0.1 Compilation Settings

This tar.gz file contains the code to compile our WMM method and our FMM and MSFM implementations, ready to be used in Matlab. It requires MATLAB mex capabilities, a c++ compiler and the OpenCV library for c++. The file CompileAll.m is a script that compiles all the files needed to run the tests.

0.2 Test Files

In all test files all our different WMM implementations are testes, including an additional interpolation technique: the hermite interpolation.

test_T1.m: This test contains the code needed to reproduce the result of the equation $T(p) = \sqrt{(x-x_0)^2 + (y-y_0)^2}$, starting at source point $(x_0, y_0) = (51, 51)$, using a grid of size 101×101.

test_T1_2.m: This test contains the code needed to reproduce the result of the equation $T(p) = \sqrt{(x-x_0)^2 + (y-y_0)^2}$, starting at source point $(x_0, y_0) = (1, 1)$, using a grid of size 101×101.

test_T1_3.m: This test contains the code needed to reproduce the result of the equation $T(p) = \min\left(\sqrt{(x-x_0)^2 + (y-y_0)^2}, \sqrt{(x-x_1)^2 + (y-y_1)^2}\right)$, starting at source points $(x_0, y_0) = (21, 24)$ and $(x_1, y_1) = (65, 74)$, using a grid of size 101×101.

test_T2.m: This test contains the code needed to reproduce the result of the equation $T(p) = \frac{(x-x_0)^2}{100} + \frac{(y-y_0)^2}{20}$, starting at source point $(x_0, y_0) = (51, 51)$, using a grid of size 101×101 and a distance between nodes $(h_x, h_y) = (1, 1)$.

test_T2_2.m: This test contains the code needed to reproduce the result of the equation $T(p) = \frac{(x-x_0)^2}{100} + \frac{(y-y_0)^2}{20}$, starting at source point $(x_0, y_0) = (51, 51)$, using a grid of size 101×101 and a distance between nodes $(h_x, h_y) = (0.1, 0.2)$.

test_T3.m: This test contains the code needed to reproduce the result of the equation $T(p) = 1 - \cos(\frac{x-x_0}{20})\cos(\frac{y-y_0}{20})$, starting at source point $(x_0, y_0) = (26, 26)$, using a grid of size 50×50.

test_T3_2.m: This test contains the code needed to reproduce the result of the equation $T(p) = 1 - \cos(\frac{x-x_0}{20})\cos(\frac{y-y_0}{10})$, starting at source point $(x_0, y_0) = (26, 26)$, using a grid of size 50×50.

brain_test.m: This test contains the code needed to reproduce the result of the brain CT tumor segmentation.

0.3 Discussion on the Results

In Tables 1 and 2 we reproduce both FMM and MSFM results provided by the Hassouna and Farag paper. However, we have developed our own implementation of these methods, and our results do not match the results provided by the authors. Since the MSFM results we obtain are worse than the results shown in the PAMI paper, we decided to maintain their results, concluding that our implementation may contain some mistake. However, we cannot find it, so we encourage the reviewers to take a look to the code to see if they can find the error we've made.