1035-68-1435 **Avraham Goldstein*** (avi_goldstein@netzero.net), BMCC / The City University of New York, 199 Chambers street, Room N770, New York, NY 10007, and **Chokri Cherif** (ccherif@bmcc.cuny.edu), BMCC / The City University of New York, 199 Chambers street, New York, NY 10007. *Algorithm and pseudo-code for a contour construction of a smooth closed surface when it is given by its approximate triangulation.*

In computer science smooth closed surfaces embedded in R^3 are given by their triangulations. The data record for a surface S is an array $P[1...n]$ of points in R^3 and an array $T[1...m]$ of triples of different elements of $P[1...n]$ (so each $T[i] = (P[i_1], P[i_2], P[i_3])$ where $i_1 < i_2 < i_3$) so that the polyhedron K constructed from the filled-in triangles $T[1], ..., T[m]$ is "the best approximation" of S possible using the points $P[1...n]$. The assumption is that K has the topology of S and also "resembles closely" the geometry of S.

Given a (unit) direction vector $\vec{v} \in R^3$. We need to restore the $\vec{v}$-contour of S. All known algorithms create a lot of fictional contour lines (and delete the existing ones) to the extent that even the topology of the contour gets extremely distorted.

We present an Algorithm which accepts filtration parameter e between 0 and 1 (it tells how "close" is K to S - it is related to the max of sin of angles between the tangent planes to S and the corresponding triangles of $T[1...m]$). With respect to e it constructs "the closest possible" approximation to the $\vec{v}$-contour of S [normally in linear time $O(m)$. In the worse case scenario the time is smaller then the quadratic time $O(m^2)$]. (Received September 19, 2007)