Yang LIU

Personal Data

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Education

10.2015 - 11.2019	University of Surrey PhD. in Electric Engineering.
9.2012 - 3.2015	Harbin Engineering University Master in Electric Engineering and Automation
9.2008 - 6.2012	Harbin Engineering University Bachelor in Electric Engineering and Automation

Research Project

Audio-Visual Classification and Representation with GAN and VAE

07/2019 - Current | Microsoft, UK

- Collect 30TB video dataset for scene classification.
- Propose a audio scene classification network based on GAN and VAE, which is implemented by Keras and Tensorflow.
- Train the model on Youtube BB (380,000 videos), Youtube 8M (10,000 videos), Place 365 and Dcase dataset.
- Sunmit a paper to IJCAI 2020.

S3A: Future Spatial Audio for An Immersive Listener Experience at Home

10/2015 - 06/2019 | Centre for Vision, Speech and Signal Processing, Surrey, UK

- Work with Prof. Wenwu Wang and Prof. Adrian Hilton and propose a mutli-speaker tracking framework with a microphone array and a camera using DOA, MUSIC, faster R-CNN and YOLO network.
- The muli-sensor data are fused by sequential Monte Carlo, Probability Hypothesis Density (PHD) filter and particle flow.
- Implement the methods by Matlab, C++ and Python on AV16.3 (135 videos), AVDIAR (23 videos) and CLEAR (50 videos).
- Compared to the baseline lines, the tracking filter decrease 52% accuracy errors and 24% computational cost.
- Nominated for Best student paper in International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2019.
- Video: Method(2018), Method(2017) and Method(2016).

Target Tracking using COZMO robot.

07/2018 - 08/2018 | Centre for Vision, Speech and Signal Processing, Surrey, UK

- Implement a single target tracking for a cozmo robot with YOLO network and Kalman filter by Python and C++.

- Design a 3D visualizer for Cozmo's world state by Qt, OpenCV and OpenGL.

IEEE-AASP Challenge on Acoustic Source Localization and Tracking

06/2018 - 07/2018 | Centre for Vision, Speech and Signal Processing, Surrey, UK

- Propose a mutli-speaker tracking framework based on particle flow with MUSIC method.
- The method is evaluated on the LOCATA datasets which are recorded by four microphone arrays (20 recordings).
- Compared to the baseline method, our proposed method increases 42% the probability of detection and decreases 71% the elevation error on the planar microphone array.

WORK EXPERIENCE

Reviewing

- Serve as a reviewer for IET Single Processing and IET Computer Vision.

Demonstration

- Computer Algorithms and Architecture (80 student) and Computers and Programming 2 (80 student) about C++ with Dr. Jean-Yves Guillemaut. (Jan 2017 – Oct 2018, 1 yr 10 mos)
- Al and Al Programming (40 students) and Advanced Signal Processing (40 students) about Matlab and machine learning with Dr. Terry Windeatt. (Jan 2017 – May 2017, 5 mos)
- Web and Database Systems (70 students) about SQL, PHP and HTML with Prof. Shujun Li. (Oct 2016 – Feb 2017, 5 mos)
- Computer and Digital Logic (80 students) about Python with Dr. Nikolaos Dikaios. (Sep 2016 – Dec 2016, 4 mos)

Internship

- Propose a multi-sensor tracking system with Microsoft Vision team in 2019.
- Be a freelance developer to create an IOS app implemented by Support Vector machine to mark users' speaking Screenshot and get over 1k users in 6 mos.
- Design a monitoring system for Siemens PLC systems in Siemens LAB in 2011.

Volunteering

- Student Volunteer in 2019 IEEE International Conference on Acoustics, Speech and Signal Processing.
- Student Helper in 2016 University of Surrey Open Day.

Publication

JOURNAL

- Labelled non-zero particle flow for Multi-speaker tracking, Yang Liu, Wenwu Wang, IEEE Transactions on Signal processing (under review).
- Intensity Particle Flows for Sequential Monte Carlo Implementation of Probability Hypothesis Density Filter, Yang Liu, Wenwu Wang, IEEE Transactions on Signal processing (under review).
- Audio-visual Zero Diffusion Particle Flow SMC-PHD Filter for Multi-speaker Tracking, Yang Liu, Volkan Kilic, Jian Guan, Wenwu Wang, IEEE Transactions on Multimedia, August 2019.
- Texture features extraction method based on Worldview-II multi spectral remote sensing data, Zhenxing Zhang, Ning Li, Yang Liu, Systems Engineering and Electronics, 2013, 35(10): 2044-2049.

CONFERENCE

- Acoustic Scene Classification with 'Imagined' Images, Yang Liu, Eric Sommerlade, Alexandros Neophytou, Sunando Sengupta, International Joint Conferences on Artificial Intelligence (IJCAI), 2020. (Submitted)
- Labelled Non-zero Particle flow for SMC-PHD filtering, Yang Liu, Qinghua Hu, Yuexian Zou, Wenwu Wang, International Conference on Acoustics, Speech, and Signal Processing, 2019.
- Intensity Particle Flow SMC-PHD Filter For Audio Speaker Tracking, Yang Liu, Wenwu Wang, Volkan Kılıç, LOCATA challenge workshop, 2018.
- Audio-visual SMC-PHD Filter with Non Zero Diffusion Particle Flow, Yang Liu, Wenwu Wang, Volkan Kılıç, International Conference on Acoustics, Speech, and Signal Processing, 2018.
- Particle flow for sequential Monte Carlo implementation of probability hypothesis density, Yang Liu, Wenwu Wang, Yuxin Zhao, International Conference on Acoustics, Speech, and Signal Processing, 2017.
- Particle Flow SMC-PHD Filter for Audio-Visual Multi-speaker Tracking, Yang Liu, Wenwu Wang, onathon Chambers, Adrian Hilton, International Conference on Latent Variable Analysis and Signal Separation, 2017.
- Visual Mapping and Localization Using a Tree-structured Audio Model, Yuxin Zhao, Yang Liu, Wenwu Wang, International Navigation Conference, 2015. **PATENT**
- Improved Audio Classification Using Synthesized Images (laying open for public inspection)

ACADEMIC ACTIVITIES

05, 2019	Poster in ICASSP, Brighton, UK
08, 2018	Visitor in IEG-AI, London, UK
11, 2018	Visitor in Dcase, Surrey, UK
07, 2018	Visitor in LVA-ICA, Surrey, UK
04, 2018	Poster in ICASSP, Calgary, Canada
03, 2017	Poster in ICASSP, New Orleans, United States
02, 2017	Oral in LVA-ICA, Grenoble, France

PROGRAMMING

Advanced
C++, Matlab, Python, OpenCV, pyTorch
Intermediate
Qt, PHP, HTML5, C#, Swift

AWARDS

2019	Nominated	Best student paper for ICASSP 2019
2019	Third	Taks 4 in LOCATA workshop
2015 - 2019	First Class	CVSSP Scholarship
2013	First Class	Graduate Scholarship (2 years)
2012	Second Class	'Siemens' National Industrial Design Contest
2009 - 2011	First Class	China Undergraduate Electronic Design Contest (three times)
2011	Third Class	'Challenge Cup' Provincial College Student Curricular Academic Science and Technology Works Competition
2011	First Class	'Haitai' Outstanding Scholarship
2011	First Class	China National Undergraduate Innovation program
2010	First Class	RoboCup China
2010	Third Class	International Mathematical Contest in Modeling