

Graduate Students in Computational Mechanobiology

P.I.: Sangyoon J. Han, Ph.D.
Michigan Technological University
Biomedical Engineering

I am seeking a graduate student to study the role of mechanics in the adhesion and cytoskeletal dynamics governing mechanotransduction and cell migration using computational image modeling.

My group relies on image analysis and image data modeling to investigate how cellular interactions with their surrounding local microenvironment regulate cellular organization, proliferation, differentiation, and migration. We are specifically interested in how different molecules of cell-matrix adhesions contribute to adhesion morphodynamics, molecular sensing and force transmission in response to different mechanical inputs. Based on time-lapse images of proteins of interest and marker for the gel deformation, we capture meaningful outputs such as molecular assembly, disassembly, association and mechanical force by the cell. We are in the phase of expanding our methodological framework from conventional image analysis toward deep neural network-based learning and prediction.

We are seeking candidates with outstanding programming capability who is knowledgeable of particle tracking, inverse problem, vector field operation, machine learning and deep learning. Master or Ph.D. students in Data Science, Computer Science and Engineering, Mechanical Engineering, Electrical Engineering and other related discipline are encouraged to apply. This is a funded position.

Interested candidates are encouraged to send me via an e-mail (sjhan@mtu.edu) a brief statement of interests and CV. For more details visit our website at:

<http://hanlab.biomed.mtu.edu>

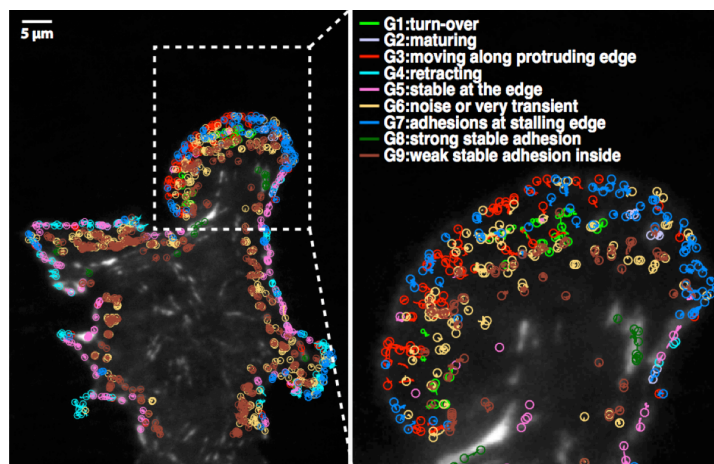


Fig 1. Machine-learned adhesion classification