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**D. Michael Senter\*** ([dmsenter@live.unc.edu](mailto:dmsenter@live.unc.edu)). *Tools and Techniques for Semi-Automated Generation of Finite Difference Based Meshes for Use with Immersed Boundary Solvers*. Preliminary report.

Numerous fluid-structure interaction problems in biology have been investigated using the immersed boundary method. The advantage of this method is that the complex geometries frequently encountered in biological applications, e.g., internal or external morphology, can easily be handled without the need to generate matching grids for both the fluid and the structure. Consequently, the difficulty of modeling the structure lies often in discretizing the boundary of the complex geometry (morphology). While tools for finite element methods have long been established, immersed boundary solvers like IB2d are based on a finite difference approximation. We will present a Python package that leverages computer vision and machine learning techniques to facilitate the semi-automated generation of the necessary finite difference meshes based on digital images of the morphology of interest. (Received January 21, 2020)