

KSIAM 2020 Annual Meeting

Seogwipo KAL Hotel, Jeju, Korea
November 12-15, 2020

SCHEDULE

- ▶ **Opening Ceremony** November 12th, 13:30-13:40 [Diamond]
 - Kim, Chongam (President of KSIAM)

- ▶ **Plenary Talks**
 - Ki, Moran (Department of Cancer Control and Population Health, National Cancer Center Graduate School of Cancer Science and Policy)
 - 코로나19 역학적 특징과 관리전략
 - November 13th, 09:30-10:20 [Diamond]
 - Cho, Hyung Hee (Department of Mechanical Engineering, Yonsei University)
 - Application of Computation Fluid Dynamics in Research of Gas Turbine and Unmanned Aerial Vehicle
 - November 14th, 9:10-10:00 [Diamond]

- ▶ **Plenary Talk – KSIAM-KUMGOK Award**
 - Park, Eun-Jae (School of Mathematics and Computing, Yonsei University)
 - Computational Paradigms: Old and New
 - November 13th, 13:40-14:30 [Diamond]

- ▶ **KSIAM Outstanding Young Investigator Award** November 12th, 13:50-14:20 [Diamond]

- ▶ **KSIAM Journal Excellent Article Award** November 12th, 16:30-17:00 [Diamond]

- ▶ **KSIAM Young Researcher Paper Award** November 14th, 10:10-10:40 [Diamond]

- ▶ **Annual Meeting** November 13th, 14:30-14:50 [Diamond]

- ▶ **Poster Session** November 13th, 15:20-16:00

- ▶ **Special Sessions**
 - Deep Learning for Medical Imaging
 - Deep Learning for Digital Dentistry
 - Domain Decomposition Methods and Related Methods I, II
 - Finance, Fishery, Manufacture Industrial Mathematics Center on Big Data
 - Image processing and Machine Learning
 - Math for Public Safety based on Modeling and Data analysis
 - Nonlinear differential equations: modeling of collective motion
 - Numerical methods for the Hyperbolic conservation laws
 - Regularity and singularity of some partial differential equations related to fluid flows
 - Stochastic Optimization in Mathematical Finance I, II
 - Some cases in Industrial Mathematics
 - The Challenges of Mathematical Modeling of the Spread of COVID-19

- ▶ **General Sessions**
 - Partial Differential Equations, Applied Probability
 - Biomathematics, Bioinformatics, Biological and Medical Modeling
 - Computer Graphics and Game, IT and Its Industrial Applications, Cryptology
 - Industrial Engineering and Applied Mathematics
 - Inverse Problems, Control and Optimization
 - Applied Analysis
 - Mechanics of Compressible and Incompressible Fluids, Solid Mechanics and Elasticity
 - Numerical Analysis and Scientific Computation

주 관 : 한국산업응용수학회, 부산대학교 빅데이터 기반 금융·수산·제조 혁신 산업수학센터, 성균관대학교
응용대수 및 최적화 연구센터, 서울대학교 산업수학센터
후 원 : 연세대학교 응용해석 및 계산센터, 서울대학교 수학연구소

13:00-	Registration			
13:30-13:40	[Diamond]	Opening Ceremony Chongam Kim (President of KSIAM)		Chair: Myungjoo Kang
13:40-13:50	[Diamond]	Ceremony for KSIAM Outstanding Young Investigator Award		Chair: Jung-II Choi
13:50-14:20	[Diamond]	Talk for KSIAM Outstanding Young Investigator Award		Chair: Jung-II Choi
		Numerical Study and Application of Partial Differential Equations on 3D Surfaces Yongho Choi (Daegu University)		
14:20-14:40	Coffee Break			
	[Diamond] Special Session : Math for Public Safety based on Modeling and Data analysis	[Emerald] Special Session : Numerical methods for the Hyperbolic conservation laws	[Sapphire] Special Session : Stochastic Optimization in Mathematical Finance I	[Rose] General Session
	Chair: Dong-Uk Hwang	Chair: Youngsoo Ha	Chair : Junkee Jeon	Chair: Byungjoon Lee
14:40-15:00	[Online] Reproduction of modulation process of human blood glucose level through the mathematical modeling Hyuk Kang (NIMS)	Hybrid WENO method with anti-diffusive flux Kunmin Sung (Seoul National University)	Intertemporal Preference with Loss Aversion: Consumption and Risk-Attitude Junkee Jeon (Kyung Hee University)	[Online] A Multigrid Method for 3D H(curl) Problems Duk-Soon Oh (Chungnam National University)
15:00-15:20	Analysis of important factors in diabetes using machine learning algorithms and KoGES (Korean Genome and Epidemiology Study) data Hark soo Song (NIMS)	Improving accuracy of the fifth-order WENO scheme by using the exponential approximation space Youngsoo Ha (Seoul National University)	Portfolid selection with drawdown constraint on consumption : a generalization model Kyunghyun Park (Seoul National University)	Optimal preconditioners on Solving the Poisson equation with Neumann boundary conditions Byungjoon Lee (The Catholic University of Korea)
15:20-15:40	Fully and robust unsupervised detection of epileptic seizure from long-term EEG recordings Jieun Kim (NIMS)	Fully implicit and accurate treatment of jump conditions for two-phase incompressible Navier-Stokes equation Hyuntae Cho (Seoul National University)	An Optimal Consumption and Investment Problem with a Subsistence Consumption Contraint and Quadratic-Featured General Utility Kum Hwan Rho (Hannam University)	A hybrid of Lagrangian and Eulerian methods for interface tracking problems Heejae Han (Seoul National University)
15:40-16:00	Sea level rise estimation near the Korean peninsula using CEEMDAN Young Jin Kim (NIMS)	High-performance Large Eddy Simulation using High-order Discontinuous Galerkin Method Hojun You (Seoul National University)	An Optimal Consumption, Investment and Retirement Choice Problem with Quadratic Utility and Subsistence Consumption Constraints Yong Hyun Shin (Sookmyung Women's University)	Gradient Explosion free algorithm for training Recurrent Neural Networks Chohong Min (Ehwa Woman University)
16:00-16:20	Coffee Break			
16:20-16:30	[Diamond]	Ceremony for KSIAM Journal Excellent Article Award		Chair: Myungjoo Kang
16:30-17:00	[Diamond]	Talk for KSIAM Journal Excellent Article Award		Chair: Myungjoo Kang
		[Online] A new mathematical epidemic model for computing unidentified infected people for covid-19 Junseok Kim (Korea University)		

09:00- Registration					
09:30-10:20 [Diamond]		Plenary Talk I			Chair: Eun-Jae Park
[Online] 코로나19 역학적 특징과 관리전략 Moran Ki (National Cancer Center Graduate school of Cancer Science and Policy)					
10:20-10:40 Coffee Break					
	[Diamond] Special Session : The Challenges of Mathematical Modeling of the Spread of COVID-19	[Emerald] Special Session : Some cases in Industrial Mathematics	[Sapphire] Special Session : Stochastic Optimization in Mathematical Finance II	[Rose] General Session	
	Chair: Chang Hyeong Lee, Sunmi Lee	Chair: Youngho Woo	Chair: Junkee Jeon	Chair: Darae Jeong	
10:40-11:00	[Online] Two important findings in the coronavirus disease 2019 (COVID-19) spread in Korea Jong-Hoon Kim (International Vaccine Institute)	[Online] Extension of pQSAR: Ensemble Model Generated by Random Forest and Partial Least Squares Regressions Byung Chun Kim (NIMS)	[Online] Optimal Market-Making Strategies under Synchronised Order Arrivals with Deep Neural Networks Hyun Jin Jang (UNIST)	PAC-Bayesian margin bounds with random input noises Hayeong Koh (Yonsei University)	
11:00-11:20	The experiences and limitations of infectious disease physician on COVID-19 management Hee-Sung Kim (Chungbuk National University)	[Online] An uncoupled approach to online state of charge and state of health estimation for a Lithium-ion battery Hyunju Lee (NIMS)	[Online] Convergence rates of large-time sensitivities Hyungbin Park (Seoul National University)	Numerical method for crack localization in a concrete model using acoustic emission Hyeuknam Kwon (Yonsei University)	
11:20-11:40	[Online] 코로나19 확산 예측 및 방역 정책 효과 분석 : data assimilation, microsimulation model 이용 Woo-Sik Son (NIMS)	Anomaly detection in sensing data based on PRCF Minjung Gim (NIMS)	[Online] Real Options with Endogenous Payoff Minsuk Kwak (Hankuk University of Foreign Studies)	Helicity-conservative finite element discretization for MHD systems Young Ju Lee (Texas State University)	
11:40-12:00	A forecast model on COVID-19 spreading in south Korea Il Hyo Jung (Pusan National University)	[Online] Development of the Forecasting Algorithm of Urban Gas usage Minwon Na (NIMS)	Note on option pricing model with credit risk Geonwoo Kim (Seoul National University of Science and Technology)	Application of Orthogonality Sampling Method for Identifying Small Anomaly From Scattering Parameters Won-Kwang Park (Kookmin University)	
12:00-13:30 Lunch					
13:30-13:40	[Diamond]	KSIAM-KUMGOK Award Ceremony Presenter: Ha, Yeon Soon (Chairman, KUMGOK Academico-Cultural Foundation)			Chair: Myungjoo Kang
13:40-14:30	[Diamond]	Plenary Talk II – KSIAM-KUMGOK Award			Chair: Chang-Ock Lee
Computational Paradigms: Old and New Eun-Jae Park (Yonsei University)					
14:30-15:00	[Diamond]	Annual Meeting			Chair: Bongsoo Jang
15:00-15:20 Coffee Break					
	[Diamond] Poster Session	[Emerald] Poster Session	[Sapphire] Poster Session	[Rose] Poster Session	
	Chair: Eun-Hee Park	Chair: Ji-Hun Yoon	Chair: Sehun Chun	Chair: Yongho Choi	
15:20-15:25	Mathematical modeling and computational simulation of the Coffee-ring phenomena using a phase-field method Hyudong Kim (Korea University)	The analytic method for pricing of vulnerable external barrier options Donghyun Kim (Pusan National University)	Derivation of stationary distributions of biochemical reaction networks via structure transformation Hyukpyo Hong (KAIST)	The data-based inference method reveals the network structure of the SCN Seokjoo Chae (KAIST)	
15:25-15:30	Simulation of water surface JungHyuk Kang (Korea University)	Analysis of stochastic and deterministic quasi-steady-state approximation Yun Min Song (KAIST)	Mathematical modeling of COVID-19 epidemic in Korea and Italy considering behavior changes: comparative analysis of the early stage of epidemic Jongmin Lee (Konkuk University)	Impedance spectroscopy-based parameter identification of lithium-ion batteries Sungyeon Kim (Yonsei University)	
15:30-15:35	Dangerous situation detection using deep learning models for construction sites Bongyeong Koo (Seoul National University)	Pricing perpetual American Strange Options under Stochastic Volatility Junhui U (Pusan National University)	Optimal intermittent social distancing control strategy considering behavior changes: flattening COVID-19 epidemic curve in Korea Youngsuk Ko (Konkuk University)	A study on the reconstruction of noisy X-ray images GyuSang Han (Korea University)	
15:35-15:40	Comparisons of models to analyze each type of repression in a negative feedback system EuiMin Jeong (KAIST)	The Pricing of European Options with Stochastic Volatility Model Mijin Ha (Pusan National University)	Particle filtering and smoothing for double-well potential model Meiyan Jiang (Pusan National University)	Analysis and Improvement of Softmax-Loss in Deep Metric Learning Junghyun Lee (Seoul National University)	

	[Diamond] Poster Session	[Emerald] Poster Session	[Sapphire] Poster Session	[Rose] Poster Session
	Chair: Eun-Hee Park	Chair: Ji-Hun Yoon	Chair: Sehun Chun	Chair: Yongho Choi
15:40-15:45	Back propagation in artificial neural networking with pantone color Eun Hae Cho (Pusan National University)	Optimal cost estimation for PV plant operation with tariff incentive Mannan Jamshaid (Pusan National University)	The least-squares finite element method with dual system for Helmholtz equation Nu Ree Song (Yonsei University)	Instance segmentation model for tracking building in satellite imagery upon high resolution time-series data Hoin Jung (Seoul National University)
15:45-15:50	Quaternion-valued deep neural network for semantic segmentation Jungho Park (Seoul National University)	A queueing theory approach to infer reaction kinetics in a non-Markovian biochemical system Dae Wook Kim (KAIST)	Landscape-dependent computational domains for reaction-diffusion equations Soobin Kwak (Korea University)	Double-gyre simulation using ROMS DongHeon Seong, GyoungMin Lim (Pusan National University)
15:50-15:55	Development of indicators for osteoporosis using 2D images Sangmin Park (Pusan National University)	Deep Image Scattering Network with Max-pooling TaeKyung Ki (Yonsei University)	Demosaicking noisy bayer images with inter-channel non-local weighted moving least squares method yeahwon Kim (Korea University)	Phase transitions in the zero Mach number limit of compressible multiphase flow equations Hyeonseong Jin (Jeju National University)
15:55-16:00	Lag synchronization of coupled time-delayed FitzHugh-Nagumo neural networks via feedback control Malik Muhammad Ibrahim (Pusan National University)	A Priori and A Posteriori Error Estimation for an Expanded Staggered DG Method Sanghee Lee (Yonsei University)	Gated Recurrent Unit Based Model for Audio Classification Juyeb Yeo (Chungnam National University)	
16:00-16:20	Coffee Break			
	[Diamond] Special Session : Deep Learning and Image Process	[Emerald] Special Session : Finance, Fishery, Manufacture Industrial Mathematics Center on Big Data	[Sapphire] General Session	[Rose] General Session
	Chair: Han-Soo Choi	Chair: Hyun-Min Kim	Chair: Hyeuknam Kwon	Chair: Sunmi Lee
16:20-16:40	Squeezed Fire Segmentation Model using Deep Learning for Outdoor Images on Mobile Device Han-Soo Choi (Seoul National University)	[Online] Climate change and variability of fisheries resources Changsin Kim (National Institute of Fisheries Science)	Excitation time map for fast multidimensional simulation with ODEs beyond PDEs Sehun Chun (Yonsei University)	Role of OCT1 in regulation of miR-451/AMPK/OCT1/mTOR core signaling network and cell invasion in glioblastoma Donggu Lee (Konkuk University)
16:40-17:00	Dynamic background subtraction with masked RPCA Hyomin Ahn (Seoul National University)	[Online] Cost sensitive machine learning model for credit card delinquency prediction Seong-Uk Nam (Pusan National University)	[Online] Inexact version of proximal iteratively reweighted algorithms Myeongmin Kang (Chungnam National University)	Assessing the Impact of Two-Dose Varicella Vaccination on Varicella and Herpes Zoster Incidences in the Republic of Korea Jiyeon Suh (Yonsei University)
17:00-17:20	Discrete Conditioned Continuous Variational Autoencoder Geonho Hwang (Seoul National University)	[Online] Artificial Intelligence Commercial Application in China Yuanmeng Hu (Pusan National University)	Semi-Uniform Multigrid (SUMG) Algorithms for Interface Problems Gwanghyun Jo (Kunsan National University)	The impact of Tuberculosis interventions in Korea Hyunwoo Cho (Yonsei University)
17:20-17:40	Rainy Image Restoration with Hierarchical Frequency Structure Yea Chan Park (Seoul National University)	Deep Learning Classification of Early Normal-Tension Glaucoma and Glaucoma Suspects Sat byul Seo (Kyungnam University)	The Optimal Conversion between Jeonse to Monthly-Rent with Borrowing Constraints Seryoong Ahn (Pukyong National University)	Agent Based Mathematical Modeling and Control Policy for COVID-19 in Korea Seyeon Lee (UNIST)
		[Online] Ophthalmic Disease Diagnosis Based on Convolutional Neural Network Sang-hyup Seo (NIMS)		

09:00-	Registration			
09:10-10:00	[Diamond]	Plenary Talk III		Chair: Sang Joon Shin
		[Online] Application of Computational Fluid Dynamics in Research of Gas Turbine and Unmanned Aerial Vehicle Hyung Hee Cho (Yonsei University)		
10:00-10:10	[Diamond]	Ceremony for KSIAM Young Researcher Paper Award		Chair: Bongsoo Jang
10:10-10:40	[Diamond]	Talk for KSIAM Young Researcher Paper Award		Chair: Bongsoo Jang
		[Online] Global Sensitivity Analysis For Multivariate Outputs Using Polynomial Chaos-Based Surrogate Model Sun Xiang (Yonsei University)		
10:40-11:00	Coffee Break			
	[Diamond] Special Session : Deep Learning for Digital Dentistry	[Emerald] Special Session : Domain Decomposition Methods and Related Methods I	[Sapphire] Special Session : Regularity and singularity of some partial differential equations related to fluid flows	[Rose] General Session
	Chair: Kiwan Jeon	Chair: Chang-Ock Lee	Chair: KyungKeun Kang	Chair: Eunha Shim
11:00-11:20	Automatic three-dimensional cephalometric landmark detection system using volume projection rendering image-based reinforcement learning Sung Ho Kang (NIMS)	[Online] Adaptive multi-level algorithm for nonlinear problems Dongho Kim (Yonsei University)	Regularity of nonlinear heat equations Sukjung Hwang (Yonsei University)	Mathematical modeling of COVID-19 transmission potential and intervention strategies Eunha Shim (Soongsil University)
11:20-11:40	Automated metal artifact reduction in dental CBCT using intraoral scan data Hye sun Yun (Yonsei University)	Accelerated Additive Schwarz Methods for Convex Optimization Jongho Park (KAIST)	Dynamical stability of uniformly rotating binary stars and galaxies Jinmyoung Seok (Kyonggi University)	Optimal treatment of the immune-evading oncolytic virus therapy for Cancer Taeyong Lee (Yonsei University)
11:40-12:00	A fully automated method for 3D individual tooth identification and segmentation in dental CBCT Taejun Jang (Yonsei University)	Parareal neural networks emulating a parallel-in-time algorithm Youngkyu Lee (KAIST)	New regularity criterion for suitable weak solutions of the surface growth model Minsuk Yang (Yonsei University)	Estimation of the Reproduction Number of Influenza A(H1N1)pdm2009 in South Korea Using Heterogeneous Models Yunjeong Lee (Yonsei University)
12:00-12:20	AI based digital platform integrating 3D multi modal Hyeon Cheol Jo (Yonsei University)	An adaptive BDDC algorithm for three dimensional problems with an enhanced edge eigenvalue problem Hyea Hyun Kim (Kyung Hee University)	Ill-posedness of the Hall-MHD system without magnetic resistivity In-Jee Jeong (KIAS)	Covid-19 transmission in Bangladesh Masud M A (Pusan National University)
12:20-13:40	Lunch			
	[Diamond] Special Session : Deep Learning for Medical Imaging	[Emerald] Special Session : Domain Decomposition Methods and Related Methods II	[Sapphire] Special Session : Nonlinear differential equations : modeling of collective motion	[Rose] General Session
	Chair: Hyoung Suk Park	Chair: Hyea Hyun Kim	Chair: Dongnam Ko	Chair: Soyoung Jeong
13:40-14:00	A Penalized Weighted Least Squares Method with a Deep Learning Prior Hyoung Suk Park (NIMS)	DD solvers for the Stokes problem with a varying viscosity coefficient Eun-Hee Park (Kangwon National University)	Entropy production estimate of the ES-BGK model below the critical Prandtl parameter Seok-bae Yun (Sungkyunkwan University)	An application of V2X data in autonomous driving system Soyoung Jeong (Advanced Institute of Convergence Technology)
14:00-14:20	Metal Artifact Reduction in Low-Dose Dental CBCT Chang Min Hyun (Yonsei University)	Efficient mesh generation utilizing adaptive initial grids and domain domain decomposition preconditioners Hee Jun Yang (Kyung Hee University)	A Cucker-Smale inspired deterministic Mean Field Game with velocity interactions Woojoo Shim (Seoul National University)	A Statistical Study of Temporal Fractal Properties of Sunspot Magnetic Parameters Eo-Jin Lee (Kyung Hee University)
14:20-14:40	[Online] Automated 3D cephalometric landmark identification and morphometric analysis using CT Seong Hyeon Baek (Yonsei University)	A hybrid difference method and postprocessing Dong-wook Shin (Myongji University)	On the Cauchy problem for the pressureless Euler-Navier-Stokes system in the whole space Jinwook Jung (Seoul National University)	Fundamental solution of second-order parabolic equations in non-divergence form Sungjin Lee (Yonsei University)
14:40-15:00	Alleviating annotation costs by combining active and semi-supervised learning Seo Taek Kong (VUNO Inc.)	[Online] Convergence analysis of a double sweep domain decomposition method for solving the Helmholtz equation Seungil Kim (Kyung Hee University)	A dynamical system approach for shape matching of polytopes along rigid-body motions Hansol Park (Seoul National University)	
15:00-15:20	[Diamond]	Ceremony for Best Poster Award		Chair: Myungjoo Kang

9:00-11:00	[Diamond]	Panel Discussion II	Chair: Bongsoo Jang
Future Agenda of Industrial and Applied Mathematics in Korea Kim, Chongam / Kang, Myungjoo / Shin, Sang Joon / Park, Eun-Jae			
Closing			