Yi-Chen Zhang
Curriculum Vitae

🏠 31350 Harlo Dr Apt H, Madison Heights, MI 48071
📞 +1 (517) 775-9919
✉ chris7462@gmail.com
🖥 https://chris7462.github.io

EDUCATION

2013 – 2018	**Doctor of Philosophy** Statistics and Probability *Michigan State University, USA*
2007 – 2009	**Master of Science** Graduate Institute of Statistics *National Central University, Taiwan*
2003 – 2007	**Bachelor of Science** Department of Mathematics *National Central University, Taiwan*

WORK EXPERIENCE

Algorithm Engineer
CURRENT, FROM JUL. 2018
APTIV — Global Technology Company

Scene Perception Algorithm Team   (Oct. 2020-Present)

Fused Road Model (FRM) Team   (Sep. 2018-Sep. 2020)
- Mainly develop fusion algorithms for object trail processing
- Fused track converter for ROS, Appsil, and AA variants
- Design FRM state machine and mode manager
- Error handling for vision, object fusion, and vehicle state inputs
- Coverity Static Analysis including AUTOSAR and MISRA C++
- Develop unit test and component test for FRM component
- Sporadically acted as the scrum master for FRM

Autonomous Driving Behavior Team   (Jul. 2018-Aug. 2018)
- Develop a prediction and cost function based algorithm to perform cooperative social behavior
- Work in Otto code migration from urban to highway

Teaching Assistant
AUG. 2013 – MAY. 2018
Department of Statistics and Probability, MSU
- TA for many undergraduate courses.
- Instructor at lower level undergraduate course in Summer 2015

Research Assistant
JAN. 2016 – DEC. 2016
Computational Mathematics, Science and Engineering, MSU
- Work in neuroimaging data, including movement correction, denosing, registration, and Fourier analysis.

Research Assistant
AUG. 2010 – JUL. 2013
Institute of Statistical Science, Academia Sinica
- Functional clustering and classification
- Functional linear model and its prediction
- Missing value imputation and outlier detection for functional data
- Assistant for Chiou, J.-M., Annals of Applied Statistics, 2012

Corporal
AUG. 2009 – AUG. 2010
Military Service, Taiwan

Network Administrator
JUL. 2007 – JUL. 2009
Graduate Institute of Statistics, NCU

Network Administrator
FEB. 2005 – JUN. 2007
Mathematics Computation Laboratory, NCU

Newtork Assistant
FEB. 2004 – JAN. 2005
Mathematics Computation Laboratory, NCU

COMPUTER SKILLS

EXPERT	R, MATLAB, C++, Linux, Git, LaTeX
INTERMEDIATE	Python, Perl, ROS, HPCC, TikZ
BEGINNER	MySQL, PHP, OpenMP, MPI

SKILLS

Machine Learning

I have been interested in machine learning such as clustering and classification. My education and research have cemented this interest into a passion. I greatly enjoy carrying out statistics research with potential practical applications.

Leadership Communication

I believe in action over long-winded discussions. I listen to everyone's viewpoints and use my judgment to immediately act based on consensus to achieve goals quickly and efficiently.

DOCTORAL RESEARCH

"Functional Data Analysis with Application to Traffic Flow Data"
My research examined the use of functional principal component analysis (FPCA) to analyze traffic flow data. We propose a non-parametric functional data approach to process traffic flow data, a functional naive Bayes classifier to classify traffic flow pattern, a mixture prediction approach to predict future traffic flow, and a two-step segmentation procedure to estimate both the number and locations of the mean changepoints of a traffic flow sequence.

AWARDS

2017	**Dissertation Continuation Fellowship** *College of Natural Science, MSU*
2018	**Dissertation Completion Fellowship** *College of Natural Science, MSU*

PUBLICATIONS

Zhang, Y.-C. (2020+). *Dynamical Highway Vehicle Lane Classification Using Vehicle Trails.* (In preparation)

Zhang, Y.-C. (2020). *Road Geometry Estimation Using Vehicle Trails: A Linear Mixed Model Approach.* (submitted to IEEE Transactions on Intelligent Transportation Systems)

Zhang, Y.-C. and Sakhanenko, L. (2019). *The Naive Bayes Classifier for Functional Data.* Statistics & Probability Letters 152, 137-146.

Chiou, J.-M., **Zhang, Y.-C.**, Chen, W.-H., and Chang, C.-W. (2014). *A Functional Data Approach to Missing Value Imputation and Outlier Detection for Traffic Flow Rate Data.* Transportmetrica B: Transport Dynamics 2, 106-129.

Fan, T.-H., Wang, Y.-F., and **Zhang, Y.-C.** (2014). *Bayesian Model Selection in Linear Mixed Effects Models with AR(1) Errors Using Mixture Priors.* Journal of Applied Statistics 41, 1814-1829.