This understanding enables the development of targeted interventions aimed at optimizing outcomes. The integration of AI into musculoskeletal research holds promise for improving diagnostic accuracy, treatment effectiveness, rehabilitation outcomes, and overall patient care providing solid foundations for research development.

### Session objectives:

- To facilitate the exchange of knowledge and experiences among Clemson researchers regarding the application of AI in musculoskeletal research
- To explore successful applications of AI in aspects of musculoskeletal research, such as diagnostics, treatment optimization, biomechanics analysis, rehabilitation, and predictive modeling
- To foster collaboration and networking opportunities to promote innovation in interdisciplinary health research

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Presentations will include: Digital biomarkers of recovery following ACL surgery; using AI to enable remote monitoring for rehabilitation; sophisticated machine learning models to provide insight into athletic performance; AI for orthopedic fracture classification and AI-enabled Clinical Decision Support Tools; Utilizing AI to perform histopathological analysis onsite and in real time, bridging the gap between microscopy and macroscopy analysis; Utilizing deep learning techniques for identifying risk factors in joint diseases.

This panel will feature health research from multiple academic disciplines. The panel will be co-presented by the Clemson School of Health Research (CUSHR), SC Translational Research Improving Musculoskeletal Health (SC-TRIMH) COBRE and Robert H. Brooks Sports Science Institute.