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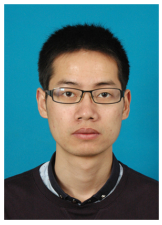

Qiaoyong Zhong

Education

09/2009 – 06/2014 **Ph.D.**, *CAS-MPG Partner Institute for Computational Biology*, Shanghai.
Computational Biology, Biomedical Image Processing

12/2012 – 09/2013 **Joint Ph.D.**, *Ruhr University Bochum*, Germany.
Bioinformatics Group, Department of Biophysics

06/2011 – 07/2011 **Visiting Student**, *Ruhr University Bochum*, Germany.
Bioinformatics Group, Department of Biophysics

09/2005 – 06/2009 **B.S.**, *School of Life Sciences, Nanjing University*.
Majored in Biotechnology

Research Projects

In Germany

- **Identification of Cancer Cells in Human Urine Through FT-IR Microspectroscopy** First, the H&E stained image and FT-IR spectral image of the same sample are registered (with rigid and similarity transform). Then the cells are segmented using thresholding and watershed methods. Next the spectral cells are annotated by pathologists using the stained cells as a reference. Finally a random forest classifier is trained to classify unknown cells.
- **Identifying Minimally Redundant Wavenumbers for Vibrational Microspectroscopic Image Analysis** We proposed an unsupervised method to select wavenumbers by minimizing the dependence measured by mutual information between them. It is an adaption of the well known mRMR method for unsupervised learning and has been validated extensively on synthetic, FT-IR and CARS datasets. [1]

In Shanghai

- **Segmentation, Annotation and Classification of FT-IR Microspectroscopic Images of Human Colon Section** First, hierarchical clustering is performed on the spectrum of each pixel and a dendrogram is obtained. The image is then segmented by cutting the dendrogram, followed by manual annotation. After that, the annotated spectra are used as the training dataset for classification of unknown spectra. [2]

Software Projects

Contests
† NetEase Youdao Nanti Mobile App Contest (2012), member of team *Candy*, developed YiRiSanXing on Android platform in Java, which won the 3rd prize of East China area
† RubyVSPython Planet Conquer 2012 April Contest, ranked No. 1/6 in Ruby

Open Source
2048-Qt the 2048 number game implemented in C++, JavaScript and Qt
Voodoo a PICB file search engine based on mlocate and powered by Sinatra
more on xiaoyong@GitHub

Languages

English **CET-6** qualified, proficient in both spoken and written English

Chinese native language

Professional Skills

Courses Data Structure, Design and Analysis of Algorithms, Digital Image Processing, Pattern Recognition, Machine Learning, Statistics, Biochemistry, Molecular Biology, Cell Biology etc.

Algorithms Linear Programming, Clustering Analysis (k-means, Fuzzy c-means, Hierarchical Clustering), Classifiers (Decision Tree, Random Forest, Support Vector Machine, Neural Networks), Image Segmentation (Thresholding, Watershed)

Programming Matlab, C/C++, Python, Ruby, Shell

Libraries OpenCV, Qt, Cplex, Lpsolve

Web Dev HTML, CSS, JavaScript and jQuery; Ruby on Rails and Sinatra

Publications

[1] **Qiaoyong Zhong**, Daniel Niedieker, Dennis Petersen, Klaus Gerwert, and Axel Mosig. Identifying minimally redundant wavenumbers for vibrational microspectroscopic image analysis. In *10th International Conference on Natural Computation*, 2014. Accepted.

[2] **Qiaoyong Zhong**, Chen Yang, Frederik Großerüschkamp, Angela Kallenbach-Thieltges, Peter Serocka, Klaus Gerwert, and Axel Mosig. Similarity maps and hierarchical clustering for annotating FT-IR spectral images. *BMC Bioinformatics*, 14(1):333, 2013.