AMIR POURMOGHADDAM, PHD

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DIRECTOR OF RESEARCH & DATA SCIENTIST

Innovative scientist with expertise in managing and directing study design and implementation, data acquisition, and results analysis in partnership with industry, clinical partners & Insurance industry, including experience in regulatory FDA studies.

Accomplished scientist with extensive experience collaborating with multidisciplinary teams to execute FDA and IDE studies, including numerous studies in biomechanics to develop and improve clinical products. Conduct exploratory data science studies and perform in-depth data and biostatistical analysis leveraging of SPSS and MATLAB programming. Adept at managing and directing teams of research scientists and fellows, providing mentoring on best practices, and ensuring adherence to study protocols. Persuasive and articulate communicator with ability to cultivate relationships with IRB members, regulators (FDA), industry representatives, academics, and corporate leaders.

Core Competencies:

- Study Design & Implementation
- Multidisciplinary Collaboration
- Team Leadership & Mentoring
- Regulatory (FDA/IDE) Compliance
- Project Management & Budgeting
- Data Acquisition & Biostatistical Analysis
- Scientific Writing & Peer Review
- Industry & Clinical Partnerships
- Machine Learning

PROFESSIONAL EXPERIENCE

Memorial Bone & Joint Research Foundation – Houston, TX, July 2012 to Present

Clinical Study Director, May 2020 to Present

Earned multiple promotions to develop and lead implementation of cutting-edge research for FDA and IDE studies. Interface with internal and external stakeholders, including academic and clinical laboratories, industry collaborators, regulators, and Institutional Review Board (IRB). Prepare documentation and protocols for submission and approval by regulating bodies and IRB. Lead teams of 10 researchers including orthopedic surgeons, mentor medical students and research fellows, and control project budgetss. Continue to participate in scientific aspects of research, perform biostatistical analysis and data science using computer programming, and assist with scientific writing to present study results. Oversee patient contact, data collection, and clinical assessments.

Key Achievements:

- Managed and contributed to multiple FDA studies funded by companies such as Smith & Nephew, THINK Surgical, Inc., Blue Cross Blue Shield, and other orthopedic research and implant companies.
- Spearheaded annual foundation budget review to ensure continued financial viability, appropriate allocation of funds, and effective cost control.
- Leading project for using Machine Learning in Surgical Risk Stratification and Developed Patient Selection Algorithm.
- Drove outreach to industry partners and health care insurances; and cultivated new relationships with leading companies such as CORIN Inc. to influence revolutionary orthopedic products.
- Conducted biomechanical studies and implemented such investigations within the standard clinical process.
- Distinguished as Elite Reviewer for *Journal of Arthroplasty* assessing scientific validity and study integrity of papers focused on joint replacement submitted for publication.

Co-director & Senior Medical Research Scientist, July 2013 to May 2020

As lead medical scientist, designed and implemented research studies, wrote grant applications, administered budgets, performed scientific writing, and managed required reporting.

Key Achievements:

- Successfully wrote and published numerous papers in peer-reviewed journals with multiple first author attributions.
- Led randomized control studies on radiographic assessments and clinical outcome of hip and knee arthroplasty cases and conducted radiographic imaging analysis of 2D & 3D virtual implantations.
- Conducted biomechanical studies on different populations, including patients with hip replacement and neurological disorders, by using Motion Capture Devices (VICON), Force Plates, Electromyography, NeuroCom balance master, Biodex dynamometer, and GAITRite System.
- Performed data acquisition, data analysis, and biostatistical modeling on patients with total hip/knee replacement using inferential and non-parametric tools (SPSS software).

Continued...

- Streamlined collection and analysis of large data sets by writing MATLAB scripts and designing custom GUI.
- Delivered presentations at various workshops and domestic & international conferences, including ISTA, EFORT, AAOS, and AAHKS.

Post-doctoral Fellow, July 2012 to June 2013

Served as key point-of-contact with industry sponsors, conducted research and data analysis, translated results into reports for academic and industry use, and performed scientific writing.

Key Achievements:

- Performed clinical data gathering and analysis of patients treated for hip or knee arthritis.
- Gathered and analyzed Electromyography (EMG) signals, interpreted results using nonlinear biostatistical analysis, and created predictive models to assess biomechanical performance.
- Collaborated on Spinal Cord Injury and Traumatic Brain Injury studies to evaluate muscle fatigue using EMG.

University of Houston (UH) – Houston, TX, September 2005 to May 2012

Teaching/Research Fellow

Developed lesson plans and taught 12+ courses in biomechanics, human physiology, and movements in alignment with curricula while completing PhD research. Served as Research Assistant on multiple projects.

Key Achievements:

- Conducted computational and clinical neuroscience research at Center for Neuromotor and Biomechanics Research at Texas Medical Center, UH (’08 to ’13).
- Collaborated with Veterans Administration to study biomechanical and neurophysiological parameters associated with walking of individuals with Parkinson’s disease at Laboratory of Integrated Physiology, UH (’06 to ’08).
- Member of Dynamic Foot Stimulation NASA-granted Project at Laboratory of Integrated Physiology, UH (’05 to ’06).
- Designed study experiments to simulate neuromechanical movement of human body using data acquisition devices, VICON motion capture device, EMG, NeuroCom balance master, Biodex dynamometer, and GAITRite System; analyzed findings and completed dissertation.

Additional experience as Teaching Assistant with University of Tehran, Field Engineer with Molding Construction Company and Research Engineer with Concrete Material Institute (CRI).

EDUCATION AND CREDENTIALS

Doctor of Philosophy in Kinesiology, Focus: Biomechanics & Computational Neuroscience
University of Houston – Houston, TX
Dissertation: SYNERGOS Index: Nonlinear Analysis of EMG signals to Quantify the Multiple Muscle Activation

Master of Science in Structural Engineering | Bachelor of Civil Engineering
University of Tehran – Tehran, Iran
Thesis: On the Fracture and Crack Propagation of Human Femur During Dynamical Loading

Trainings & Certification
Space Physiology, Physiological Aspects of Zero or Hypogravity – NASA
Space Research Analogs, NEMO, Antarctica, Bedrest Studies, Zero Gravity Flights – NASA
fMRI Analysis Certification – University of New Mexico, Mind Research Network, Albuquerque, NM

Technical Proficiencies
MATLAB, Simulink, SPSS, Data Science, VICON Nexus Motion Capture, VICON Motus, GAITRite, Electromyography, AutoCAD, Photoshop, Microsoft Office (Word, Excel, PowerPoint), Microsoft Project

Affiliations
American Association of Hip and Knee Surgeons (AAHKS)
Society of Neuroscience

Grants, Fellowships, Honors, Awards, Publications, Presentations
Details available upon request