

# Yikai Wang

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## Education

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Emory University, Rollins School of Public Health, Atlanta, GA Sep. 2013 - Present  
Major: **Biostatistics** Master Degree expected at May 2015 **GPA: 3.98**

South China University of Technology, Guangzhou, China Sep. 2009 - Jun 2013  
Major: **Applied Mathematics** Bachelor of Science

## Research Experience

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**Emory Biomark Clinic Group, School of Medicine, Emory University, Atlanta, GA**

### Metabolomics Analysis

Research Assistant of Dr. Shuzhao Li and Dr. Miriam Vos Jan. 2014 - Present

- Extracted metabolite feature table for subjects from the raw data using apLCMS for further statistical analysis;
- Performed the quality control analysis of feature table using R, i.e. missing values control, correlation control;
- Collaborated with the group members to identify the analysis strategies and presented the analysis results;
- Analyzed the feature tables, i.e. data visualization, statistical tests, feature selection in metabolite and disease pathway analysis.

**Department of Biostatistics and Bioinformatics, Emory University, Atlanta, GA**

### Statistical Comparison between AOD Calibration Methods in PM<sub>2.5</sub> Prediction

Research Assistant of Dr. Lance Waller and Dr. Yang Liu May. 2014 - Present

- Studied the mixed linear model and regression methods in AOD calibration method for pm<sub>2.5</sub> prediction;
- Modified the original SAS code to experiment through the dataset of North California;
- Performed the regression diagnostics and 10-fold cross validation to detect the efficiency of the method.

### A Novel Network-based Factor Detection under General Dependence Distance

Volunteer of Dr. Tianwei Yu Feb. 2014 - May. 2014

- Studied the General Variable Similarity based on conditional order list (SCOL), the SCOL-based Hierarchical clustering methods, Local FDR calculation using Efron's procedure, Module Detection with Short Random Walk and the Lasso Methods with BIC.
- Implemented the algorithms and the overall Workflows in R, simulated the expression array containing both linear and non-linear relationship and experimented the algorithms with the Spellman cell cycle data to detect the latent patterns.

### Feature Selection in Brain Imaging for Zen Meditation

Volunteer of Dr. Ying Guo Oct. 2013 - Jan.2014

- Attended regular meetings in Center for Biomedical Imaging Statistics;
- Calculated the fALFF index from the fMRI data to perform the priori statistical tests;
- Performed SVM to study the classification plane for Zen Meditation and used the plane to find the most significant voxels in classification;
- Evaluated the robustness of chosen voxels by performing different k-fold cross validation and .632 bootstrap with SVM.

**Bioinformatics Group, South Medical University, Guangzhou, China**

### Detection and Verification of the Function Scope btw RNA & Protein

Research Assistant of Dr. Hao Zhu Dec. 2012 - Apr. 2013

- Studied the biological co-evolution theory, Blosum matrix and read through *Computational Molecular Evolution* to study Models of nucleotide substitution, Models of amino acid and codon substitution, etc;
- Studied the algorithm idea of CAPS and the realization of its source code (CAPS is the first version of the software aimed at measuring the co-evolution between amino acid sites in proteins);

- Adapted the original CAPS model to verify the co-evolution between RNA and protein and to locate the fragments, involved in the co-evolution.

**School of Science, South China University of Technology, Guangzhou, China**

**Research Based on Semi-Supervised Face Recognition**

Undergraduate Researcher supervised by Dr. Xiaolan Liu

Jun. 2011- Jul. 2012

- Led the 5 members to ascertain the research topic and applied for the project;
- Assigned tasks and supervised the process of the tasks to ensure the overall process;
- Put forward improved opinions based on the principles of graph construction algorithm and Lasso method and processed the mathematical operation with MATLAB;
- Experimented through databases including Yale, Orl and UCI to further amend the algorithm and ascertain the parameters, and finally processed the more accurate method to classify the face samples under the common parameters.

**Chaotic Time Series Analysis in Detection and Prediction**

Undergraduate Thesis supervised by Dr. Xiaowei Yang

Dec. 2012- May. 2013

- Studied the properties of Chaotic System, including the 4 basic properties of chaotic, to define the chaotic time series in practice, i.e. chaotic attractor;
- Studied and implemented the numerical algorithms, i.e. CC method, in determining the parameters in re-constructing the original space based on the time series;
- Utilized neural network and support vector machine to predict the re-constructed Lorenz system and the Shanghai Securities composite index.

**Publication**

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**Graph Construction Based on Reweighted Sparse Representation for Semi-supervised Learning**

- Outcome of the *Research Based on Semi-supervised Face Recognition*;
- First Author, mainly responsible for the algorithm improvement and the language achievement of relevant matlab as well as the supervision on the schedule of the whole project;
- Published in *Journal of Information & Computational Science* (Year: 2013, Volume: 10);
- Supported by Guangdong Province Undergraduate Innovative Experiment Project (No. 1056111088) and Student Research Project "Semi-supervised Learning on manifold learning" of South China University of Technology.

**Selected Coursework**

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Data Mining	Data Structures
C++ Programming	SAS Programming
Database Theory and Its Application	Machine Learning
Biostatistics Method 1	Applied Bayesian Analysis
Real Function Analysis	Partial Equations
Statistical Inferences 1	Applied Linear Models

**Professional Skills**

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Language: R, C++, Java, SAS, PERL, SQL;	Software: MATLAB, Winbugs, Offices;
Certification: SAS Base, National C++ 2nd Level;	Bilingual: Chinese and English.

**Awards**

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Excellent Graduate Student in South China University of Technology	May. 2013
Excellent Volunteer of 2010 Asian Games	Nov. 2010
3 <sup>rd</sup> Prize of Guangdong Province for Gaojiaoshe China Undergraduate Mathematical Modeling Contest	Sep. 2010
Excellent Student Cadre / Merit Student	2009-2012
	(each academic year)