



Stony Brook University

## Biomedical Informatics Grand Rounds



**Chao Chen PhD**; Assistant Professor,  
Department of Biomedical Informatics

**Pursuing the Structures of Complex Biomedical Images**

**Wednesday, October 24, 2018 3pm—4pm**

**BMI Conference Room HSC-L3 Room 045**

### Abstract

Powerful learning methods have been developed to analyze biomedical images of unprecedented quality and quantity. However, we observe a progressively wider gap between these methods and biomedical researchers' quest for sensible explanations of different phenomena. This gap is largely due to the booming complexity in both the data/images and the methods. In this talk, I will present how we designed specialized learning and image analysis methods to help biomedical researchers to achieve their goals. In cardiac image analysis, we extracted and analyzed the complex and topology-rich inner surface of human ventricles. In the analysis of EM images, we developed robust (semi)-automatic segmentation tools to extract neuronal structures. In functional MRI image analysis, using novel deep convolutional neural networks, we identified crucial brain regions-of-interest for cognitive tasks. The common theme of these projects is to exploit the topological and geometric information underneath the complex data, based on advanced theory from applied mathematics and machine learning.

### BIO:

Chao Chen is an Assistant Professor of Biomedical Informatics. His works on biomedical image analysis, machine learning, and topological data analysis. He has published in top venues in all these fields, e.g., ICML, NIPS, MICCAI, IPMI, MeDIA, CVPR, ICCV, SODA, SOCG, etc. Chao Chen received his Ph.D. from Rensselaer Polytechnic Institute and his B.S. from Peking University. He was an Assistant Professor of Computer Science in City University of New York (CUNY) from 2015 to 2018. His research is funded by several NSF grants.

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**Questions? Please call the Biomedical Informatics Department at 631-638-2590.**