

# Lei Shi | Curriculum Vitae

👤 Senior Undergraduate

🏛️ School of Mathematical Sciences, Nankai University

📖 West Appartment, Nankai University

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## EDUCATION

**Undergraduate** in Mathematics 2016 – present.  
*Bachelor of Science(Expected)*

- **Major:** Mathematics (Poling Class, the Pilot Scheme of Talent Training in Basic Science)
- **GPA:** 3.82/4.0, 93.52/100.
- **Ranking:** 1/40 in Poling Class of Mathematics
- **Course:** Real Analysis(100), Complex Analysis(99), Functional Analysis(99), Abstract Algebra I,II(98,99), General Topology(96), Classical Statistics with MATLAB Application(99), Statistical Computing(92), Multivariate Statistical Analysis(93), Applied Regression Analysis(92), Representation of Finite Groups(99), etc.
- **Skills:**
  - Programming: C/C++, Java, MATLAB, R, L<sup>A</sup>T<sub>E</sub>X, Lingo
  - Miscellaneous skills: Photoshop

## STANDARD TESTS

2018-4-15	<b>TOEFL</b>	107(Reading 27, Listening 28, Speaking 23, Writing 29)
2019-	<b>TOEFL</b>	105(Reading 30, Listening 27, Speaking 23, Writing 25)
2018-10-27	<b>GRE General Test</b>	321(Verbal 151, Quantative 170), Writing 4.0

## RESEARCH INTERESTS

High dimensional statistics, Statistical learning, Robust regression, Machine learning and Deep learning, Non-parametrics, Computational statistics

## AWARDS & HONORS

- 2018** China National Scholarship, Chinese Ministry of Education, China [*top 3%*]
- 2018** Rixin Scholarship, School of Math Science, NKU, China [*top 3%*]
- 2018** Second Prize in 2018 Contemporary Undergraduate Mathematical Contest in Modeling, [*Nationwide 3%*]
- 2017** Po-Ling Scholarship, NKU, China [*top 20%*]
- 2017** ‘1987’ Math Scholarship, School of Math Science, NKU, China [*top 10%*]

## RESEARCH PROJECTS

1. ***Theoretical Guarantee for Sparse PCA*** July 1st – present.  
Advisor: Prof.Lingzhou Xue, Department of Statistics, The Pennsylvania State University

- Read literature about the theory and development of sparse PCA. Learned about the mainstream methodology (SPCA, SDP, IT, etc.), theoretical results and drawbacks (consistency, etc.).
- Studied how authors of popular sparse PCA formulation and methods build their theoretical guarantees (consistency, rate of convergence and variable selection, etc.).
- Studied sparse estimators without theoretical guarantee yet and utilized tools available to explore their statistical property.

## ACADEMIC ACTIVITIES

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### 1. *2018 Contemporary Undergraduate Mathematical Contest in Modeling* Sep. 2018

- Tackling the problem of high temperature resistant clothing designing through thermodynamical models
- Establish thermal conduction equations with unknown parameters to depict the model, and determine the parameters through step iteration algorithm on least square best-fitting principle.
- Programming on MATLAB to implement and improve the algorithm.

### 2. *Seminar Class On “Analysis On Manifolds” by J.R. Munkres (Graduate and Upper Division Level).* Sep. 2017 – Jan. 2018

Advisor: Prof. Jun Li, School of Mathematical Sciences, Nankai University

- Studied five chapters of the book as an extension for mathematical analysis and an introduction to differential manifolds.
- Made several reports about the topics, including the implicit function and inverse function theorem, general integrals, manifolds in  $\mathbb{R}^n$

### 3. *COMAP’s Mathematical Contests in Modeling.* Jan. 2019

- Tackled resources management problems via operation and programming method. Programming using Lingo, in terms of nonlinear programming and data computing.

## EXPERIENCE

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### 1. *15th Sino-Singapore Undergraduate Exchange Programme* Jul. 2018

- Visited Singapore universities (NTU, NUS, SMU, SUTD) and official institutions (Ministry of Education, PRC Embassy, etc.) as one of the Chinese delegates.
- Participated in lectures about artificial intelligence and its innovation & application on projects like smart cities, self-driving cars, etc.