



YUAN MA

COMPUTER VISION, SOFTWARE ENGINEER | AKIRAAPT.X.BLOG
UNIT 3, 967 BELMONT TERRACE, SUNNYVALE, CA, 94086, USA

SUMMARY

Current Senior Software Engineer at Futurewei Technologies, INC. 3+ years' experience specializing in machine learning / deep learning algorithm design and implementation for computer vision tasks. Interested in devising a better problem-solving method for challenging tasks and learning new technologies and tools if the need arises.

SPECIALTIES

- Machine Learning
 - Deep Learning
- Computer Vision
- Data Mining
- Cloud Computing

WORKING EXPERIENCE

SENIOR SOFTWARE ENGINEER • FUTUREWEI TECHNOLOGIES, INC

2017.09 - NOW

- Designed and implemented a head pose estimation module which makes use of deep learning algorithms and sizable synthetic training dataset to generate fine-grained head pose. The appearance-based model can achieve MAE $< 8^\circ$ for each DoF with 25 FPS inference speed. The model was also transformed to a mobile using light-weight feature extractor (MobileNet-v2) and deployed on Huawei's Kirin 970 NPU supported device. (TensorFlow, PyTorch, C++)
- Designed a service-based module evaluation framework which refactors all developed modules to use a unified interface. The service can load any target module and generate real-time inference result and generate online evaluation result with ground-truth data provided. The framework is also used as a library dependency in Android applications to run designed deep learning algorithms on mobile devices. (Android, JNI, C++)
- Designed a landmark localization network with encoder-decoder based architecture. A novel intermediate presentation, UV position map, is used to map any 2D face image to a pre-defined 3D head model with location information encoded. The model output is an estimation of the UV position map of a given input 2D face from which real-time estimation of the landmark positions can be generated. (MATLAB, TensorFlow)

GRADUATE STUDENT RESEARCH ASSISTANT • UNIVERSITY OF MICHIGAN

2014.09 - 2017.08

TOYOTA ALLIANCE: Senior driver Guardian System

- **Project Leader.** Built a cross-platform demo application with Electron and Node.js. The application shows driver's perspective in real time and visualizes lane change detection through computer vision algorithm. (JavaScript, Node)



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SKILLS

Programming Skills:

- C++
- Python
- Java
- MATLAB
- Unix Shell

Database:

- Postgres
- MySQL
- SQLite

Frameworks:

- TensorFlow
- PyTorch
- OpenCV
- OpenGL

Software Management:

- Git
- SVN
- TeamCity

- Developed the trip segmentation algorithm that automatically partitions a trip into a sequence of links according to road types and segments it into different driving scenarios. (Python)

FORD ALLIANCE: Personal Route Prediction (PRP) System design

- **Project Leader.** Designed and implemented an online learning system that can incrementally learn a driver's personal driving behavior by analyzing his/her historical trip data. (MATLAB)
- Implemented a prediction system that can predict the driver's route choices given the destination before the driver starting the trip. (MATLAB)
- Designed and implemented real-time traffic flow and traffic incident databases. Wrote programs to analysis the real-time traffic data and automatically upload the corresponding information to the databases. (C++, Boost, Postgres API)

FORD ALLIANCE: Lane Change Prediction using Physiological Signal

- **Project Leader.** Designed and implemented a prediction system framework, mainly based on Artificial Neural Network (ANN) and Recurrent Neural Network (RNN), which can predict the driver's lane change intention by analysis the drivers' multi-channel physiological signals. (MATLAB, TensorFlow)
- Implemented the causality analysis and correlation analysis algorithm to select the useful physiological signals from the signal set. (MATLAB)

HONORS AND AWARDS

THE 2ND DJI DEVELOER CHALLENGE • INNOVATION PRIZE • 2015.08

- As the leader of Team 'Firmament', we designed a powerful and easy-to-use ground station app called Fire Scouter.
- This app helps fire departments quickly respond to fire incidents by making it possible to pre-plan flight routes and transmit real-time imaging from the UAV



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back to the ground station, letting the fire department conduct qualitative analysis of the scene, so as to improve decision-making for rescue missions.

EDUCATION

MASTER • 2017.04 • UNIVERSITY OF MICHIGAN

Major: Electrical Engineering

GPA: 3.67/4

Relevant courses: Intelligent system, Advanced Intelligent System, Cloud Computing, Stochastic process, Data Mining, Advanced Data Mining, Modern Control System, Speech Processing, Information Theory

BACHELOR • 2014.06 • HUAZHONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

Major: Electrical and Information Engineering

Cumulative GPA: 3.68/4 (85.9/100)

RESEARCH PUBLICATIONS

- Wang, X., Ma, Y., Di, J., Murphey, Y. L., et al. "Building Efficient probability transition matrix using machine learning from big data for personalized route prediction," in *Procedia Computer Science* 53, 284-291., Aug 2015.
- Lemieux, Joe and Yuan Ma, "Vehicle Speed Prediction using Deep Learning," *Vehicle Power and Propulsion Conference (VPPC), 2015 IEEE*. IEEE, 2015.
- Dai, Yue, Yuan Ma, Qianyi Wang, Yi Lu Murphey, et al. "Dynamic prediction of drivers' personal routes through machine learning." In *Computational Intelligence (SSCI), 2016 IEEE Symposium Series on*, pp. 1-8. IEEE, 2016.



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