Cell Lineage Construction of Neural Progenitor Cells

Abstract

This study aims at automatic construction of cell lineage from time-lapse images of progenitor cells. In order to construct the cell lineage it is very useful to have an efficient cell tracking system. In this paper we have described a system for tracking neural progenitor cells in a sequence of images using multiple matching object method based on modified mahalanobis algorithm. This system produces the results including the position, shape, motility and ancestry of each cell in every frame, which helps in construction of cell lineage. The proposed method has been implemented to the sequence of image frames and the computational results of cell tracking are presented.
- Stem-cell Therapy: Promise and Reality, Consumer reports on health 17. 6 (2005): 8-9
  Academic Search Premier EBSCO. web 5. Apr 2010.
- Sulston JE and Horvitz HR. Post embryonic cell lineages of the nematode
- Sulston JE and Horovitz HR. Abnormal cell lineages in mutans of the nematode
- Chalfie R, Horvitz HR, Sulston JE, Mutations that lead to reiterations in the cell
- Omar Al-Kofahi, Richard J. Radke, Susan K. Goderie, Qin Shen, Sally Temple and
  Badrinath Roysam. Automated cell lineage construction: A Rapid method to Analyze Clonal
  327-335, 2006.
- Amalka Pinidiyaarachchi and Carolina Wahlby. Seeded watershed for combined
  A comparative study between Level set and Watershed image segmentation for tracking stem
- Nezamoddin N. Kachouie, Paul Fiehguth and Eric Jervis. Stem Cell Localization: A
  Deconvolution problem. Proceedings of the 29t Annual International Conference of the IEE
- Chunming Tang and Ewert Bengtsson. Segmentation and Tracking of Neural Stem Cell.
  morphological operatorsand Scale-Space analysis. Computer Graphics and Image Processing,
- Cecilia D. Ruberto, Andrew Dempster, Shahid Khan and Bill Jarra. Segmentation of
  stochastic model based image segmentation. IEEE transaction on Image processing, vol. 7(2),
- Theodoros Mouroutis. A. A. B and Stephen J. Roberts. Robust Cell nuclei
  cell image preprocessing or feature generation. 5t International Workshop on Computational
- Vincent. L. and Soille, P. Watersheds in digital spaces: an efficient algorithm based
  onimmersion simulations. IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol
- Comaniciu. D and Meer. P. Cell image segmentation for Diagnostic Pathology,
  Advanced Algorithmic approaches to medical image segmentation: State-of-art applications in

Index Terms

Computer Science Artificial Intelligence

Keywords

Cell lineage mapping image segmentation progenitor cell tracking