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RESEARCH INTERESTS

Computer Vision, Machine Learning: 3D point cloud registration, 3D object detection, visual place recognition.

EDUCATION

Sep. 2017-May. 2019	College of Engineering, Carnegie Mellon University Degree: M.S. in Biomedical Engineering
Sep. 2013-Jul. 2017	College of Plant Science, Jilin University Degree: B.S in Biotechnology
Sep. 2014-Jul. 2016	College of Computer Science and Technology, Jilin University Dual Degree: B.E. in Computer and Application

COURSES HIGHLIGHT

Introduction to Machine Learning (10-601A)	Computer Vision (16-720B)
Computational Bio-Modeling and Visualization (24-658)	Neural Signal Processing (18-698)
Deep Reinforcement Learning and Control (10-703)	Probabilistic Graphical Models (10-708)
Biomedical Engineering Systems Modeling and Analysis (42-302)	Convex Optimization (10-725)

RESEARCH EXPERIENCE

- Jun. 2019-Now** **Research staff, CI2CV Lab, CMU (Dr. Simon Lucey)**
- Deep feature-based efficient Lucas-Kanade algorithm in point cloud registration
 - Study on PointNet encoding
 - Multi-resolution deep sampling-based point cloud registration
- Oct. 2017-Now** **Graduate research student, Biorobotics Lab, CMU (Dr. Howie Choset)**
- Point cloud registration using Siamese network structure and PointNet encoding (PCRNet): We provide a novel framework to align point clouds that utilizes PointNet encoding. Our PCRNet is robust to noise and large initial misalignment between source point cloud and template point cloud.
 - Voxel-based 3D object detection in KITTI dataset: We propose a voxel-based 3D object detection framework using faster R-CNN prior information.
 - Multi-domain feature learning-based visual place recognition under different environment conditions: Using CapsuleNet-based feature extraction and entropy-controlled separation modules.
 - Multi-resolution sampling-based visual place sequential searching under various environments: With coarse-to-fine searching and particle filter, our method balances the matching accuracy and searching efficiency.
 - Accurate real-time da Vinci surgical robot tool segmentation using deep learning
- Sep. 2014- Jun. 2017** **Host-Microbe Molecular Interaction Laboratory, JLU (Dr. Qingming Qin)**
- Cloning and functional identification of the strong promoter *Pef1* of *Botrytis cinerea* independently
 - Molecular dissection of *Septin* protein *Sep4* in mediation of infection structure formation
- Oct. 2014- May.2017** **National University Student Innovation Program team, JLU (Dr. Guihua Li)**
- Leader, undertook a project “Distribution Model of Nuclei of Multinuclear Fungi—*Botrytis cinerea*”
- Jul. 2014- Aug. 2014** **Maize Biology Lab, JLU (Dr. Yaping Yuan)**
- Member, research on maize pollination and molecular biology
- Jan. 2014- Feb. 2014** **Anhui Academy of Applied Technology**
- Member, participated in a provincial project “Comprehensive Exploitation of Jiu Hua *Polygonatum sibiricum*”

COURSE PROJECT

- **10-708 Probabilistic Graphical Models (Dr. Eric Xing):** Using various deep kernels in time-varying networks for reverse-engineering of gene interaction
- **16-720 Computer Vision (Dr. Simon Lucey):** 3D reconstruction and Lucas-Kanada tracking using difference of Gaussian pyramid features and ORB descriptor
- **10-703 Deep RL and Control (Dr. Tom Mitchell, Dr. Katerina Fragkiadaki):** Grid-world navigation using various deep reinforcement learning techniques
- **24-658 Computational Bio-Modeling and Visualization (Dr. Yongjie Zhang):** Mesh quality improvement using the implicit fairing with curvature flow

TEACHING EXPERIENCE

Jul. - Aug. 2015

Served as a private mathematics / physics tutor during summer vacation

ACADEMIC HONORS

2017	Scholarship with offer by Carnegie Mellon University
2013- 2016	Academic Achievement Scholarship every semester sponsored by Jilin University
2013- 2016	Outstanding Student Medal of College each year
2013- 2014	Individual Scholarship sponsored by Jilin University

SIGNIFICANT AWARDS

Mar. 2016	First Place for Jilin College Student Bridge Championships
Sep. 2015	Third Prize of China Undergraduate Mathematical Contest in Modeling (CUMCM) in Jilin First Place for Jilin College Student Bridge Championships
May. 2015	Second Prize for Brand C in 2015 National English Competition for College Students (NECCS)
Mar. 2015	Second Prize of 2014-2015 Winter Vacation Social Practice Contest
Nov. 2014	Second Place for Herbarium Contest sponsored by College of Plant Science
Sep. 2014	Seventh Place for the Women's 1500m of Jilin University Sports Meeting
Jun. 2014	Excellence Award for "Reading During Spring and Summer" Essay Competition
Apr. 2014	Third Place for Changchun College Student Bridge Competition

SOCIAL ACTIVITIES & MEMBERSHIP

Mar. 2014-Sep. 2015	Vice president of Yonghe Bridge League of Jilin University
Dec. 2013-Dec. 2015	Member of "Walk with Light" caring for autistic children

PUBLICATION (* equal contribution)

Vinit Sarode*, **Xueqian Li***, Hunter Goforth, Yasuhiro Aoki, Animesh Dhagat, Arun R. Srivatsan, Simon Lucey, Howie Choset. One Framework to Register Them All: PointNet Encoding for Point Cloud Alignment arXiv preprint arXiv:1912.05766.

Vinit Sarode*, **Xueqian Li***, Hunter Goforth, Yasuhiro Aoki, Arun R. Srivatsan, Simon Lucey, Howie Choset. (2019). PCRNet: Point Cloud Registration Network using PointNet Encoding. arXiv preprint arXiv:1908.07906.

Peng Yin, Lingyun Lin, **Xueqian Li**, Yin Chen, Yingli Li, R. Arun Srivatsan, Lu Li, Jianmin Ji, and Yuqing He. (2019). A Multi-Domain Feature Learning Method for Visual Place Recognition. *ICRA 2019*.

Peng Yin, R. Arun Srivatsan, Yin Chen, **Xueqian Li**, Hongda Zhang, Lingyun Xu, Lu Li, Zhenzhong Jia, Jiamin Ji and Yuqing He. (2019). MRS-VPR: a multi-resolution sampling based global visual place recognition method. *ICRA 2019*.

Huiqiang Feng, Guihua Li, Shunwen Du, Shuo Yang, **Xueqian Li**, Paul de Figueiredo, Qing-Ming Qin. (2017). The septin protein S ep4 facilitates host infection by plant fungal pathogens via mediating initiation of infection structure formation. *Environmental microbiology*, 19(5), 1730-1749.

TECHNICAL SKILLS

Programing Language: Python, Matlab, C, HTML
Deep learning tools: Tensorflow, Pytorch, Tensorlayer

Tools: Latex, Dreamweaver, Emacs