YINGNAN WANG

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EDUCATION

Master of Science in Electrical Engineering — June 2017
University of California, Los Angeles — **GPA: 3.74**
Bachelor of Science in Electrical Engineering — May 2015
University of Minnesota, Twin Cities — **GPA: 3.70**
Bachelor of Science in Electrical Engineering — July 2015
Beijing Jiaotong University

SKILLS AND INTERESTS

Languages	C/C++, Python, MATLAB, Java, C#
Programming Skills	OpenCV, OpenGL, CUDA, TensorFlow, Android, Eigen, g2o
Knowledge	Graphics&PBR, SfM&SLAM, Deep Learning, Image Processing, Parallel Computing
Side Projects & GitHub	Tiny OpenGL game engine, Face recognition, etc. https://github.com/coroner4817

PROFESSIONAL EXPERIENCE

Senior Software Engineer at Magic Leap — Oct 1, 2019 - Present
Mixed Reality Platform Frameworks Team

- Lead engineer on multi-user real-time 3D collaborating drawing framework. Designed algorithm for 3D dynamic mesh generation, synchronization and persistence. Used digital filtering and Eigen Spline interpolation to improve the drawing geometry.
- Lead engineer on collaborating session media sharing, such as photos, videos and scanned documents. Developed a robust OpenCV image processing algorithm to extract document from different scenarios. Working on 3D object reconstruction support.
- Working on Mixed Reality application interactive sharing framework using Google Firebase and Twilio SDK.
- Develop some new experimental projects related to computer vision, computer graphics and data analysis.

Software Engineer at Magic Leap — Aug 14, 2017 - Oct 1, 2019
Mixed Reality Application Team

- Worked on various AR applications and frameworks for the Magic Leap One device, such as Phone App/Framework, Gallery. Lead developer on MusicPlayer, Phone App and Sharing to social media service.
- Worked on YAML based declarative app generation framework and plugin system for dynamically load components libraries during runtime.
- Coordinated with UX and Interaction team to make the App more user friendly and experiment with design concept of Mixed Reality.
- Designed the software architecture and implement specific software features set. Maintain the code base and accomplish requirements for system update.

Deep Learning with GPU Parallel Computing On Android Device — Winter 2017 - Spring 2017
Lead Developer, Advisor: Professor Mani Srivastava, University of California, Los Angeles

- Implemented TensorFlow's core ops with RenderScript to enable running on Android Adreno GPU. Achieved 3x speed up on Inception model in comparison with the TensorFlow default Eigen CPU library.
- Hijacked the original matmul and conv ops' computation with RenderScript kernels. Supports both float precision and quantized 8-bit fixed point. Used Bazel to build RenderScript NDK library within TensorFlow source code.
- The first open source project on this topic. Working on make the code more robust and try to contribute to TensorFlow. Project repo: https://goo.gl/e4ZtXx
- ***Publication:*** Moustafa Alzantot, Yingnan Wang, Zhengshuang Ren, and Mani B. Srivastava. "Rstensorflow: Gpu enabled tensorflow for deep learning on commodity android devices." *The 1st International Workshop on Deep Learning for Mobile Systems and Applications*, pp. 7-12. ACM, 2017.

Submersible Waterborne Pathogen Monitoring Platform Fall 2016 - Summer 2017
Lead Software Engineer, Advisor: Professor Aydogan Ozcan, University of California, Los Angeles

- Designed a GUI-based parallel computing image processing and hardware control software for detecting pathogens in the drinking water from wild area.
- Developed with Qt platform and OpenCV. Used CUDA to speed up the object segmentation, autofocus and hologram reconstruction. Interoped with OpenGL to fast render real-time processed microscopy images.
- Utilized Deep Learning (TensorFlow C++ API) to detect and classify the different types of pathogens.

Natural Language Processing Tool For Airline Error Message Analysis Summer 2016
Deep Learning Developer, Thales InFlyt Experience, Thales Group

- Created a NLP tool for classifying the error log messages from the airline seat-back screens into 55 categories.
- Applied Word2Vec on the training dataset to get the word vectors and calculated the sentence vectors. Then fitted the sentence vectors and the corresponding labels in a Neural Networks to train the model.
- Automatically filtered out the less confident prediction and left them for manual classification, the final accuracy is over 95% on test dataset.

Computer Assisted Sperm Quality Analysis Application Spring 2016
Lead Software Engineer, Advisor: Professor Aydogan Ozcan, University of California, Los Angeles

- Developed an image processing tool using OpenCV and OpenMP for analyzing the sperm quality based on holograms taken from the Lens-Free Microscope (LUCAS).
- Reconstructed the holograms and detected over 2000 sperms in each frame using self-adaptive image processing algorithm with high accuracy and high speed.
- Utilized Kalman Filter to track the trajectories of thousands of sperms in continuous frames and calculated the motility and health index of the sperms.

Vessel Segmentation From Fundus Images Application Summer 2015
Undergraduate Student Researcher, Advisor: Professor Keshab Parhi, University of Minnesota, Twin Cities

- Created a web-based Android application and server program that extract vessel segmentation from fundus images using OpenCV and Machine Learning, reduced opthamologists's time from several days to 10 seconds.
- Developed the drawing and erasing features which allow opthamologists to edit the result and also designed a local patients file management database.

ShangShui Surveillance Platform Android Application Spring 2015
Software Engineer Intern, Beijing Hangrid Technology Co., Ltd

- Built a web-based Android app that can query information from the database of the surveillance system.
- The app can alert users when there is an emergency such as fire or flood in their area. Users can also check previous emergency history, search information from the database and view the live streaming video from the security cameras connected to the system.
- This app's primary users are the police, fire departments and government in some major provinces of China.

LEADERSHIP

HHMI Project Mentor September 2016 - Summer 2017
The Ozcan Research Group, UCLA

- Lead two teams of undergraduate students doing biomedical researches in the lab.
- Present in weekly group meeting to update the progress with professor.
- Manage all the servers and computer resources in the lab.

HONORS AND AWARDS

- Skaar Family Scholarship, University of Minnesota Fall 2014
- CSE Dean List of distinguished student Fall 2013, Spring 2014, Fall 2014
- Third Prize at ACM-ICPC Beijing Universities Contest Spring 2012