

## Program at a Glance

Time		Track 1: Room A (3F Cattleya)	Track 2: Room B (3F Kocho)	Track 3: Room C (3F Deigo)
10/31 (Wed)	17:00 – 19:00	Registration		
	18:00 –	Welcome Party (3F Cattleya)		
11/1 (Thu)	8:00 – 9:00	Registration		
	9:00 – 10:15	Welcome Address (1F Precious Hall) Keynote Talks: Prof. Takayuki Yamada (Kyoto University, Japan)		
	10:15 – 10:40	Coffee Break		
	10:40 – 12:00	GCA1: 3 talks	VMI1: 4 talks	EAC1: 2 talks
	12:00 – 13:20	Lunch (2F Restaurant Colonne)		
	13:20 – 14:20	Keynote Talk (1F Precious Hall): Prof. Soo Hong Lee (Yonsei University, Korea)		
	14:20 – 14:30	Break		
	14:30 – 15:30	DAS1: 3 talks	CDO1: 3 talks	PLM1: 3 talks
	15:30 – 15:55	Coffee Break		
	15:55 – 17:15	GCA2: 4 talks	VIM2: 4 talks	EAC2: 3 talks
	17:15 – 17:25	Break		
	17:25 – 18:45	DAS2: 4 talks	CDO2: 4 talks	PLM2: 2 talks
	19:00 –	Reception (1F Precious Hall)		
11/2 (Fri)	8:45 – 9:15	Registration		
	9:15 – 10:15	Keynote Talk (1F Precious Hall): Prof. Yunfeng Zhang, Shandong (Univ. of Finance and Economics of China)		
	10:15 – 10:40	Coffee Break		
	10:40 – 12:00	DAS3: 4 talks	VMI3: 4 talks	EAC3: 3 talks
	12:00 – 13:20	Lunch (2F Colonne)		
	13:20 – 14:40	DAS4: 3 talks	CDO3: 4 talks	PLM3: 4 talks
	14:40 – 15:05	Coffee Break		
	15:05 – 16:25	DAS5: 3 talks	VMI4: 4 talks	GCA3: 4 talks
	16:25 – 16:35	Break		
	16:35 – 17:55	DAS6: 3 talks	CDO4: 4 talks	GCA4: 4 talks
	18:30 –	Conference Banquet (1F Precious Hall)		
11/3 (Sat)	Excursion			

**GCA:** Geometric Computing, Approximating and Processing Workshop

**VMI:** Visual Media and Interaction Workshop

**PLM:** PLM & Smart Manufacturing Workshop

**CDO:** Computational Design and Optimization Workshop

**EAC:** Emerging Applications of CAD Workshop

**DAS:** Design & Architecture & Shipbuilding Workshop

## Keynote Talks

11/1 (Thu) 9:15 – 10:15

Chair: Takashi Maekawa

### **A PDE Model for Geometrical Feature Extraction in Images and Its Applications in Digital Engineering**



Takayuki Yamada (Kyoto University, Japan)

#### **Biography:**

Takayuki Yamada is an assistant professor of the Department of Mechanical Engineering and Science in Kyoto University, Japan. He studied aeronautics and astronautics and received his B.S., M.S. and Dr. Eng. degrees from Kyoto University, Japan, in 2007, 2008 and 2010, respectively. After receiving his Dr. Eng., he joined the Department of Mechanical Science and Engineering, Nagoya University, Japan, as an assistant professor. In 2012, he was recruited to Kyoto University as an assistant professor. From 2014 to 2016, he was a visiting researcher in the Center of Applied Mathematics, Ecole Polytechnique, France. His major research focuses on optimum design methods and the applications based on the topology optimization. He was honored with the Springer Prize in 2009 from the International Society for Structural and Multidisciplinary Optimization, the Young Scientist Prize in 2016 from the Minister of Education, Culture, Sports, Science and Technology of Japan and the JSME Medal for Outstanding Paper in 2010, 2016, 2017 and 2018 from the JSME. So far in his career he has received twenty-three awards related to his research.

<http://www.osdel.me.kyoto-u.ac.jp/members/yamada.html>

11/1 (Thu) 13:20 – 14:20

Chair: Soonhung Han

## **Access to Future Technology**



Soo Hong Lee (Yonsei University, Korea)

### **Biography:**

Soo-Hong Lee is currently a full-time professor at the Department of Mechanical Engineering, Yonsei University in Seoul, Korea. He received his bachelor's degree in mechanical engineering from Seoul National University in 1981 and his master's degree in mechanical engineering design from Seoul National University in 1983. He completed his Ph.D. from Stanford University, California, USA, in 1991. His current research interests include Intelligent CAD, Knowledge-based Engineering Design, Concurrent Engineering, Product Design Management, Product Lifecycle Management, Artificial Intelligence in Design, and Design Automation.

[URL:http://cadcam.yonsei.ac.kr/](http://cadcam.yonsei.ac.kr/)

[http://me.yonsei.ac.kr/eng/intro/professor\\_view.asp?code=1&idx=67](http://me.yonsei.ac.kr/eng/intro/professor_view.asp?code=1&idx=67)

11/2 (Fri) 9:15 – 10:15

Chair: Hongwei Lin

## **Rational Fractal Function Theory and Its Applications**



Yunfeng Zhang (Shandong University of Finance and Economics of China)

### **Biography:**

Yunfeng Zhang is a professor at the School of Computer Science and Technology, Shandong University of Finance and Economics of China. He received his B.Sc. (2000) and his Ph.D. (2007) from Shandong University, China. He paid an academic visit to University of California, Irvine in 2012. His current research interests include computer-aided geometric design, digital image processing, computational geometry, and function approximation.

## Parallel Sessions

### DAY 1: Thursday, 1 November, 2018

10:40 – 12:00

#### Session GCA 1: Room A (Geometric Computing, Approximating and Processing 1)

Chair: Kenjiro Miura, Fazhi He

**No. 1** Fitting CAD Data to Scanned Data with Large Deformation

Shintaro Suzuki, Yutaka Ohtake and Hiromasa Suzuki

**No. 58** Lossy Compression Algorithm Based on Wavelet Transform for Dixel Models

Nobuyuki Umezu, Keisuke Yokota and Masatomo Inui

**No. 78** Hausdorff Distance Computation in Near-zero Cases

Yunku Kang, Seung-Hyun Yoon, Min-Ho Kyung and Myung-Soo Kim

#### Session VMI 1: Room B (Visual Media and Interaction 1)

Chair: Ligang Liu, Shinichi Fukushige

**No. 63** Development of Surgical Assistant Navigation System Using Augmented Reality Glasses

Taeseok Lee, Yong-Soo Kim, Tae-Geun Son and Youngjun Kim

**No. 69** Low Dose 4D-CT Lung SR Reconstruction via Respiratory Motion Estimation and NLBP

Hui Liu, Qiang Guo, Bulat Ibragimov, Xiaohong Shen and Caiming Zhang

**No. 87** Evaluation System of User's Attention on Products in 3D Environment Using Eye Tracking Glasses

Ting-Hao Li, Hiromasa Suzuki and Yutaka Ohtake

**No.102** Augmented Reality Based Tele-immersion System for Collaborative Design in a Real Space

Shinichi Fukushige

## **Session EAC 1: Room C (Emerging Applications of CAD 1)**

Chair: Yunfeng Zhang, Masatomo Inui

**No. 56** Design of Boundary Shape in Compliant Mechanism Fabricated by Multi-material Additive Manufacturing

Momoko Kimura and Toshitake Tateno

**No. 91** Embedding 3D QR Codes onto Foods

Ryosuke Kikuchi and Takashi Maekawa

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**14:30 – 15:30**

## **Session DAS 1: Room A (Design & Architecture & Shipbuilding 1)**

Chair: Yoshiyuki Furukawa, Yusuke Kishita

**No. 16** Bounded Distance Field for Assisting Interactive Layout Design of Water Circuits

Masatomo Inui, Tomohiro Imai and Nobuyuki Umezu

**No. 21** CFD and Experimental Study on the Orifice Flow Characteristic of LNG through Crack in Insulation Panel

Se-Yun Hwang, Ho-Sang Jang, Yoon-Jae Ju and Jang-Hyun Lee

**No. 86** Development of Efficient Stress Calculation Models of Piping System and a Method for Translating Pipe Model

Minsung Kim, Joung-Hyun Lee, Jeong-Jae Woo and Jeong-Youl Lee

## **Session CDO 1: Room B (Computational Design and Optimization 1)**

Chair: Fazhi He, Shintaro Yamasaki

**No. 70** Shape Extraction of Guardrails on Roads Using Point Clouds and Images from Mobile Mapping Systems

Yuma Mori and Hiroshi Masuda

**No. 90** Analysis for Impact Force of Baby Carriage under Operating Condition

Yuta Ishikawa and Tatsuhito Aihara

**No.100** A Study on Fabrication Criteria for the Implementation of Freeform Aluminum Sheet Panel

Ji-Yong Lee, Young-Sook Roh, In-Sub Kang, Chanhee Kim and Eun-Jin Lee

## Session PLM 1: Room C (PLM & Smart Manufacturing 1)

Chair: Shigeru Hosono, Yixiang Fang

**No. 18** Platform of Smart Manufacturing System based on RAMI 4.0

Hong-Seok Park and Risky Ayu Febriani

**No. 68** Design Implications and Methodology Based on the Potential Needs of Seniors for Home Monitoring Systems

Jiang Wu, Yuriki Sakurai, Soo In Kang, Reina Yoshizaki, Akihiko Kamesawa, Koki Nakano, Daisuke Yoshioka, Kazuki Kaneko, Chung-Hsien Lin, Toko Funaki, Shiho Hirose, Kenichiro Ito, Mahiro Fujisaki, Ikuko Sugawara, Misato Nihei, Takahiro Miura, Ken-Ichiro Yabu, Taketoshi Mori, Tohru Ifukube and Junichiro Okata

**No. 85** A Study on the Failure Prediction of Plant Equipment: Compressor Case

Hong-Bae Jun

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**15:55 – 17:15**

## Session GCA 2: Room A (Geometric Computing, Approximating and Processing 2)

Chair: Hiroshi Masuda, Min-Jae Oh

**No. 6** Tau-curve -Introduction of Points with Infinite Curvature to Aesthetic Curves-

Kenjiro T. Miura, Sho Suzuki, R.U. Gobithaasan and Shin Usuki

**No. 32** An Extension of Bézier Curve and Surface Which Automatically Satisfy GP2P Continuity

Zhang Di and Liu Huayong

**No. 98** Extraction of Knee-form-contacting Areas on Automobile Parts for UNECE Inspection

Kenta Gunji, Masatomo Inui and Nobuyuki Umezu

**No.103** Algorithms for Planar Domains Bounded by Circular Arc Splines

Bert Juettler

## Session VMI 2: Room B (Visual Media and Interaction 2)

Chair: Tingting Liu, Tetsuro Ogi

**No. 11** Improved C-COT Based on Feature Channels Confidence for Visual Tracking

Shuwei Shen, Shengjing Tian, Leyuan Wang, Aihong Shen and Xiuping Liu

**No. 13** Context Data Acquisition Tool to Improve Wide Range Services

Yusuke Tsutsui, Kenshiro Hiramitsu, Yuya Mitake, Mar'Atus Sholihah and Yoshiki Shimomura

**No. 49** Fast Similarity Calculation between Images for Realtime Photomosaic Generation  
Takahiro Ishii and Nobuyuki Umezu

**No. 94** AR Measurement Technology Applied to Nutritional Management  
Yawen Sun and Tetsuro Ogi

## **Session EAC 2: Room C (Emerging Applications of CAD 2)**

Chair: Toshitake Tateno, Masakazu Kobayashi

**No. 27** Development of Fast Posture Change Method for FE-Model of the Human Body Based on Mesh Deformation

Kazuma Hirosawa, Mitsunori Tada, Natsuki Miyata, Satoshi Kanai and Hiroaki Date

**No. 71** Operation and Maintenance System for Offshore Wind Turbines Based on Virtual Reality with a Physics Engine

Imgyu Kim, Hyebin Kim, Hyuncheol Kim and Soonhung Han

**No.101** CAD Guided Edge Enhancement of Ambiguous Boundaries in X-ray CT Image of Mechanical Assembly

Yuki Doi, Yutaka Ohtake, Yukie Nagai and Hiromasa Suzuki

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**17:25 – 18:45**

## **Session DAS 2: Room A (Design & Architecture & Shipbuilding 2)**

Chair: Jang Hyun Lee, Yutaka Nomaguchi

**No. 17** Shape Modeling of Possible Sink Marks on Plastic Part

Shunsuke Onishi, Masatomo Inui and Nobuyuki Umezu

**No. 72** Connected iAR: a Prototype for Pipeline Maintenance Application

Jungmin Lee and Kyungho Lee

**No. 76** Design of Space Structure Based on Triangulated Cylindrical Origami

Shoko Arita, Itsuki Fukuta and Yoshiki Yamagiwa

**No. 88** B-spline Surface Modeling in Shipbuilding using Geometric Iterative Methods

Masahito Takezawa, Kohei Matsuo and Takashi Maekawa



## **Session CDO 2: Room B (Computational Design and Optimization 2)**

Chair: Hong-Seok Park, Takayuki Yamada

**No. 51** Reverse design modeling: Gas turbine Vane

Yeonghak Kim, Sangho Park, Junwon Jang, Dajiang Fan,  
Seongmo Yang, Hageom Park, Dongkwan Kim and Hyun-Sun Choi

**No. 55** A Novel Bat Algorithm based on Cross Boundary Learning and Uniform Explosion  
Strategy

Jiashi Yong, Fazhi He, Haoran Li and Weiqing Zhou

**No. 79** An Exploring Method for Feasible Design Space Using Optimization and Active Learning

Kohei Shintani, Atsuji Abe and Yasushi Yamamoto

**No. 93** Computational Design of a Heat Exchanger with Topology Optimization

Hiroki Kobayashi, Kentaro Yaji, Shintaro Yamasaki and Kikuo Fujita

## **Session PLM 2: Room C (PLM & Smart Manufacturing 2)**

Chair: Yusuke Kishita, Nobuyuki Umezu

**No. 24** A Surface Mesh and Boundary Representation (B-rep) Combined Approach for Geometric  
Representation in Collaborative CAD

Cong Hong Phong Nguyen and Young Choi

**No. 66** Interactive Knowledge Exploration for ERP Systems Development

Yoshiyuki Furukawa, Shinsuke Kondoh, Hitoshi Komoto,  
Yoshiaki Oida, Yohei Sakamoto and Isaac Okada

## DAY 2: Friday, 1 November, 2018

**10:40 – 12:00**

### Session DAS 3: Room A (Design & Architecture & Shipbuilding 3)

Chair: Takashi Maekawa, Wissam Bouajila

- No. 22** Thermal Stress Analysis of Process Piping System Installed on LNG Vessel Subject to Hull Design Loads  
Jang-Hyun Lee, Min-Seok Kim, Seong-Kyeom Kim and Sungchan Kim
- No. 73** Characterization of Design Concept Generation Process by Lexically-and-Corpus-based Concept Distance  
Yutaka Nomaguchi, Takahiro Kawahara, Kouki Shoda and Kikuo Fujita
- No. 77** Multi-purpose Simulator for Ships and Offshore Structures  
Seung-Ho Ham, Myung-II Roh, Jong-Hyuk Lee and Sung-Jun Lee
- No. 89** Study on Application of Additive Manufacturing Technologies to Cementitious Materials  
Takashi Kinumura

### Session VMI 3: Room B (Visual Media and Interaction 3)

Chair: Tetsuro Ogi, Asad Khan

- No. 36** Influence of Humanoid Robot's Behavior on Personal Space  
Akihiro Tatsumi, Taishi Matsushima and Masashi Okubo
- No. 50** Development of a Web-based Rating System for Slide Visibility and Its Evaluation  
Genki Sugawara and Nobuyuki Umezu
- No. 57** Multi Projection Mapping onto a Digitally Reconfigurable Surface  
Yong Yi Lee, Junho Choi, Bilal Ahmed and Kwan H. Lee
- No. 97** Development of an Augmented-reality Application for 3D Object Manipulation  
Yong-Soo Kim, Eungjune Shim, Taeseok Lee and Youngjun Kim

### Session EAC 3: Room C (Emerging Applications of CAD 3)

Chair: Ming Li, Toshitake Tateno

- No. 12** Generating Quantitative Product Profile using Deep Network  
Hairui Xu, Weicheng Zhang and Ming Li

**No. 23** Use of the Electroencephalogram(EEG) and Deep Neural Network Classification Model to Recognize Users' Affection toward Design Alternatives

Sunwoo Chang, Hanjong Jun and Won Hyeok Dong

**No. 43** Pose Initialization Method of Mixed Reality System for Inspection Using Convolutional Neural Network

Yong Hwi Kim, Moongu Son, Kim Junbeom and Kwan H. Lee

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**13:20 – 14:40**

**Session DAS 4: Room A (Design & Architecture & Shipbuilding 4)**

Chair: Hiroaki Date, Seung-Ho Ham

**No. 42** A Study of the Mixed Reality Viewing Tool for the Improving Construction Efficiency

Jaekyung Lee

**No. 64** EDIPS: Development of a Business Game for Experiencing Product-service System Business Principle

Yuya Mitake, Tatsuru Maezono, Mar'atus Sholihah and Yoshiki Shimomura

**No. 67** A Study of Immersive Architectural Acoustic Simulation Methodology Using Multi-Channel Speaker

Yeongchan Lee and Jaeho Ryu

**Session CDO 3: Room B (Computational Design and Optimization 3)**

Chair: Wei Wang, Masakazu Kobayashi

**No. 2** Printing Direction Optimization Based on Slicer Number Minimization

Weiming Wang, Hanliu Shao, Xiuping Liu and Baocai Yin

**No. 9** Multi-objective Optimization on Deformation of Lattice Structures for Multi-material Additive Manufacturing

Haruki Mizokami and Toshitake Tateno

**No. 53** Reverse design modeling: Gas turbine Blade

Junwon Jang, Sangho Park, Yeonghak Kim, Dajiang Fan,  
Seongmo Yang, Hagyeom Park, Dongkwan Kim and Hyun-Sun Choi

**No. 82** Biscala Topology Optimization for Print-ready Structural Design

Dengyang Zhao, Ming Li, Yusheng Liu and Shuming Gao

### **Session PLM 3: Room C (PLM & Smart Manufacturing 3)**

Chair: Soo-Hong Lee, Shigeru Hosono

- No. 37** Modeling and Simulation of Agriculture Production System Considering Seasonal Variable Information Using Big Data Analysis Based on IoT  
Hironori Hibino, Takumu Miwa, Takumi Kuwahara,  
Yusaku Matsumoto, Yousuke Mizukami and Makoto Kimura
- No. 39** Decision Support for Energy-saving Idle Production Facility Operations Based on M2M Environment Second Report : Proposal of Idle Time Prediction Model Considering Breakdown  
Hironori Hibino, Koki Miki, Kentaro Yanaga and Junhao Wang
- No. 60** Simulation Method for Minimizing Electricity Cost Considering Production Line Scheduling Including Injection Molding Machines Using Simulated Annealing  
Masaki Ishihara, Hironori Hibino, Taku Harada, Kazuhide Kaifuku and Rio Takasaki
- No. 84** A Study on Digital Twin-based Complex Product Assembly Process Planning and Implementing Mode  
Yixiang Fang and Jiangyan Jin
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**15:05 – 16:25**

### **Session DAS 5: Room A (Design & Architecture & Shipbuilding 5)**

Chair: Hiroshi Katoh, Jang Hyun Lee

- No. 19** Innovative Design Method for Valuable Product Service System: Relationship of Multi-stakeholders' Requirements and Lifecycle Cost Approach  
Mar'Atus Sholihah, Yuya Mitake, Kento Yuasa and Yoshiki Shimomura
- No. 28** Automatic Database Construction and Utilization Method of Machining Know-How  
Ryo Fukuda and Hideki Aoyama
- No. 30** Real Time Building Data Collectiing Using IoT and BIM  
Eonyong Kim, Youchang Cho and Gyuhan Kim

## Session VMI 4: Room B (Visual Media and Interaction 4)

Chair: Hui Liu, Okubo Masashi

- No. 15** A Haze Removal Algorithm Using Dark Channel Prior and V-system  
Xiaochun Wang, Xiangdong Sun and Ruixia Song
- No. 40** Modeling Naturalistic Driver Behavior in Traffic using Deep Neural Network  
Inhak Lee and Sang Hun Lee
- No. 62** CPPS for Multiple Evaluation of Workers Using IoT Technologies  
Yoshihiko Watanabe, Kenji Shimomura and Hironori Hibino
- No. 80** Photographic Painting Style Transfer using Convolutional Neural Networks  
Asad Khan

## Session GCA 3: Room C (Geometric Computing, Approximating and Processing 3)

Chair: Yanjie Chai, Kenjiro Miura

- No. 3** 3D Printing CFD Simulation Results Using Structural Mechanics  
Hiroki Takeda, Yutaka Ohtake and Hiromasa Suzuki
- No. 44** A High-accuracy Single Patch Representation of Multi-patch Structure  
Jinlan Xu, Ningning Sun, Gang Xu and Bojian Li
- No. 61** Using Support Vector Machines for the Automatic Classification of Building Information Modeling Elements  
Bonsang Koo, Sunmin La, Nam-Wook Cho and Youngsu Yu
- No. 96** Freeform Shape Forming of CFRP Based on Lines of Curvature  
Riku Usami, Masahito Takezawa, Kohei Matsuo, Akio Sakurai and Takashi Maekawa
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**17:25 – 18:45**

## Session DAS 6: Room A (Design & Architecture & Shipbuilding 6)

Chair: Se Yun Hwang, Taku Harada

- No. 20** Recognition of Real Trajectory of Cutting Tool Motion Based on Identification of Acceleration and Deceleration in Machine Tool Control  
Tomoya Noguchi and Hideki Aoyama

**No. 46** A Study on the Operation of IoT Equipment Using Brain Wave Equipment in Architectural Space

Seung Yeul Ji, Seyeon Kang, Mi Kyoung Kim and Han Jong Jun

**No. 95** Operation Analysis of Container Ships Using AIS Data

Min-Jae Oh, Myung-II Roh, Sung-Woo Park, Do-Hyun Chun, Jeong-Youl Lee and Myeong-Jo Son

#### **Session CDO 4: Room B (Computational Design and Optimization 4)**

Chair: Myung-II Roh, Kohei Shintani

**No. 34** T-splines Based Isogeometric Topology Optimization with Arbitrarily Shaped Design Domains

Gang Zhao, Jiaming Yang, Wei Wang, Yang Zhang and Xiaoxiao Du

**No. 59** Influence Factors on D-efficiency of a Design of Experiments for the Optimization of a Subscale Rocket Engine's Liner Geometry

Wissam Bouajila and Masatoshi Shimoda

**No. 81** Efficient Optimal Design of Interconnected Anisotropic Porous Structures Using Extended Triply Periodic Minimal Surfaces

Ming Li, Liangchao Zhu and Lili Pan

**No. 83** Development of Resonant Sound Absorbers Using Helmholtz Resonators with Honeycomb Core by Numerical Analysis

Hirotaaka Tada and Masakazu Kobayashi

#### **Session GCA 4: Room C (Geometric Computing, Approximating and Processing 4)**

Chair: Hiromasa Suzuki, Hongwei Lin

**No. 8** Gregory Solid Construction for Polyhedral Volume Parameterization by Sparse Optimization

Chuanfeng Hu and Hongwei Lin

**No. 14** Organic Skeleton Correspondence Using Part Arrangements

Shuhua Li, Xiuping Liu, Junjie Cao and Shiyao Wang

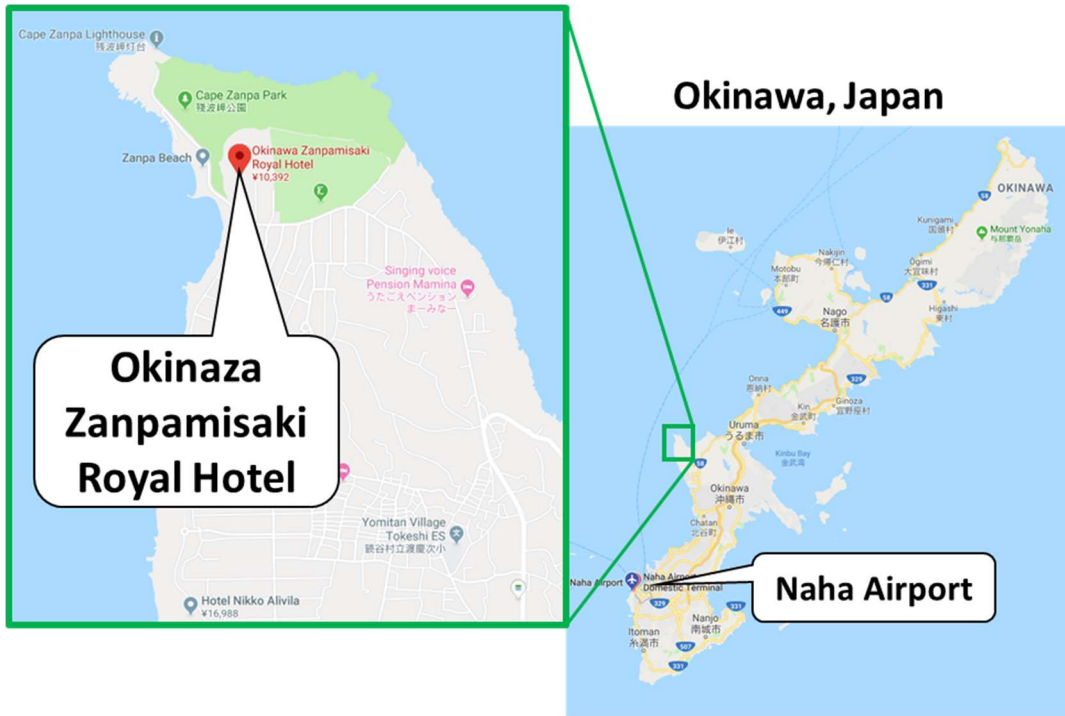
**No. 48** Curve Modeling by Using Rational Fractal Interpolation with Variable Parameters

Tiantian Liu, Qinglan Fan, Fangxun Bao, Yunfeng Zhang and Xiaomei Yang

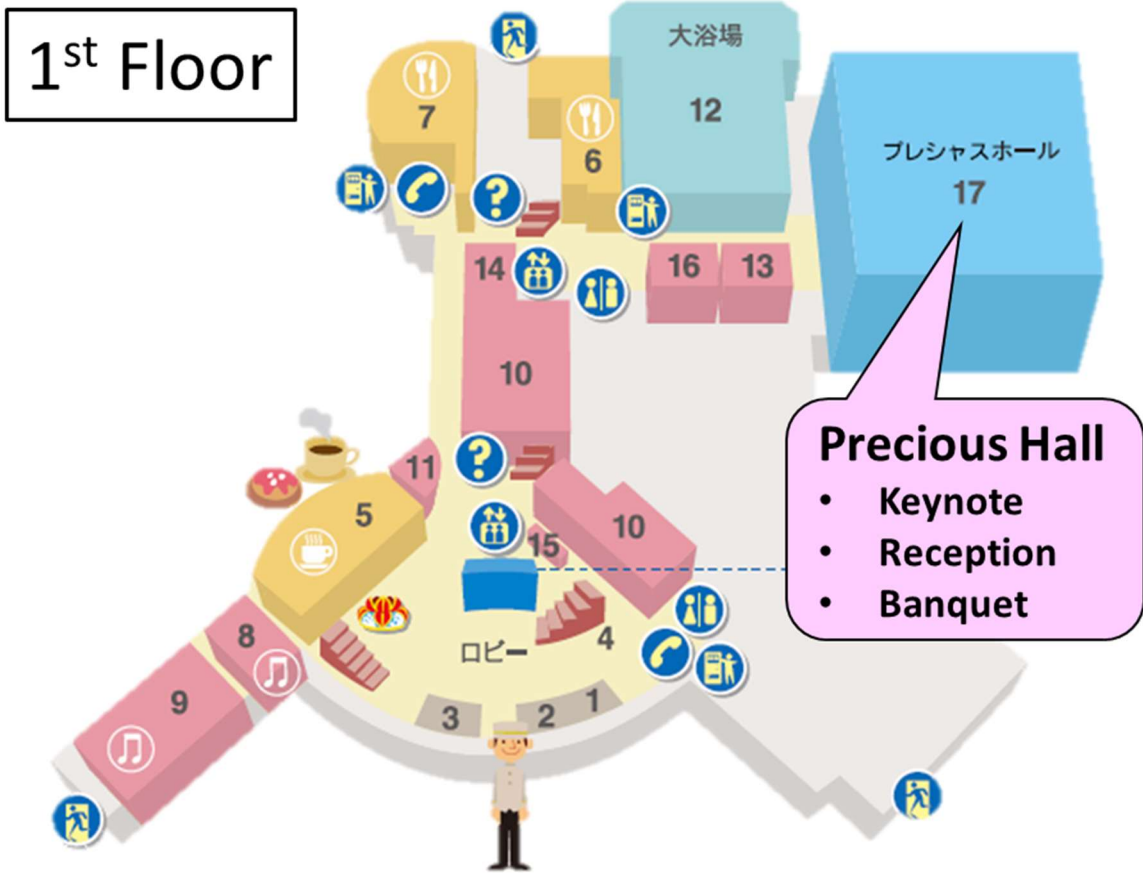
**No. 65** Refining Geodesic Paths on Polygonal Meshes with a Super-linear Convergence

Bangquan Liu, Zhen Liu, Yun Meng, Tingting Liu, Jin Wang and Yanjie Chai

# Conference Venue

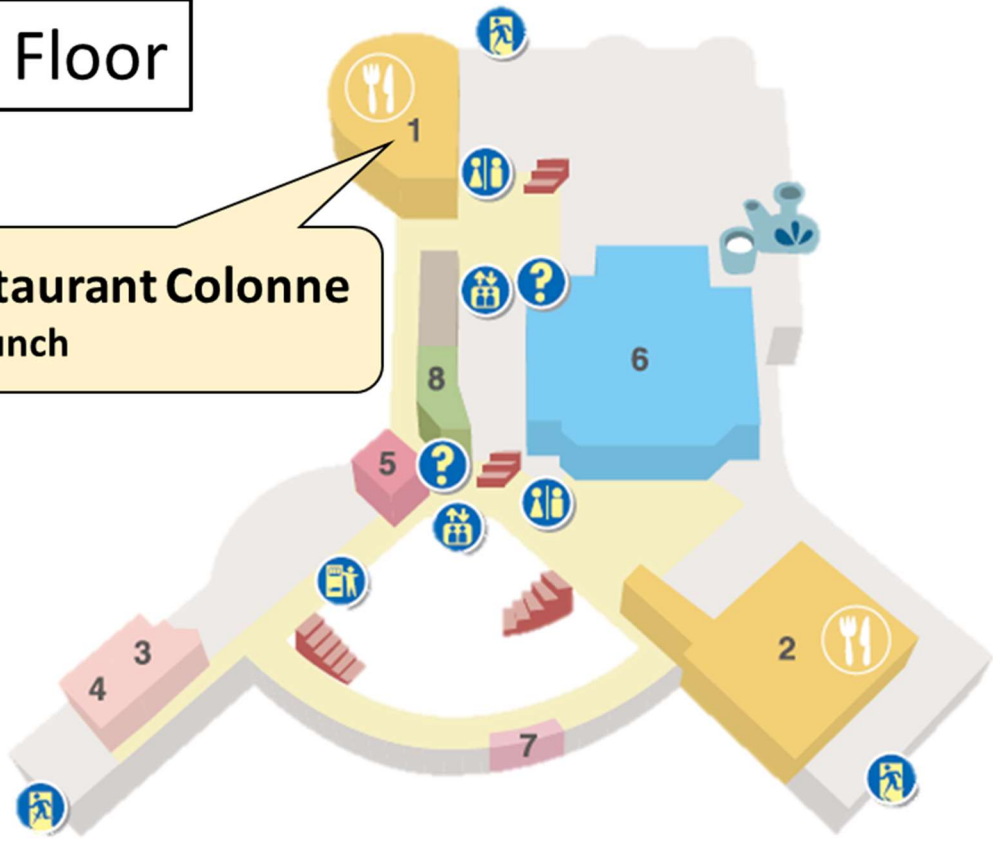


# Floor Maps



2<sup>nd</sup> Floor

**Restaurant Colonne**  
• lunch



3<sup>rd</sup> Floor

**Room B  
Kocho**

**Room C  
Deigo**

**Room A  
Cattleya**

**Break Room  
Hamayu**

