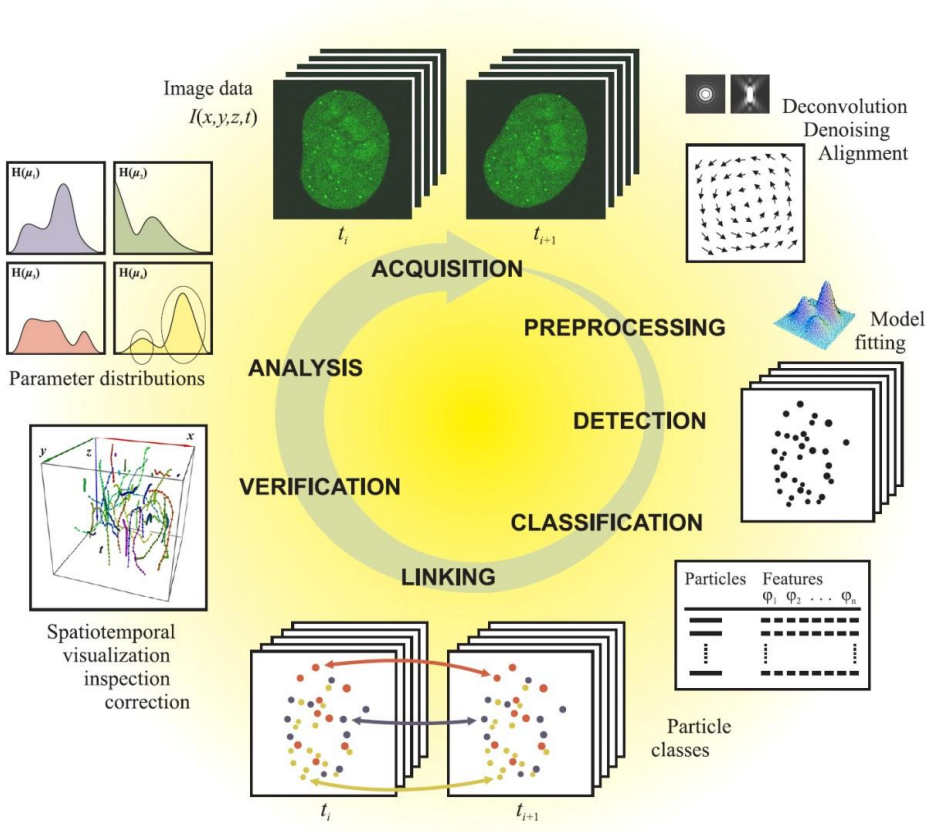
Erasmus University Rotterdam, the Netherlands
CSC PhD 2015 Project Description

School/Department:	Erasmus MC – University Medical Center Rotterdam Departments of Medical Informatics and Radiology Biomedical Imaging Group Rotterdam (http://www.bigr.nl/)
Project Title:	**Bioimage Analysis of Cell Function**
Abstract:	Biological cells are the fundamental building blocks of life. In order to understand disease processes and to develop effective drugs it is of crucial importance to find out how cells work. Life scientists often use advanced microscopes to visualize cellular processes. This produces very large amounts of bioimage data containing much more information than can be analyzed by humans. Computerized image analysis can help to extract more information in an efficient and reproducible way. The goal of this project is to develop and test advanced image analysis methods for the detection, tracking, and motion analysis of large numbers of cells in microscopy movies. 

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Requirements of candidate:	Background: MSc degree in mathematics, physics, electrical engineering, biomedical engineering, computer science, or a related field. Experience with computer programming (Java or C++), strong theoretical skills, communication skills (English), and the ability to work in a multidisciplinary team (involving both computer scientists and biologists) are required. Master degree: Yes IELTS Grade: 7.0 *(minimal 6.0 per component)* or TOEFL: *100 (minimal 20 per component)*
Supervisor information:	Promotor: Prof. Dr. Wiro Niessen Supervisor: Assoc. Prof. Dr. Erik Meijering http://www.imagescience.org/meijering/ Recent relevant publications of our group: • C Ortiz de Solórzano, A Muñoz-Barrutia, **E Meijering**, M Kozubek (2014). Towards a morphodynamic model of the cell. *IEEE Signal Processing Magazine*, in press. • M Maska, et al., **E Meijering**, M Kozubek, C Ortiz de Solórzano (2014). A benchmark for comparison of cell tracking algorithms. *Bioinformatics* 30(11):1609-1617. • N Chenouard, I Smal, F de Chaumont, M Maska, et al., JC Olivo-Marin, **E Meijering** (2014). Objective comparison of particle tracking methods. *Nature Methods* 11(3):281-289. • **E Meijering** (2012). Cell segmentation: 50 years down the road. *IEEE Signal Processing Magazine* 29(5):140-145. • **E Meijering**, O Dzyubachyk, I Smal (2012). Methods for cell and particle tracking. *Methods in Enzymology* 504(9):183-200. • O Dzyubachyk, J Essers, WA van Cappellen, C Baldeyron, A Inagaki, WJ Niessen, **E Meijering** (2010). Automated analysis of time-lapse fluorescence microscopy images: from live cell images to intracellular foci. *Bioinformatics* 26(19):2424-2430. • **E Meijering**, O Dzyubachyk, I Smal, WA van Cappellen (2009). Tracking in cell and developmental biology. *Seminars in Cell and Developmental Biology* 20(8):894-902.