Tianpei Xia

• 360-808-3650 • txia4@ncsu.edu • LinkedIn

EDUCATION

North Carolina State University, Raleigh, NC — Aug. 2016 - Present
Ph.D. in Computer Science | Adviser: Dr. Tim Menzies

The University of Texas at Dallas, Richardson, TX — Aug. 2013 - Dec. 2015
M.S. in Computer Science

Nanjing University of Posts and Telecom., Nanjing, China — Sep. 2009 - Jun. 2013
B.S. in Electrical Engineering

SKILLS AND INTERESTS

- Experience in software development, machine learning, hyperparameter optimization and software analytics.
- Proficient in *Python and Java*, familiar with *C/C++ and R*, good at ML tools: Scikit-learn, Pytorch, Keras.
- Actively seeking SDE and MLE internships.

SELECTED PROJECTS

NSF Funded: Search-based Software Engineering Research Aug, 2017 - Present
Research Assistant Under Dr. Tim Menzies, North Carolina State University, USA

- **Evolutionary Algorithms for Hyperparameter Optimization:** Developed a hyperparameter optimization framework called OIL (Optimized Inductive Learning), which applied evolutionary algorithms (e.g. Differential Evolution and NSGA-II) to supercharge software analytic tasks. OIL was tested on a wide range of optimizers with 945 projects data. Experimental results show that OIL improved the performance of effort estimation in terms of accuracy (won 16 out of 18 cases) and efficiency (reduced runtime from days to hours), respectively.
- **Sequential Model Optimization for Software Effort Estimation:** Applied and developed a sequential model based method (a.k.a active learning method) named "FLASH" for the first time in software effort estimation domain. With the constraints of specific computation costs, FLASH can efficiently find good configurations of machine learning methods (e.g. CART) for effort estimations. Overall it can improve the performance of software effort estimation tasks by 11% on average in terms of accuracy.
- **Project Health Prediction for Open-Source Software:** Proposed and developed a predicting method for project health prediction. A group of health indicators is defined based on project developing process and industrial domain knowledge. In the study, 78,455 months of data from 1,628 GitHub projects are collected, according to the preliminary results, the process action on project level can be predicted to a high level of accuracy (%10 error rate) with hyperparameter tuning on predicting methods.

System migration for educational computer programming application Jan, 2017 - May, 2017
Research Project, Game2Learn Lab, North Carolina State University, USA

- **Educational Application Platform Migration:** Helped to migrate an educational purpose programming game, BOTS, from its original developing platform "Unity 4" to "Unity 5" by using JavaScript. After migration, more potential features are enabled for the game's future extension and development. BOTS is a serious puzzle game designed to teach programming fundamentals for novice computer users.

Satellite images change detection by using Gaussian Mixture Model Jan, 2017 - May, 2017
Graduate Course Project, North Carolina State University, USA

- **Satellite Image Change Detection:** Applied and developed a Gaussian mixture model to identify landscape changes using high resolution satellite images. This grid-based method has competitive performance in Bi-temporal change detection. Given two very high resolution satellite images from the same landscape area, it can achieve similar performance as humans in terms of landscape change detection.

SELECTED PUBLICATIONS

- **Tianpei Xia**, Rui Shu, Xipeng Shen, Tim Menzies, *Sequential Model Optimization for Software Effort Estimation*. **Transactions on Software Engineering**, 2020.
- **Tianpei Xia**, Wei Fu, Rui Shu, Tim Menzies, *Predicting Project Health for Open Source Projects (using the DECART Hyperparameter Optimizer)*. **Empirical Software Engineering (Under Review)**, 2020.
- Rui Shu, **Tianpei Xia**, Laurie Williams, Tim Menzies, *How to Better Distinguish Security Bug Reports (using Dual Hyperparameter Optimization)*. **Empirical Software Engineering**, 2020.