

# Yuling (Daniel) Shi

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## EDUCATION

### Shanghai University of Finance and Economics

Department of Mathematics

Shanghai, China

Sept 2018 - Present

- Undergraduate in Applied Mathematics (Elite Program), Major GPA: **3.64/4(87.6/100)**, Courses on AI: **Natural Language Processing (4.0), Deeping Learning (4.0), Machine Learning (3.7)**.
- Scholarships: People's Scholarship, Outperforming Individual Scholarship (**2 out of 86**), Featured Student (**2 out of 86**).
- Solid expertise in: Python (Deep Learning, Scientific Computing), MATLAB, Bash, L<sup>A</sup>T<sub>E</sub>X, Git; experienced in: C, C++, Make, Javascript, SQL.

## PUBLICATIONS

[1] Xuehai Huang, **Yuling Shi**, Wenqing Wang: A Morley-Wang-Xu element method for a fourth order elliptic singular perturbation problem. (*Journal of Scientific Computing*, accepted)

## RESEARCH EXPERIENCE

### Research Assistant, Interpreting Predictions of NLP Models

Shanghai, China

Advisor: Dr. Wanyun Cui

Jan 2021 - Present

- Studied recent conference tutorials and papers on interpretation techniques like SHAP, LIME and so on.
- Analyzed changes in gradients of important words during the training process with Pytorch.
- Researched on interpreting how the model learned relations between words from the aspect of Taylor expansion.

### Research Assistant, Robust Finite Element Method for A Singular Perturbation Problem

Shanghai, China

Advisor: Prof. Xuehai Huang

Jul 2020 - Feb 2021

- Studied scientific computing packages scikit-fem in Python and iFEM in MATLAB for finite element method. Contributed codes and reported bug for scikit-fem.
- Implemented a robust AMG-CG solver with designed preconditioner for decoupled equation. Achieved optimal convergence rate with Nitché's technique in the case of the boundary layers.
- Discovered and analyzed the super-convergence benefit from a simply modified right hand side.
- Final paper has been accepted by *Journal of Scientific Computing*.

### Principal Investigator, Building Domain Knowledge Graph with Deep Learning Models

Shanghai, China

Advisor: Prof. Xuehai Huang

Mar 2020 - Dec 2020

- Applied NLP models to build a financial knowledge graph, studied models for named entity recognition, relation extraction and event extraction.
- Collected data with Scrapy, stored the data in Neo4j graph database and wrapped them up with Flask framework.
- Added labels to original sentences and included a BiGRU layer after BERT to improve the performance in named entity recognition task, implemented with Pytorch.
- Awarded as the "Excellent Project" in school and selected for oral presentation (**3 out of 165**).

### Project Leader, Kaggle Question Answering Competition

Shanghai, China

Advisor: Ass.Prof. Hui Fang

Feb 2020 - Jun 2020

- Ensembled models and improved training process by studying research papers to improve performance of BERT and similar models in question answering task.
- Outperformed the best submission in Kaggle leaderboard with smaller models. Implemented experiments in Pytorch including: pre-training on similar dataset, hard negative mining, adding special token, mixed precision training.
- Reached a final GPA of 4.0 in second year among juniors from Elite Program in Department of Electrical Engineering.

## ACITIVITIES AND HONORS

**1<sup>st</sup> Prize in Mathematical Contest in Modeling of SUFE (Ranked 2/70)**

Apr 2020 – Apr 2020

**1<sup>st</sup> Prize in National Olympiad in Physics (Provincial Area, top 0.02%)**

Sept 2016 – Sept 2017

## OTHER SKILLS

**Language:** English (TOFEL 102), Chinese (mother language)

**Team working:** President of School Table Tennis Club (with 300+ members)

**Interests that make me optimistic:** Table tennis (5<sup>th</sup> place in Shanghai Doubles Championship, 3<sup>rd</sup> place in Teams)