# ZIMING QIU

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## EDUCATION

**New York University** *September 2017 - June 2022(expected)*

PhD: Electrical Engineering.

Research Interests: Computer Vision, Machine Learning and Image Analysis.

Courses: Big Data, Robot Perception, Bayesian Machine Learning, System Optimization, Data Structures and Algorithms, Natural Language Processing, Image and Video Processing, Linear Algebra.

Honor: Ernst Weber Fellowship from the Department of Electrical and Computer Engineering.

**Beihang University** *September 2013 - June 2017*

Bachelor: Biomedical Engineering.

## WORK EXPERIENCE

**Nokia Bell Labs** June 2020 - December 2020
*Summer Research Intern and Fall Co-op* *Murray Hill, NJ*

· Rendered 100,000 training images with scene coordinate ground truth from a color LiDAR point cloud.
· Applied histogram matching and CycleGAN to align the rendered images to real camera images.
· Trained a scene coordinate regression network with adversarial feature-level domain adaptation.
· Used PnPRansac to estimate camera poses, achieving 0.22m location and 4.1° rotation median error. (submitted one patent and one ICRA 2021 paper.)

**New York University** September 2017 - May 2020
*Research Assistant* *Brooklyn, NY*

· Used graph cut and rule-based methods for brain ventricle (BV) and body segmentation.
· Developed deep learning based algorithms for BV and body segmentation in 3D ultrasound mouse embryo images, achieving over 90% DSC and real-time inference.
· Leveraged the segmentation to design a mutant classification algorithm, achieving 97% accuracy.

**Siemens Healthineers** May 2019 - August 2019
*Summer Research Intern* *Princeton, NJ*

· Trained a 3D ResNet to predict the lung nodule malignancy with one time-point CT screening images.
· Developed a registration based method that could align the longitudinal CT images for nodule tracking.
· Implemented 3D Convolutional LSTMs to predict the nodule malignancy with longitudinal data.

**Microsoft Research Asia & Beihang University** June 2015 - June 2017
*Research Assistant* *Beijing, China*

· Developed a video subtitle localization and recognition system with near-human-level performance.
· Proposed to combine SIFT flow and optical flow for atlas-based hippocampus segmentation in MRI.

## PROFESSIONAL SKILLS

**Programming Languages** Python, C++, Matlab and Shell Script.
**Libraries/Platforms** Pytorch, Tensorflow, Caffe, Git, Docker, SLURM and GCP.

## PUBLICATIONS

### Journal Paper:

Ziming Qiu et al., **"A Deep Learning Approach for Segmentation, Classification and Visualization of 3D High Frequency Ultrasound Images of Mouse Embryos,"** in Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2020, under major revision, preview link.

Yan Xu, Siyuan Shan, Ziming Qiu et al., **"End-to-End Subtitle Detection and Recognition for Video in East Asian Languages via CNN Ensemble with Near-Human-Level Performance,"** in Signal Processing: Image Communication, 2018, paper link.

### Conference Paper:

Jack Langerman*, **Ziming Qiu*** et al., **"Domain Adaptive Training for Camera Pose Estimation: Learning Camera Pose Estimation Without Pose Labels,"** in IEEE International Conference on Robotics and Automation (ICRA), 2021, * equal contribution, under review, preview link.

Tongda Xu*, **Ziming Qiu*** et al., **"Deep Mouse: An End-to-end Auto-context Refinement Framework for Brain Ventricle & Body Segmentation in Embryonic Mice Ultrasound Volumes,"** in IEEE International Symposium on Biomedical Imaging (ISBI), 2020, * equal contribution, paper link.

Ziming Qiu et al., **"Automatic Mouse Embryo Brain Ventricle & Body Segmentation and Mutant Classification from Ultrasound Data Using Deep Learning,"** in IEEE International Ultrasonics Symposium (IUS), 2019, paper link.

Ziming Qiu et al., **"Deep BV: A Fully Automated System for Brain Ventricle Localization and Segmentation in 3D Ultrasound Images of Embryonic Mice,"** in IEEE Signal Processing in Medicine and Biology (SPMB), 2018, paper link.

Jen-wei Kuo, Ziming Qiu et al., **"Automatic Body Localization and Brain Ventricle Segmentation in 3D High Frequency Ultrasound Images of Mouse Embryos,"** in ISBI, 2018, paper link.

### US Patent:

Ziming Qiu et al., **"Longitudinal Lung Nodule Malignancy Prediction with Image Registration based Nodule Tracking and 3D Convolutional LSTMs,"** under invention disclosure.