Feisi Fu

8 Saint Mary St, Photonics Center – Boston, MA, 02215

feisiwantjob@gmail.com https://fufeisi.github.io
857-869-0444 https://www.linkedin.com/in/feisifu

SUMMARY

- I am very much interested and looking forward to involve in **Machine Learning, Optimization and Deep Reinforcement Learning**.
- My experience includes: 1. Use Neural Networks to do classification; 2. Use neural networks to control robots (aircrafts); 3. Use Neural Networks to generate new images (VAE, GAN); 4. Trojan Attacks & Defense on Neural Networks; 5. Adversarial Attacks & Adversarial Training on Neural Networks; 6. Use Matplotlib to visualize data and results.
- **I have some publications in the top-level machine learning conference (ICLR).**

SKILLS

- Areas of Study: **Machine Learning, Machine Learning Safety, Neural Networks Repair**
- Industry Knowledge: **Deep Reinforcement Learning, Safe Reinforcement Learning**
- Coding: **Python, Pytorch, Tensorflow, C++, MySQL, Matlab, Gurobi, LaTeX**

EDUCATION

Boston University — **Advisor: Prof. Wenchao Li**
Ph.D of Systems Engineering, GPA: 4.0/4.0 — *2018 – Present*
Electrical and Computer Engineering

Chinese Academy of Sciences, China — **Advisor: Prof. Baohua Fu**
MS of Algebraic Geometry, GPA: 84.5/100 — *2014 – 2018*
Academy of Mathematics and Systems Science

Sichuan University, China
BS of Mathematics, GPA: 89.2/100 — *2010 – 2014*
College of Mathematics

PROJECTS & PAPERS

- **Sound and Complete Neural Network Repair with Minimality and Locality Guarantees**
  Feisi Fu, Wenchao Li
  International Conference on Learning Representations (ICLR), accept as Posters (top 32.9%), April 2022
  We present the first neural networks repair methodology which applies only a localized change in the function space while guaranteeing the removal of the buggy behavior.
  Experiment Performance: 1. Repair Rate 96% (ReTrain) $\rightarrow$ guarantee 100% (ours); 2. Negative Side Effect 22.11% (Fine-Tuning) $\rightarrow$ 0.12% (ours).

- **On-manifold Counterexample Guided Learning**
  Feisi Fu, Wenchao Li
  We present a neural networks repair methodology which automatically find on-manifold counterexamples (examples that comes from high level latent space but not satisfy a given specification) and adjust the model parameters to repair such counterexamples.

- **Temporal-Constrained Adversarial Attack Against Neural-Network Control Systems**
  Feisi Fu, Wenchao Li
  We present a adversarial attack methodology which generates adversarial sequences (image sequences that fool the neural network control model) against a Neural-Network Control System.

- **Optimal Control Framework for Connected Automated Vehicles at Urban Intersections with Group Based Dynamic Resequencing**
  Feisi Fu, Christos G. Cassandras
  We modified the dynamic resequencing of connected automated vehicles to a grouping based dynamic resequencing and such modification greatly improve the CPU time for dynamic resequencing at urban intersections.

- **A Study of Complement Problem for Plane Curves**
  Feisi Fu, Baohua Fu
  We will describe the isomorphisms between complements of irreducible closed curves in the complex affine plane C^2, which do not extend to an automorphism of C^2.

EXPERIENCE

- **Graduate Teaching Fellow for Optimization Theory and Methods**
  Boston University, USA
- **Graduate Teaching Assistant for Calculus**
  Chinese Academy of Sciences, China

REVIEWER FOR JOURNALS & CONFERENCE ARTICLES

- **Design Automation Conference (DAC), 2020**
- **Design Automation and Test in Europe (DATE), 2021, 2022**
- **International Conference on Dependable Systems and Networks (DSN), 2021, 2022**
- **Hybrid Systems: Computation and Control (HSCC), 2020**
- **International Conference on Computer-Aided Design (ICCAD), 2021**
- **International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), 2020**

Honors and Awards

- **Dean's Fellowship Award**, Boston University
- **1st prize in 4th Mathematics Competition of Chinese College students**
- **1st Prize in Mathematics Competition of Sichuan university**
- **1st prize in 3th Mathematics Competition of Chinese College students**
- **3rd Prize of Chinese Chemical Society National Chemistry Contest for High School**