Kewen Peng

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EDUCATION

North Carolina State University Raleigh, NC
Ph.D. in Computer Science | Advisor: Dr. Tim Menzies | Lab: RAISE Lab *Aug. 2019 – May 2024*

Wake Forest University Winston-Salem, NC
B.S. in Computer Science, B.A. in Mathematics *Aug. 2015 – May 2019*

SKILLS AND INTERESTS

Languages: Python, Java, C/C++, MySQL
General Expertise: Machine Learning, Software Analytics, Hyperparameter Optimization
Libraries: Pandas, NumPy, Matplotlib, scikit, TensorFlow, Keras, OpenCV

SELECTED PROJECTS

Exploring Noether Bound over Noncommutative Algebra May 2018 – Aug. 2018
Wake Forest University, summer research fellowship, honor thesis *Winston-Salem, NC*
- Disproved the existence of Noether bound over noncommutative algebra
- Discovered a new pattern of upper bounds over noncommutative algebra

Satellite Image Classification Jan. 2019 – May. 2019
Wake Forest University, class project *Winston-Salem, NC*
- Developed and evaluated various feature extraction and description methods
  to detect plantation areas in high-resolution satellite images
- Designed and applied a SURF-based classification model for recognizing river
  areas in high-resolution satellite images

Lung Cancer Survival Prediction using TCGA Clinical Data Aug. 2018 – May. 2019
Wake Forest University, honor thesis *Winston-Salem, NC*
- Proposed and applied a multi-learner preprocessor to impute missing data
- Bringing the novelty of appending the imputed data and the imputation info, we achieved
  better performance in all selected machine learners (SVM, Random Forest, etc.)

Ethical Software Design (Facebook Funded) Aug. 2019 – Present
North Carolina State University, RAISE Lab, research project *Raleigh, NC*
- Literature view on ethics standards of software design
- Categorize existent machine learning algorithms in SE community by their fulfilled ethical standards
- Propose a potential congregated framework for ethical software design

Fairness Aware AI (LAS Funded) Oct. 2019 – Present
North Carolina State University, RAISE Lab, research project *Raleigh, NC*
- Explored fairer results in machine learners using fairness as the goal in pre- & in- processing
- Explored reliable and robust explanation generation tools for interpreting the potential causes
  of unfair classification
- Contributed to the open source python package
- Contributed to a conference paper

SELECTED PUBLICATIONS

- Luigi Ferraro, Ellen Kirkman, W Frank Moore, **Kewen Peng**, *On the Noether Bound for Noncommutative Rings*, **PAMS journal** (accepted)

- Joymallya Chakraborty, **Kewen Peng**, Tim Menzies, *Making fair ML software using trustworthy explanation,* **ESEC/FSE 2020** (accepted)

- **Kewen Peng**, Tim Menzies, *Defect Reduction Planning (using TimeLIME)*, **TSE journal** (under revision)