

CSI701 - Adam Cadien  
Assignment #4  
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#### #Interpolating

The main() can be found in interpolate.cpp. Again all of assignment 3's code was re-used. The functions interpolate and fmax were added for assignment 4. I implemented a nearest neighbor search with a brute force cop-out method incase the nearest neighbor fails, this garauntees the finding of the parent element for the corresponding interpolation point. Once the parent element is found the vector field is immediately interpolated for the new coordinates and the whole process is repeated for the next interpolation point. The fmax function is a helper that finds the floating point maximum between 3 points, which is very useful when attempting to determine the next nearest neighbor to travel to.

#### #Results & Plotting

The interpolated fields are saved in the ixvec\_fld.dat, iyvec\_fld.dat, ixpts.dat, and iypts.dat files. The matlab script plot\_ivec\_fields.m loads these files and plots: 1 3D surface plots of the interpolated vector field, 1 top down view of the 3d surface (vector field), and 1 contour plot of the interpolated vector field.