KSIAM 2018 Annual Meeting

Jeju Ramada Plaza Hotel

November 02-04, 2018

SCHEDULE

▶ **Opening Ceremony**: November 2nd, 13:00-13:10 [Tamra]
- Jung, Eunok (President of KSIAM)

▶ **Invited Talks**

○ Yang, Hyunmi (Seoul National University)
- The 4th Industrial Revolution is Here and Now
- November 2nd, 13:10-14:00 [Tamra]

○ Kwak, Do Young (KAIST)
- Recent development of immersed FEM for elliptic and elasticity interface problems
- November 2nd, 17:10-18:00 [Tamra]

○ Kim, Seung Jo (Seoul National Univ.)
- The future unlimited green energy source, space based solar power system
- November 3rd, 9:00-9:50 [Grand Ballroom]

▶ **Annual Meeting:** November 2nd, 16:10-16:30 [Tamra]

▶ **Outstanding Young Investigator Award** November 2nd, 16:30-17:10 [Tamra]

▶ **Poster Session:** November 2nd, 15:30-16:10 [Mara]

▶ **Special Sessions**

○ Analysis for Biology Data: from molecules to populations
○ Applied Algebra and Geometry
○ Applied Algebra and Optimization Ⅰ, Ⅱ
○ Data Approximation and Its Applications
○ Deep Learning and Its Applications
○ Financial Derivative Modeling using Diverse Mathematical Techniques
○ Industry and Math: Revolution, Innovation, Harmony
○ Mathematical Biology
○ Structural Graph Theory and Its Applications
○ Wellposedness of Partial Differential Equations and Applications Ⅰ, Ⅱ

▶ **General Sessions**

○ Imaging Science
○ Mathematical Modeling
○ Applied Analysis
○ Numerical Analysis and Scientific Computation Ⅰ, Ⅱ, Ⅲ, Ⅳ

▶ **Welcome Reception** : November 2nd, 18:00-20:00 [Hall]

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Nov. 02 (FRI) Session

13:00-13:10	**[Tamra]**	**Opening Ceremony** **Jung, Eunok (President of KSIAM)**				
13:10-14:00	**[Tamra]**	**Invited Talk I**			**Chair: Kang, Myungjoo**	
	Yang, Hyunmi (Seoul National Univeristy) The 4th Industrial Revolution is Here and Now					
14:00-14:10	**Break**					
14:10-15:30	**[Tamra]** **Special Session: Deep Learning and Its Applications**	**[Halla]** **Special Session: Applied Algebra and Geometry**	**[Ara]** **General Session: Mathematical Modeling**	**[Ora]** **Special Session: Data Approximation and Its Applications**	**[Udo]** **Special Session: Wellposedness of PDEs and Applications I**	**[Biyang]** **General Session: Numerical Analysis and Scientific Computation I**
	Chair: Jung, Miyoun	**Chair: Han, Kangjin**	**Chair: Lee, Wanho**	**Chair: Yoon, Jungho**	**Chair: Kang, Kyungkeun**	**Chair: Lee, Chang-Ock**
	Kwak, Jihoon (Seoul National Univ.) Introduction to deep learning	**Kim, Young-Jin** (Seoul National Univ.) Harmonic cycle and relations	**Park, Jongo** (UNIST) A mathematical model of criminals and in and out of prisons	**Lee, Sukho** (Dongseo Univ.) Effect of local search with real data on generalization in deep learning	**Ahn, Jaewook** (Chung-Ang Univ.) Remarks on Smoluchowski-Poisson system	**Seo, Boyoon** (Yonsei Univ.) An adaptive algorithm based on two-grid method for the Navier-Stokes equations
	Seo, Hyun (Seoul National Univ.) Deep learning method for news recommendations	**Woo, Youngho** (NIMS) A brief introduction to polynomial Waring rank	**De Los Reyes V, A.A.** (Konkuk Univ.) Model identification of a cardiovascular-respiratory system in response to constant workload	**Ha, Youngsoo** (Seoul National Univ.) A new type smoothness indicator for the third order WENO schemes	**Kim, Lami** (Yonsei Univ.) On the mean curvature flow of grain boundaries	**Hwang, Jinah** (Korea Univ.) Two-dimensional Riemann problem for hyperbolic conservation laws
	Song, Kyung Min (Seoul National Univ.) Face recognition and grading face's beauty score using deep learning	**Lee, Cheolgyu** (KIAS) Algebraic equations in state condition	**Kim, Soyoung** (Konkuk Univ.) An age-dependent mathematical model and effective vaccine strategy for 2009 A/H1N1 influenza in the Republic of Korea	**Jeong, Byeongseon** (Ewha Womans Univ.) Non-uniform subdivision schemes reproducing locally different curves	**Chang, Tongkeun** (Yonsei Univ.) Global in time solvability of the Navier-Stokes equations in the half-space	**Jo, Junhong** (Inha Univ.) Axial Green function method for unbounded elliptic equation
	Kim, Hyeonuk (Seoul National Univ.) Development of melody and drum pattern composition algorithm using deep learning	**Moon, Hyunsuk** (NIMS) Introduction to multivariate public key cryptography	**Nyouky, Philip** (Pusan National University) A first order price approximation of the Black-Scholes Hull-White European call option	**Park, Yunjin** (Ewha Womans Univ.) Image denoising method based on low rank minimization	**Chae, Myeongju** (Hankyong National Univ.) Global existence and asymptotic behavior of solutions to the hyperbolic Keller-Segel equation with a logistic source	**Park, Jongho** (KAIST) Fast nonoverlapping Block Jacobi method for the dual Rudin-Osher-Fatemi model
15:30-16:10	**[Mara]**	**Poster Session**				

1. Enriched discontinuous bubble IFEM and its applications to Hele-Shaw flows / **Choi, Yoonjeong** (KAIST)
2. Traffic distribution algorithm based on destinations of vehicles / **Lee, Seunghyun** (KAIST)
3. Applying influence function to various neural network models / **Ahn, Keun Hoi** (Seoul National Univ.)
4. Explicit numerical method for motion by mean curvature on curved sufaces / **Kim, Hyundong** (Korea Univ.)
5. Direct method for solving Caputo-Fabrizio differential equations / **Lee, Junseo** (UNIST)
6. Dictionary learning on the set of positive definite matrices with applications to image restorations / **Kim, Jeoungheon** (Sungkyunkwan Univ.)
7. Cardinality estimation of support of the global minimizer for interaction energy / **Seo, Geuntaek** (Yonsei Univ.)
8. Refinement of some inequalities concerning the maximum modulus of a polynomial / **Ibrahim, Sheikh Mohd** (Pusan National Univ.)
9. Impact on pressure difference of immersed boundary in channel flow / **Xu, Tiantian** (Yonsei Univ.)
10. Analysis of software based algorithms for optimal decisions / **Jamshaid Mannan** (Pusan National Univ.)
11. Extension of 2-absorbing submodules / **Wasim, Abbas** (Pusan National Univ.)
12. Educational and treatment campaign in smoking dynamics / **Said Muhammad** (Pusan National Univ.)
13. Control Malaria through media awareness: a mathematical modeling approach / **Ibrahhim, Mlik Muhammad** (Pusan National Univ.)
14. Numerical study of blood flow through catheterized artery / **Shama, Javeed** (Pusan National Univ.)
15. Role of N1/N2 neutrophils in regulation of tumor growth in lung cancer / **Lee, Donggu** (Konkuk Univ.)
16. Construction of stiffness detector and its application for PDEs / **Park, Jeonghoon** (Kyungpook National Univ.)
17. A study of frequency localization using atomic norm denoising / **Shin, Myoungin** (Sejong Univ.)
18. Portfolio optimization problems with linear programming models / **Song, Hyunsun** (Yonsei Univ.)
19. Synergetic effect of bortezomib on oncolytic virus: signaling pathways / **Lee, Jun Ho** (Konkuk Univ.)
20. Uncertainty quantification analysis of conductivty reconstruction in electrical impedance tomography / **Sun, Xiang** (Yonsei Univ.)
21. Comparison of the different dynamcs for the Allen-Cahn and the Cahn-Hilliard equations / **Lee, Chaeyoung** (Korea Univ.)
22. The three-dimensional FDTD method with parallel computing / **Kim, Hanul** (Yonsei Univ.)
23. Ultrasound image-based thyroid nodule classification using CNN-extracted features / **Ha, Heonkyu** (Yonsei Univ.)
24. Nrf1 and microRNA-378 form a double negative feedback model / **Lee, Sieun** (Kyungpook National Univ.)

16:10-16:30	[Tamra]	**Annual Meeting**	**Chair: Lee, Eun Jung**
16:30-16:40	[Tamra]	**Ceremony for 2018 Outstanding Young Investigator Award, Best Poster Award, KSIAM-MathWorks Problem Challenge**	**Chair: Jeon, Kiwan**
16:40-17:10	[Tamra]	**Talk for 2018 Outstanding Young Investigator Award**	**Chair: Lee, June-Yub**
	Yoon, Ji-Hun (Pusan National Univ.) A note on the pricing of diverse options using integral transform techniques		
17:10-18:00	[Tamra]	**Invited Talk II**	**Chair: Park, Eun-Jae**
	Kwak, Do Young (KAIST) Recent development of immersed FEM for elliptic and elasticity interface problems		
18:00-20:00	[8th Floor]	**Welcome Reception** **KSIAM-KUMGOK Award**	

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Nov. 03 (SAT) Session

9:00-9:50	[Grand Ballroom]	Invited Talk III	Chair: Shin, Sang Joon
	Kim, Seung Jo (Seoul National Univ.) The future unlimited green energy source, space based solar power system		
9:50-10:00	**Break**		

10:00-11:40	[Grand Ballroom] General Session: Imaging Science	[Mara] Special Session: Applied Algebra and Optimization I	[Udo] Special Session: Wellposedness of PDEs and Applications II	[Chuja] Special Session: Analysis for Biology Data: from Molecules to Populations	[Biyang] General Session: Numerical Analysis and Scientific Computation II
	Chair: Park, Won-Kwang	**Chair: Yun, Sangwoon**	**Chair: Kang, Kyungkeun**	**Chair: Kim, Jae Kyoung**	**Chair: Ahn, Hyung Taek**
	Kang, Myeongmin (Chungnam National Univ.) Low dimensional patch manifold for image demosaicking	**Kim, Hana** (Sungkyunkwan Univ.) Stretched Motzkin paths and their applications	**Hwang, Sukjung** (Yonsei Univ.) Holder continuity of porous medium type equations with drift terms	**Kim, Jae Kyoung** (KAIST) Mathematical modeling to analyze sleep quality of shift workers	**Shin, Jaemin** (Yonsei Univ.) P0 space/time limiting DG-DGLM method for hyperbolic systems of conservation laws
	Choi, Han-Soo (Seoul National Univ.) Control based surface smoothing algorithm using vertex-based geometric features	**Mojallal, Seyed Ahmad** (Sungkyunkwan Univ.) Subgraph characterizations of Toeplitz graphs	**Kim, Hwa Kil** On global minimizers of the interaction energy with repulsive-attractive potentials	**Rao, Shodhan** (Ghen Univ.) A model reduction method for biochemical reaction networks	**Kim, Dongho** (Yonsei Univ.) A unified framework for two-grid methods for nonlinear problems
	Ahn, Hyomin (Seoul National Univ.) Single image restoration in the dust environment	**Lim, Dongkyu** (Sungkyunkwan Univ.) Completely monotonic functions and inequalities for multinomial coefficients and multivariate beta functions	**Jin, Bum Ja** (Mokpo National Univ.) Inhomogeneous Navier-Stokes equations in the half-space with nonhomogeneous boundary value	**Choi, Boseung** (Korea Univ.) A statistical inference for enzyme kinetics	**Shin, SeongGeun** (KAIST) Splitting basis techniques in dynamic cloth simulation by isogeometric analysis
	Kim, Geonwoo (Seoul National Univ.) Fractional-order total variation for the Cauchy noise removal	**Koo, Namhun** (Sungkyunkwan Univ.) On the Cipolla-Lehmer type algorithms in finite fields	**Lee, Jihoon** (Chung-Ang Univ.) Well-posedness and stabilization of two-species aerotaxis competitive models	**Rempala, Grzegorz A.** (Ohio State Univ.) Stochastic enzyme kinetics and quasi steady state approximations	**Go, Gwangsoo** (Univ. Ulsan) Multigrid accelerated incompressible flow simulation on arbitrary irregular domain
	Park, Won-Kwang (Kookmin Univ.) Multi-frequency direct sampling method for imaging short linear perfectly conducting cracks	**Kang, Bumltle** (Sungkyunkwan Univ.) Study on consecutive edge-magic labeling through matrix	BLANK	**Rempala, Grzegorz A.** (Ohio State Univ.) SIR Models: From Micro to Macro and Back Again	**Lee, Kyunghoon** (Pusan National University) Real-time, high-fidelity thermal conduction models for engineering education

11:40-12:40	[한식당]	Lunch and Break		
12:40-14:00	[Mara] **Special Session: Applied Algebra and Optimization II**	[Udo] **Special Session: Structural Graph Theory and Its Application**	[Chuja] **Special Session: Financial Derivative Modeling using Diverse Mathematical Techniques**	[Biyang] **General Session: Numerical Analysis and Scientific Computation III**
	Chair: Yun, Sangwoon	**Chair: Kwon, O-joung**	**Chair: Yoon, Ji-Hun**	**Chair: Kim, Do Wan**
	Kim, Donghwan (KAIST) Optimized first-order method for decreasing the gradient of smooth convex functions	**Kwon, O-joung** (Incheon National Univ.) A unified polynomial-time algorithm for feedback vertex set on graphs of bounded min-width	**Jeon, Jaegi** (Yonsei Univ.) A scaled version of the double-mean-reverting model for VIX derivatives	**Ahn, Hyung Taek** (Univ. Ulsan) Hyperbolic method for incompressible Navier-Stokes equations (Hyper-INS) on 2D and 3D unstructured meshes
	Cao, Tan (SUNY Korea) Optimal control for controlled sweeping process with applications to the crowd motion model	**Sang-il Oum** (KAIST) Classes of graphs with no long cycle as a vertex-minor are polynomially X-bound	**Huh, Jeonggyu** (KIAS) Measuring systematic risk with neural network factor model	**Kim, Dohyun** (Yonsei Univ.) C0-interior penalty methods for stationary quasi-geostrophic equations
	Lee, Hosoo (Sungkyunkwan Univ.) Metric learning via rank preserving geometric means of positive definite semidefinite matrices	**O, Suil** (SUNY-Korea) Sharp conditions for the existence of an even [a,b]-factor in a graph	**Lee, Younhee** (Chungnam National Univ.) Pricing the real option with regime-switching jump-diffusion models	**Zhao, Lina** (Yonsei Univ.) Fully computable bounds for a staggered DG method
	Krishnan, Muralitharan (Sungkyunkwan Univ.) Short-term energy load forecasting using neural networks in smart grid	**An, Hyung-Chan** (Yonsei Univ.) Dynamic facility location via exponential clocks	**Choi, Sun-Yong** (Gachon Univ.) An analysis on the risk in variable annuities	**Jo, Gwanghyun** (KAIST) New type of multigrid algorithms for interface problems based on semi-uniform grids
14:00-14:10	Break			
14:10-15:30	[Mara] **Special Session: Industry and Math: Revolution, Innovation, Harmony**	[Udo] **Special Session: Mathematical Biology**	[Chuja] **General Session: Applied Analysis**	[Biyang] **General Session: Numerical Analysis and Scientific Computation IV**
	Chair: Kim, Sangil	**Chair: Lee, Chang Hyeong**	**Chair: Ahn, Jaewook**	**Chair: Kang, Myeongmin**
	피노텍 LIVEEN을 활용한 위치기반 Big Data의 연구 활성화 방안	**Kim, Peter** (Univ. Sydney) Optimizing anti-cancer vaccines to preferentially stimulate high-avidity T cells	**Kim, Junbeom** (KAIST) Electric field concentration between nearly touching boundaries	**Lee, Seunggyu** (NIMS) Energy stable compact scheme for Cahn-Hilliard equation with periodic boundary condition
	남호성 언어와 인공지능	**Zheng, Collin** (Univ. Sydney) Mathematical models for checkpoint blockade therapies	**Choi, Doo Sung** (KAIST) Construction of multilayered neural inclusion of general shape	**Yoo, Sung Sic** (Inha Univ.) An efficient numerical method for impinging jets on an arbitrary wall
	조수희 그놈 목소리	**Lee, Hyojung** (Hokkaido Univ.) Sexual transmission and the probability of the end of the Ebola virus disease epidemic	**Choi, Junho** (UNIST) On boundary layer for the Burgers equations in a bounded domain	**Piao, Xiangfan** (Kyungpook National Univ.) Higher order numerical schemes in backward semi-Lagrangian methods
	김동훈 인공지능 딥러닝을 이용한 엘니뇨 예측 시스템 개발	**Cho, Giphil** (Pusan National Univ.) Wavelet analysis among catch of yellow croaker (Larimichthys polyactis) and environment effects	**Jung, Younghoon** (KAIST) Series representation of layer potential operators for the transmission problem	**Lee, Sunju** (Chungnam National Univ.) Numerical methods for the fixed-strike European-Asian options with jumps

9:00-11:00	[Mara]	Panel Discussion
	Future Agenda of Industrial and Applied Mathematics in Korea	
Closing		