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# Han Liu

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## EDUCATION

**Yale University**
M.S. in Biomedical Engineering
GPA: 3.3/4.0 (HIGH PASS)

**Rensselaer Polytechnic Institute**
B.S. in Biomedical Engineering
Dual Major in Electrical Engineering
GPA: 3.24/4.0
Dean's List (2012-2015)

## COURSEWORK

**Graduate**
Data Ming and Machine Learning
Optimization Techniques
Biomedical Imaging Processing and Analysis
Stochastic Process
Imaging Drugs in Brain

**Undergraduate**
Modeling of Biomedical Systems
Computer Components and Operations
Embedded Control
Signal and Systems
Digital Signal Processing
Intro to Image Processing

## SKILLS

**Programming**
Python, C++

**Toolkits**
MATLAB, R, Keras, TensorFlow, OpenCV, SITK, PIL, SPSS, SITK etc.

## ACTIVITIES & VOLUNTEERS

BME Society, Secretary, RPI. 2013-2016
Mandarin club, volunteer, RPI. 2013-2015
Eddy Memorial Geriatric Center, volunteer, Troy, New York. Summer 2015.
CSSA mid-autumn vocal competition 1st place. 2015.
Northeast CSSA Basketball tournament 8th place. 2014.
RPI Relief, volunteer, RPI. 2012-2014.

## LINKS

GitHub: https://github.com/hl645

## RESEARCH & PUBLICATIONS

**Imaging Research Lab, UPMC | Researcher**
Aug, 2017-Present | Pittsburgh, PA
With Dr. Jiantao Pu.

- Developed a new CNN framework to improve the state-of-art CheXnet by incorporating holistic and local features. "SDFN: Segmentation-based Deep Fusion Network for Thoracic Disease Classification in Chest X-ray Images", first author. Aiming for Computerized Medical Imaging and Graphics. ArXiv: https://arxiv.org/abs/1810.12925
- Proposed "A coarse-to-fine deep learning framework for optic disc segmentation in fundus images", second author. Major revision at Medical Signal Processing and Control, BSPC-D-18-00639 and accepted at SPIE Medical Imaging 2019.
- Compared the glaucoma classification performances of CNNs on the holistic images and the local OD regions. "Computerized assessment of glaucoma severity based on color fundus images", second author. Accepted at SPIE Medical Imaging 2019.

**IPAG, Yale University | Graduate Research Assistant**
Sep, 2016-May, 2017 | New Haven, CT
With Dr. James Duncan.

- Developed a multi-feature Gaussian Mixture Model to segment four classes of tissues in the MRI images with HCC.
- K-SVD dictionary learning to track the epicardial boundary of left ventricle in echocardiographic images.

**BIC, Rensselaer Polytechnic Institute | Individual study**
Jan, 2014-May, 2014 | Troy, NY
With Dr. Ge Wang.

- Modelling the filtered backpropagation of parallel beam CT.

## PROJECTS & EXPERIENCE

**2018 Kaggle RSNA Competition – Pneumonia detection**
Sep, 2018-Oct, 2018 | Pittsburgh, PA
Proposed an ensemble model of three Mask R-CNNs at different training stages, enhanced by a pneumonia classification model, InceptionV3.
Our solution ranked 25th (2%) at the final testing phase.

**Philips IntelliSpace Portal | Research assistant**
May, 2017-Aug, 2017 | New Haven, CT
Developed and validated the unsupervised algorithms embedded in the Philips software, including qEASL, GMM, and ISODATA.