A volume-of-fluid interfacial flow solver with advected normals

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TEAM — We introduce an implementation of the advecting normals method in a
volume-of-fluid interfacial flow solver. The advected normals are used to compute
the interface curvature for calculating the surface tension force, and for reconstruct-
ing the interface in a volume-conserving volume-of-fluid method. To improve the
performance of the method in under-resolved regions of the flow, where normals
vary sharply, a curvature-based criterion is used to detect and correct poorly de-
finited normals. We present results of advection as well as actual flow problems and
demonstrate that the new method is well suited for problems that involve large
interface deformation and breakup.

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