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G. Elisabeta Marai
Assistant Professor
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Dear Liz,

I am writing this letter to support of your tenure dossier at the University of Pittsburgh, based on our collaborative projects and the potential impact of your work on my research. My work has focused on the development and application of innovative approaches for characterizing the dynamic function of human joints and joint tissues, and their response to dynamic loading, injury, disease and treatment. We have developed a unique system for measuring joint kinematics using high-speed dynamic stereo x-ray imaging, which we have applied to identify mechanical factors leading to degenerative joint disease in the knee, spine and other joints. This system has great potential as a diagnostic clinical tool for evaluating function and guiding treatment of a variety of musculoskeletal injuries and disorders, but clinical applications have so far been impractical because of the labor-intense processes we have used for image analysis.

Having been familiar with the work you did as a graduate student at Brown University on computational modeling of anatomical joints, I was pleased to hear that you were joining the faculty at the University of Pittsburgh. We immediately began collaborating on the development of intelligent, automated bone tracking techniques. The algorithms you and your graduate students developed have shown the potential to dramatically improve bone tracking, reducing operator effort by an order of magnitude or better and significantly improving reliability. Your contributions in this area, along with your other projects on improving visualization and analysis of the dynamic imaging data, have the potential to bring these imaging techniques into mainstream orthopaedic imaging for routine evaluation of dynamic musculoskeletal disorders.

I believe we have formed an excellent interdisciplinary team incorporating engineers, computer scientists and clinicians, and I look forward to many more years of productive collaborations.

Sincerely,

Director, Biodynamics Laboratory
Associate Professor, Department of Orthopaedic Surgery