서상협 (Seo, Sang-hyup)

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학력

이학박사, 부산대학교 **2012.03 – 2019.02**

◦ 졸업논문 : Accelerations of Newton's Methods Solving Nonlinear Matrix Equations

이학석사, 부산대학교 **2010.03 – 2012.02**

◦ 졸업논문 : The Numerical Method for Solving a Quadratic Matrix Equation with Special Coefficient Matrices

경력사항

국가수리과학연구소 **2019.10 – 2022.09**

◦ 박사후연구원

부산대학교 **2019.03 – 2019.09**

◦ 박사후연구원

(주)스마트소셜 **2017.03 – 2017.10**

◦ 사원 : 데이터베이스 분석, 상품 및 과제 기획

연구실적

논문

2013 Seo, Sang-Hyup, Seo, Jong-Hyun, and Kim, Hyun-Min, "Newton's Method for Solving a Quadratic Matrix Equation with Special Coefficient Matrices", *Honam Math. J.*, 35(3), 417–433, Sep. 2013.

2018 Meng, J., Seo, S. & Kim, H. "Condition Numbers and Backward Error of a Matrix Polynomial Equation Arising in Stochastic Models", *J. Sci. Comput.* 76, 759–776 (2018).

2018 Seo, Sang-Hyup, Seo, Jong-Hyeon, and Kim, Hyun-Min, "A Modified Newton Method for a Matrix Polynomial Equation Arising in Stochastic Problem", *Electron. J. Linear Algebra*, 34, 500–513, 2018.

2019 Kim, Taehyeong, Sang-Hyup Seo, and Hyun-Min Kim. "On Newton's Method for Solving a System of Nonlinear Matrix Equations." *East Asian Math. J.* 35(3), 341–349, 2019.

2020 Seo, Sang-hyup, and Jong-Hyeon Seo. "Convergence of relaxed Newton method for order-convex matrix equations", *Comput. Appl. Math.* 39(1), 1–17, 2020.

과제참여

안과질환 진단서비스 플랫폼 개발사업
◦ 기간 : 2019.05 – 2020.12
◦ 지원기관 : 부산광역시

아프리카 돼지열병 발생시 효과적인 차단 방역지대 설정 연구
◦ 기간 : 2020.04 – 2021.12
◦ 지원기관 : 농림축산식품부

데이터 기반 감염병 유행 예측 수리모델 개발과 완화전략 분석
◦ 기간 : 2021.09 – 2022.09
◦ 지원기관 : 한국연구재단

발표실적

- "Ophthalmic Disease Diagnosis Based on Convolutional Neural Network", *KSIAM 2020 Annual Meeting*, KAL Hotel in Jeju, Korea, Nov. 12–15, 2020.
- "Convergence of a Modified Newton Method for a Matrix Polynomial Equation Arising in Stochastic Problems", *Numerical Analysis and Scientific Computation with Applications 2018*, Elite City Resort in Kalamata, Greece, Jul. 2–6, 2018.
- "Convergence of Newton Iterations for Order-Convex Matrix Functions", *SIAM Conference on Applied Linear Algebra*, Hyatt Regency Atlanta, USA, Oct. 26-30, 2015.

- "The Existence and Convergence of Two Iterations for Differentiable Order-Convex Matrix Functions", *The 2014 International Conference on Tensors and Matrices and their Applications*, Suzhou, China, Dec. 16–19, 2014.
- "The Newton and the Fixed Point Iterations for Differentiable Order-Convex Matrix Functions", *International Linear Algebra Society Conference 2014*, Sungkyunkwan University, Korea, Aug. 6–9, 2014.
- "The Monotone Convergence of Newton's Method for Differentiable Convex Matrix Functions", *Hakata Workshop 2014*, Kyushu, Japan, Feb. 8, 2014.
- "The Elementwise Convex Condition for Differentiable Matrix Functions", *AKOOS-PNU*, Pusan National University, Korea, Feb. 5–7, 2014.
- "Newton's method for solving a quadratic matrix equation with special coefficient matrices", *KOOK-TAPU Joint Seminar 2013*, Osaka City University, Japan, Jul. 22–26, 2013.

포스터 발표

- "Properties of Nonnegative, Irreducible, and M-Matrices", *The Asian Mathematical Conference 2013*, BEXCO, Korea, Jun. 30–Jul. 4, 2013.

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Education

Ph. D., Pusan National University **2012.03 – 2019.02**

∘ Thesis : Accelerations of Newton's Methods Solving Nonlinear Matrix Equations

MS., Pusan National University **2010.03 – 2012.02**

∘ Thesis : The Numerical Method for Solving a Quadratic Matrix Equation with Special Coefficient Matrices

Career

National Institute for Mathematical Sciences **2019.10 – 2022.09**

∘ Post Doctor

Pusan National University **2019.03 – 2019.09**

∘ Post Doctor

Smart Social, Inc. **2017.03 – 2017.10**

∘ Staff : Analysis for Database, Product and Project Planning

Publications

Papers

2013 Seo, Sang-Hyup, Seo, Jong-Hyun, and Kim, Hyun-Min, "Newton's Method for Solving a Quadratic Matrix Equation with Special Coefficient Matrices", *Honam Math. J.*, 35(3), 417–433, Sep. 2013.

2018 Meng, J., Seo, S. & Kim, H. "Condition Numbers and Backward Error of a Matrix Polynomial Equation Arising in Stochastic Models", *J. Sci. Comput.* 76, 759–776 (2018).

2018 Seo, Sang-Hyup, Seo, Jong-Hyeon, and Kim, Hyun-Min, "A Modified Newton Method for a Matrix Polynomial Equation Arising in Stochastic Problem", *Electron. J. Linear Algebra*, 34, 500–513, 2018.

2019 Kim, Taehyeong, Sang-Hyup Seo, and Hyun-Min Kim. "On Newton's Method for Solving a System of Nonlinear Matrix Equations." *East Asian Math. J.* 35(3), 341–349, 2019.

2020 Seo, Sang-hyup, and Jong-Hyeon Seo. "Convergence of relaxed Newton method for order-convex matrix equations", *Comput. Appl. Math.* 39(1), 1–17, 2020.

Projects

Development of a Service Platform for Ophthalmology Disease Diagnosis
- Period : 2019.05 – 2020.12
- Support : Busan Metropolitan City

Study on establishing effective blocking zones for the spread of Africa swine fever
- Period : 2020.04 – 2021.12
- Support : Ministry of Agriculture, Food and Rural Affairs

Development of mathematical model for data-based infectious disease outbreak prediction and mitigation strategy analysis
- Period : 2021.09 – 2022.09
- Support : National Research Foundation of Korea

Presentations

- "Ophthalmic Disease Diagnosis Based on Convolutional Neural Network", *KSIAM 2020 Annual Meeting*, KAL Hotel in Jeju, Korea, Nov. 12–15, 2020.
- "Convergence of a Modified Newton Method for a Matrix Polynomial Equation Arising in Stochastic Problems", *Numerical Analysis and Scientific Computation with Applications 2018*, Elite City Resort in Kalamata, Greece, Jul. 2–6, 2018.
- "Convergence of Newton Iterations for Order-Convex Matrix Functions", *SIAM Conference on Applied Linear Algebra*, Hyatt Regency Atlanta, USA, Oct. 26-30, 2015.

- "The Existence and Convergence of Two Iterations for Differentiable Order-Convex Matrix Functions", *The 2014 International Conference on Tensors and Matrices and their Applications*, Suzhou, China, Dec. 16–19, 2014.
- "The Newton and the Fixed Point Iterations for Differentiable Order-Convex Matrix Functions", *International Linear Algebra Society Conference 2014*, Sungkyunkwan University, Korea, Aug. 6–9, 2014.
- "The Monotone Convergence of Newton's Method for Differentiable Convex Matrix Functions", *Hakata Workshop 2014*, Kyushu, Japan, Feb. 8, 2014.
- "The Elementwise Convex Condition for Differentiable Matrix Functions", *AKOOS-PNU*, Pusan National University, Korea, Feb. 5–7, 2014.
- "Newton's method for solving a quadratic matrix equation with special coefficient matrices", *KOOK-TAPU Joint Seminar 2013*, Osaka City University, Japan, Jul. 22–26, 2013.

Poster Presentations

- "Properties of Nonnegative, Irreducible, and M-Matrices", *The Asian Mathematical Conference 2013*, BEXCO, Korea, Jun. 30–Jul. 4, 2013.