Lingyu Zhang — Curriculum Vitae

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RESEARCH INTERESTS

Descriptor Linear Systems, Control Theory, Data-driven Control
Parametric Eigenstructure Assignment, Robust Pole Assignment

EDUCATION

Harbin Institute of Technology – School of Mathematics **Harbin, CHN**
Ph.D. in Mathematics *September 2023 - present*

– Centesimal grade average: 94

Harbin Institute of Technology – School of Mathematics **Harbin, CHN**
M.S. in Mathematics *September 2021 - June 2023*

– the Rank of the subdiscipline: 1/6
– Centesimal grade average: 88

Shenyang University of Technology – School of Science **Shenyang, CHN**
B.S. in Information and Computing Science *September 2017 - June 2021*

– GPA: 3.68/4.0
– Rank: 6/61

RESEARCH EXPERIENCE

Parametric Eigenstructure Assignment - Acceptable(Online) *2021 - 2024*

– Zhang, B., **Zhang, L. Y.**, Li, Z. Y. (2025). Parametric eigenstructure assignment for linear systems via state-derivative feedback. *International Journal of Systems Science*, 1-29. doi: 10.1080/00207721.2025.2504051
– The main contributions of the paper: 1) A new derivative feedback design framework named complementary system framework is proposed. 2) The fundamental theorem of state-derivative feedback has been established. 3) A new complete parametric approach for solving the eigenstructure assignment problem is proposed.

Robust Pole Assignment - Manuscript in preparation *2023 – 2025*

– It focuses on robust pole assignment for descriptor linear systems via state-derivative feedback.
– A new robust pole placement algorithm is proposed based on a fully parameterized expression for the controller. The condition number for infinite closed-loop eigenvalues is generalized for descriptor linear systems.
– The main contributions of the paper: 1) A new robustness measure suitable descriptor linears is proposed. 2) We refine a new real-valued parameterized robust pole assignment methodology. 3)Additionally, the explicit gradient expressions for the robustness measure are given for optimization.

COMPETITIONS & ACHIEVEMENTS

– **Mathematics competition of Chinese Collage Students, National First Prize of preliminary competition**, Chinese Mathematical Society, 2020
– **Mathematics competition of Chinese Collage Students, National Second Prize of preliminary competition**, Chinese Mathematical Society, 2019
– **The Challenge Cup, Provincial Special Prize**, Liaoning Provincial Department of Education, 2019
– **"Teddy Cup" national data mining challenge, National First Prize**, China University Big Data Education Innovation Alliance, 2019
– **MathorCup Mathematical Application Challenge, National Third Prize**, Chinese Society of Optimization, Overall Planning and Economic Mathematics, 2019

EXPERIENCE

Teaching Assistant *2021 - 2022*

- Teaching Assistant for the Course of linear algebra
- Teaching Assistant for the Course of calculus

AWARDS & Honours

- **Outstanding Master's Thesis**, Harbin Institute of Technology, 2023
- **Outstanding Student**, Harbin Institute of Technology, 2022
- **The First Price Scholarship**, Harbin Institute of Technology, 2022
- **The Third Price Scholarship**, Harbin Institute of Technology, 2021
- **Outstanding Graduate Students**, Shenyang University of Technology, 2021
- **Outstanding Studenrt**, Shenyang University of Technology, 2018, 2020
- **National Scholarship**, Ministry of Education of the People's Republic of China, 2020
- **The First Price Scholarship**, Shenyang University of Technology, 2019, 2020
- **The Third Price Scholarship**, Shenyang University of Technology, 2018

SKILLS

Programming	Matlab, LaTeX, Python
Languages	Chinese, English
Software	Office, Endnote

SELECTED COURSES

- **Postgraduate:**

  Functional Analysis(92,91), Fundamentals of Numerical Mathematics(80), Real Analysis and Complex Analysis(98), Modern Optimization Theory and Algorithms(94) , Parallel Computing(90), Theory of Ordinary Differential Equations(95)

- **Undergraduate:**

  Mathematical Analysis(100, 93, 96), Linear Algebra(91, 83), Ordinary Differential Equation(100), Modern Algebra(100), Topology of Set of Points(98), Complex Functions(100), Real Functions(96), Numerical Algebra(97), Numerical Approximation(94), Partial Differential Equations(95), Discrete Mathematics(99), Probability Theory and Mathematical Statistics(100, 89), Numerical Methods for Differential Equations(97), Computational Geometry(92)
  Introduction to C Programming(92), Algorithms and Data Structures(92), Introduction to Java Programming(91), Principles and Applications of Databases(91), Nature-Inspired Computing(91)