

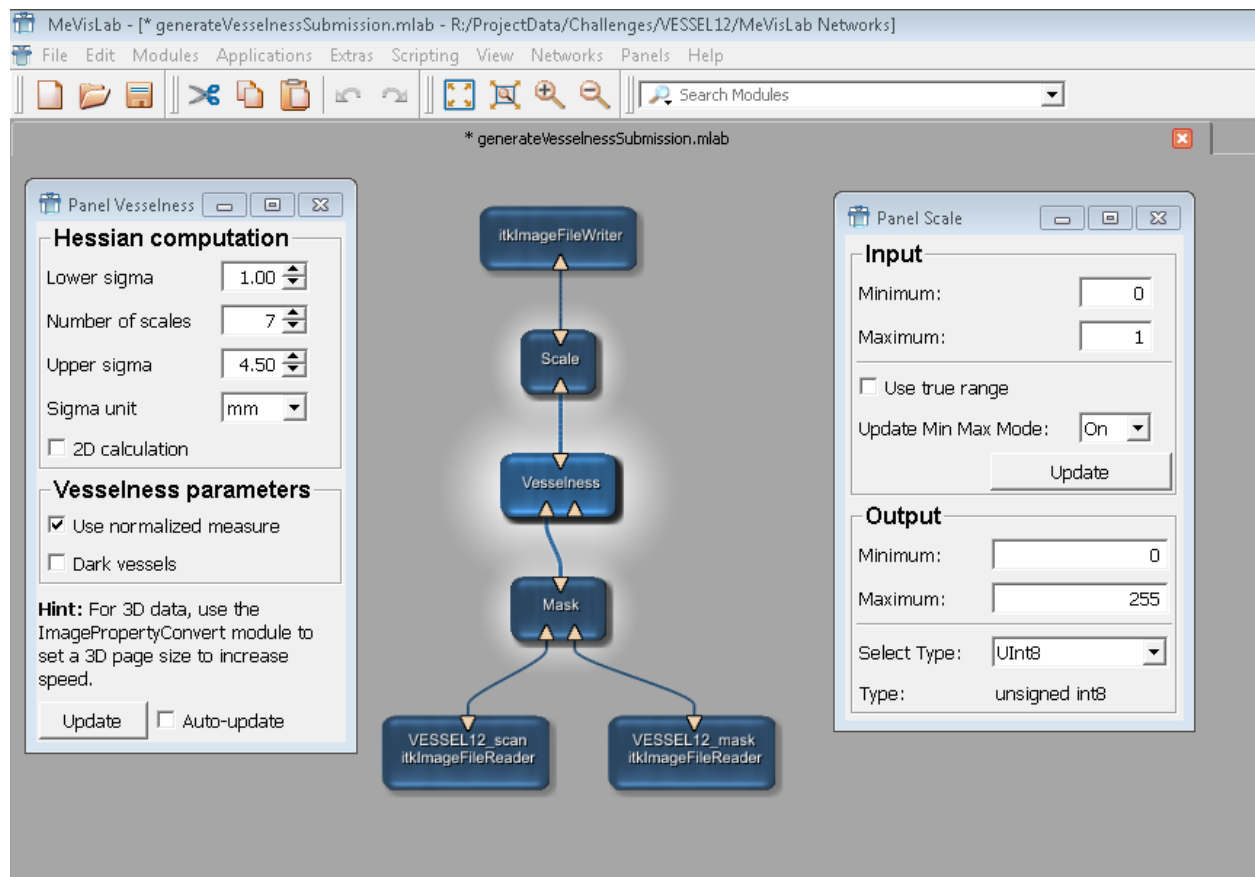
VesselnessVesselSegMultiScale1To4.5mm7steps

This submission for the VESSEL12 challenge was included as a reference method by challenge organizer Sjoerd Kerkstra. It was created by running the MeVisLab 'vesselness' module, created by Ola Friman.

This module is available for free download on the MeVisLab website.ⁱ This module computes vesselness as a function of the hessian matrix, based on work by Sato et al. More information on this module can be found online.ⁱⁱ

To compute the masks in this folder the following steps were taken

- VESSEL12 scans were masked with the VESSEL12 lungmasks to obtain the lungfields only
- Hessian at 7 scales from 1 to 4.5 mm were computed using the MeVisLab 'Vesselness' block. The option "Use normalized measure" was ticked, "2D calculation" was not
- Parameters for the vesselness block: lower sigma: 1, Number of scales = 7, upper sigma = 4.5, unit = mm.
- The float [0,1] output of the vesselness block was scaled to [0-255] and saved as UInt8 mhd raw.



1: the MeVisLab module used to generate the multi scale vesselness reference submission

Runtime of this algorithm is quite long: about 5 to 10 hours per scan on an Intel Core i5-2400 CPU @ 3.10 GHZ with 8 GB ram, running win7 64. Processing all 20 scans took a total of 5 days and 9 hours. No attempts were made to optimize the runtime of the algorithm.

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ⁱ<http://www.mevislab.de/download/>

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<http://www.mevislab.de/docs/2.0rc/MeVisResearch/Release/Documentation/Publish/ModuleReference/VesselnessFrame.html>