

# CHONGYU QU

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## Education

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### Johns Hopkins University

*M.S.E. in Biomedical engineering, GPA: 3.818*

August 2020 - May 2022

Baltimore, USA

### The Ohio State University

*Transfer from Hainan University*

*B.S. in Biology, GPA: 3.411*

August 2017 - May 2020

Columbus, USA

### Hainan University

*Transfer to The Ohio State University*

*Biological Science*

September 2015 - May 2017

Haikou, China

## Publication

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[1] C. Qu, T. Zhang, H. Qiao, J. Liu, Y. Tang, A.L. Yuille, Z. Zhou\* “Annotating 8,000 Abdominal CT Volumes for Multi-Organ Segmentation in Three Weeks”, **NeurIPS 2023** [Paper] [Code]

[2] C. Qu, T. Zhang, H. Qiao, J. Liu, Y. Tang, A.L. Yuille, Z. Zhou\* “AbdomenAtlas-8K: Human-in-the-Loop Annotating Eight Anatomical Structures for 8,448 Three-Dimensional Computed Tomography Volumes in Three Weeks”, **RSNA 2023 (Oral Presentation)** [Abstract]

## Professional Experience

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### Johns Hopkins University CCVL Research Group

*Research Assistant | Advised by Prof. Alan L. Yuille and Dr. Zongwei Zhou*

*Research Area: Active Learning, Medical Image Segmentation, Continue Learning*

March 2023 – Present

Baltimore, USA

### Johns Hopkins University LCSR Lab

*Research Intern | Advised by Prof. Mathias Unberath*

*Research Area: Contrastive Learning*

September 2022 - February 2023

Baltimore, USA

### Johns Hopkins University AIAI Lab

*Research Intern | Advised by Prof. Web Stayman*

*Research Area: Denoising VAE, Machine Learning*

September 2021 - May 2022

Baltimore, USA

## Research Projects

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### Active Learning for Medical Image Segmentation

- Developed a comprehensive dataset comprising 8,448 CT volumes, with the primary objective of producing per-voxel annotations for eight target organs.
- Proposed an active learning method comprising two components: error detection from AI predictions and active learning performed by annotators to revise the most significant errors detected.

### Automated Propagating of Annotations on Scarcely Annotated Intraoperative CT Dataset

- Segmented 4D extended cardiac-torso (XCAT) human virtual phantom by TotalSegmentator and derived 3D organ meshes of each phantom volume.
- Derived point clouds from meshes of each organ and applied PointNet to extract embedding features and establish point correspondence.

## Academic Projects

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### Deep-Learning Segmentation for High-resolution Measurements of Bone Microstructure [Report]

- Introduced U-Net and Otsu segmentation for cone beam CT (CBCT) 3-D volumes of trabecular bone.
- Analyzed how well the segmentation results matched the Micro-CT data (used as the reference) by measuring correlation and absolute difference.

## Facial Expression Detector [Report]

- Introduced a facial expression detector and classification model pipeline to detect human face from background features and classify the facial expression from eight different classes.
- Detected human faces using multi-task cascaded convolutional Networks (MTCNN), and fine-tuned pre-trained VGG-16 and ResNet-18 deep neural networks with the AffectNet dataset for extracting and classifying facial expressions.

## Heart Attack Prediction [Code] [R Shiny App]

- Developed a user-friendly Shiny app that predicts the probability of a heart attack based on user inputs using logistic regression.

## Technical Skills

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**Programming:** Python, MATLAB, R,  $\LaTeX$

**Developer Tools:** Linux, Git, VS Code

**Framework:** Pytorch, Keras

**Languages:** Native in Chinese