Kashu Yamazaki

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EDUCATION

Bachelor of Science, Mechanical Engineering Honors — Expected: May 2020
University of Arkansas, Fayetteville — Overall GPA: 3.975/4.0
Major: Mechanical Engineering, Minor: Computer Science — Major GPA: 4.0/4.0

QUALIFICATION

Featured Courses	MEEG 5203 (Robot Modeling and Simulation), MEEG 491V (Mechatronics), CSCE 5013 (Deep Learning), CSCE 5063 (Machine Learning), CSCE 4613 (AI)
Software and APIs	PyTorch, ROS, SolidWorks (CSWA), KiCAD, Linux, Git, OpenCV, PhotoShop
Programming Languages	Python 3, C/C++, Java, MATLAB, Arduino, JavaScript, Bash Script, LaTeX
	Fluent in English and Japanese

PUBLICATIONS

- Yang Liu, **Kashu Yamazaki**, Dawei Zhang, Yucheng Li, Meng Su, Qing Xie, Yue Chen, and Mingfeng Bai, "Minimally Invasive Intraperitoneal Photodynamic Therapy Using a New Soft Robot System," **SPIE**, Paper 11220-12. September 2019.
- Yucheng Li, **Kashu Yamazaki**, Yang Liu, Dawei Zhang, Qing Xie, Meng Su, Mingfeng Bai,and Yue Chen, "Soft Robotic Laparoscope for Photodynamic Therapy," **SPIE**, Paper 11220-30. September 2019.

PROFESSIONAL EXPERIENCE

Research Assistant — August 2019 – Present
Computer Vision and Machine Intelligence Lab, *University of Arkansas, Fayetteville*
Research Topic: Computer Vision for Medical Imaging

- Segmentation of brain tumor on volumetric multimodal MRI data (BraTS'17)
- Zero/Few shot learning for image segmentation and classification
- Knowledge graph embedding with graph convolutional network

Research Assistant — January 2019 – Present
Medical and Soft Robotics Lab, *University of Arkansas, Fayetteville*
Research Topic: Soft Robotics and Machine Learning

- Designed and fabricated of multi-DoF soft robot for photodynamic therapy (published two papers)
- On going collaborative project with geoscience department to predict the climate change with autoencoder (convolutional neural network)

Teaching Assistant — August 2017 – December 2018
Department of Mechanical Engineering, *University of Arkansas, Fayetteville*
Course: MEEG 2003 (Statics)

- Conducted drill component and grading of statics class for three semesters
- Covered topics including:equilibrium and resultants of force systems in a plane and space, analysis of structures, friction, centroids, moments of inertia, and virtual work method.
- Methods of analysis including virtual work method are emphasized.

FEATURED PROJECTS

Qualia2.0 — Deep Learning Framework May 2019 – Present

- Developed a deep learning framework integrated with automatic differentiation and dynamic graphing with CUDA acceleration from scratch.
- Implemented and trained computer vision algorithms including VGG, ResNet, OpenPose, etc.
- Implemented and trained reinforcement learning algorithms including: A2C, TD3, PPO, etc.
- Currently working on the performance optimization of the framework

Brain Tumor Segmentation — Volumetric Segmentation Model September 2019 – Present

- Research project on volumetric brain tumor segmentation (one paper in progress; Expected 2020 Sp.)
- Developing a semantic segmentation model with edge attention for BraTS'17 dataset using PyTorch

Climate Prediction — Deep Learning Based Climate Model October 2019 – Present

- Collaborative research project with geoscience department (one paper in progress; Expected 2020 Sp.)
- Developed a model with "U-Net" architecture for the temperature regression task using PyTorch
- The model was trained on CMIP5 dataset to predict the world monthly temperature
- Improved the prediction consistency and accuracy compared to the 27 models in CMIP5

Soft Robotic Laparoscope — tendon driven multi-DoF soft robot June 2019 – September 2019

- Designed and fabricated a tendon driven multi-DoF soft robotic laparoscope for photodynamic therapy as well as a mechatronic system for controlling the soft robot (two papers published in SPIE)
- Wrote GUI application for controlling the soft robot so that the collaborator in Vanderbilt University Medical Center can easily manipulate the robot

Senior Design Project — *PneuNet* Based Soft Gripper January 2019 – December 2019

- Designed and fabricated a soft gripper for grasping delicate objects
- Built a control board to achieve a force feedback control of the gripper

COMMUNITY SERVICE

Tau Beta Pi: Service Events March 2017 - October 2018

- Helped planting trees at Walker Park to small area of woodland to be extended
- Joined Fayetteville trail cleanup for the local community
- Joined Lake Fayetteville cleanup to protect the water quality of the Lake

HONORS

Chancellor's List / Dean's List, *University of Arkansas, Fayetteville* All Semesters
National College Network Tuition Advantage Award All Semesters
Blanche Bledsoe Rosecrans & Clarence J. Rosecrans, Sr. Memorial Scholarship August 2019 – Present
Boles-Vaulx Scholarship August 2018 – May 2019
TAU BETA PI Engineering Honor Society November 2017 – Present
Charles D. Brock Engineering Scholarship August 2017 – Present
University of Arkansas Academic Scholarship August 2017 – May 2018