

PROGRAMME

8th International Meeting on Origami in
Science, Mathematics and Education
(8OSME)

16 – 18 July 2024
Melbourne, Australia



Published by
Organising Committee
8th International Meeting on Origami in Science, Mathematics and Education (8OSME)
16–18 July 2024
Melbourne, Australia

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Welcome Message

It is our great pleasure and honour to host the 8th International Meeting on Origami in Science, Mathematics and Education (8OSME) at Swinburne University of Technology in Melbourne, Australia, 16-18 July 2024. 8OSME will be held in conjunction with the Folding Australia 2024 origami convention on 20-21 July.

The OSME meeting is one of the most important gatherings of the global origami community. Previous meetings, held approximately every four years, have been highly successful. The meeting proceedings have become the definitive guide for advanced research in origami and its applications.

There were 191 abstracts submitted for this conference, including 127 full papers. We have six exemplary keynote speakers for plenary sessions and four parallel sessions over the three days, with an extremely varied programme focused on the themes of Engineering, Math, Computation, History, Education and Design.

8OSME offers opportunities for researchers and practitioners to exchange the latest development in this important area. We wish you a fruitful conference. Furthermore, Melbourne offers a plethora of options for leisure, entertainment, and a rich cultural tapestry. We trust you will have a memorable experience and a happy stay in our city.

8OSME Organising Committee

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8OSME Organising Committee

Chairs:

Guoxing Lu (Chair)	Swinburne University of Technology (Formerly)
Michael Assis (Vice-Chair)	University of Melbourne Melbourne Origami Group
Jianjun Zhang (Vice-Chair)	Swinburne University of Technology

Organising Committee Members:

Winnie Leung	Sydney Origami Inc.
Malte Wagenfeld	RMIT University
Sachiko Ishida	Meiji University
Sukanya Deshmukh	RMIT University
Dian Zhang	Swinburne University of Technology (Formerly)
Xi Zhang	Swinburne University of Technology (Formerly)
Chengzheng Mao	Swinburne University of Technology

Steering Committee:

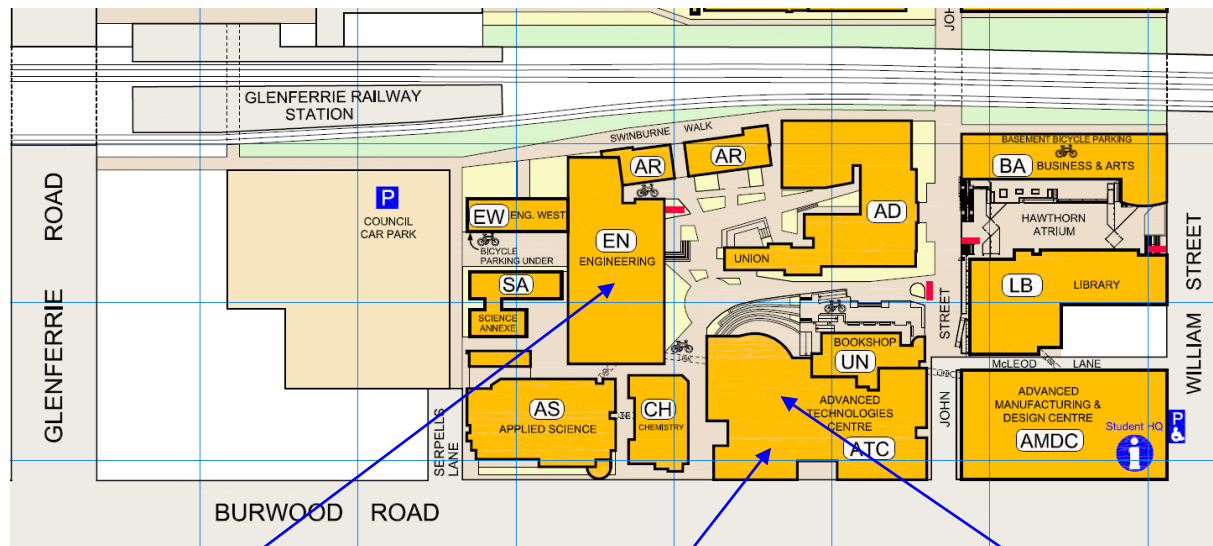
Emma Frigerio (1OST)	Emeritus Professor
Toshikazu Kawasaki (2OSSO)	Emeritus Professor
Thomas Hull (3OSME)	Franklin & Marshall College
Robert J. Lang (4OSME)	Independent artist and consultant
Patsy Wang-Iverson (5OSME)	Independent consultant
Tomohiro Tachi (6OSME)	University of Tokyo
Zhong You (7OSME)	University of Oxford

Scientific Committee

Jianguo Cai	Southeast University
Yan Chen	Tianjin University
Joseph Choma	Florida Atlantic University
Matthew Gardiner	Ars Electronica Futurelab
Joe Gattas	University of Queensland
Miri Golan	Israeli Origami Centre
Simon Guest	University of Cambridge
Hanqing Jiang	Westlake University
Paul Jackson	Shenkar College
Yves Klett	Foldcore GmbH
Jun Mitani	University of Tsukuba
Glaucio Paulino	Princeton University
Mark Schenk	University of Bristol
Tomohiro Tachi	University of Tokyo
Patsy Wang-Iverson	Independent Consultant
Zhong You (Chair)	University of Oxford

General Information

Conference venue floor plan



4 Parallel Sessions
(EN201, EN202, EN204, EN205)

Registration, Reception &
Pre-dinner Drinks
(ATC103)

Plenary Lectures
(ATC101)

Hawthorn Campus, Swinburne University of Technology
(425 Burwood Rd, Hawthorn VIC 3122)

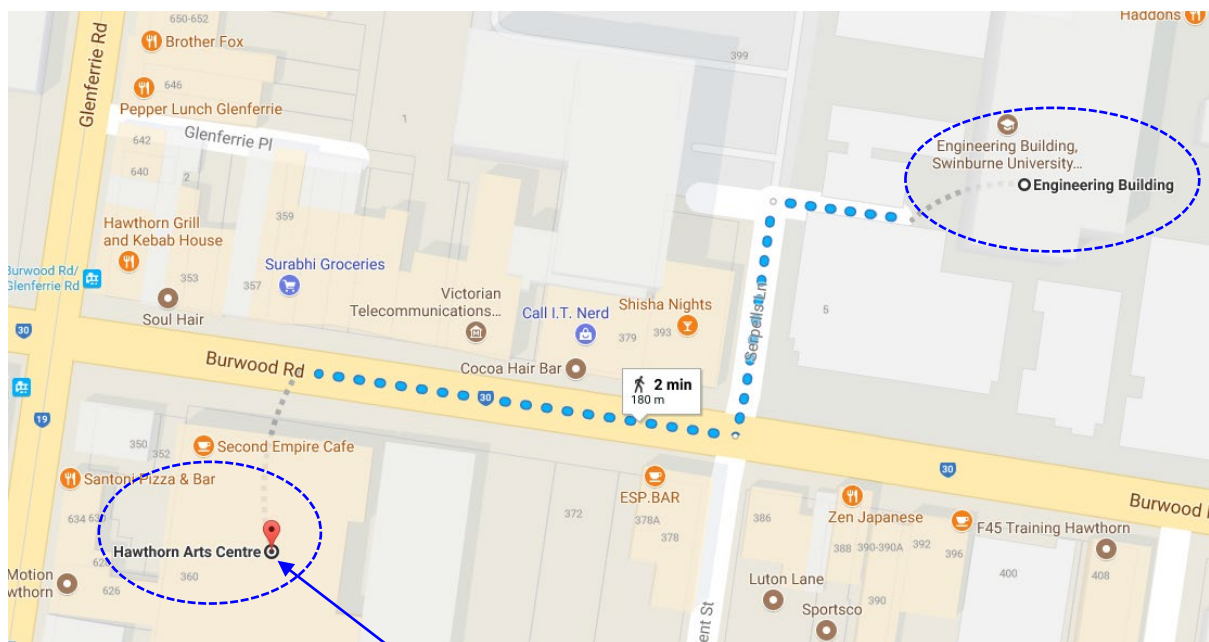
Conference Banquet

Date: 17 July 2024

Time: Pre-dinner drinks (ATC103 at Swinburne): 18:30 – 19:30

Conference Banquet (Chandelier Room): 19:30 – 23:00

Banquet Venue: Chandelier Room (Ground Floor) at Hawthorn Arts Centre



Conference Banquet
(Hawthorn Arts Centre)

8OSME Conference Organising Committee

Email: 8osme@swin.edu.au

Overview for 8OSME

Date	Event	Time	Details	Chair	Venue
15 Jul	Registration	16:00-18:00	—	—	ATC103
	Welcome Reception	18:00-19:30	Cocktail Reception	Prof Guoxing Lu	
16 Jul (Day 1)	Registration	8:00-9:00	—	—	ATC103
	Opening Ceremony	9:00-9:10	Prof Emad Gad (Dean, School of Engineering, Swinburne University of Technology)	Prof Guoxing Lu	ATC101
	Plenary Lecture 1	9:10-10:00	Darryl Bedford (Drawstring Origami, UK) Beyond Origami: Structure, Kinetics, Aesthetics and Biomimicry	Dr Robert Lang	
	Plenary Lecture 2	10:00-10:50	Prof Yan Chen (Tianjin University, China) Modular Origami: Kinematics and Metamaterials		
	Tea/Coffee Break	10:50-11:30	—	—	ATC103
	Parallel Sessions	11:30-12:30	See programme for Engineering 1	—	EN201
			See programme for Engineering 2	—	EN202
			See programme for Mathematics, Computation & History	—	EN204
			See programme for Design & Education	—	EN205
	Lunch	12:30-14:00	—	—	ATC103
	Parallel Sessions	14:00-16:00	See programme for Engineering 1	—	EN201
			See programme for Engineering 2	—	EN202
			See programme for Mathematics, Computation & History	—	EN204
			See programme for Design & Education	—	EN205
	Tea/Coffee Break	16:00-16:30	—	—	ATC103
Parallel Sessions	16:30-18:10	See programme for Engineering 1	—	EN201	
		See programme for Engineering 2	—	EN202	
		See programme for Mathematics & Computation & History	—	EN204	
		See programme for Design & Education	—	EN205	

8th International Meeting on Origami in Science, Mathematics and Education (8OSME)

Date	Event	Time	Details	Chair	Venue
17 Jul (Day 2)	Registration	8:00-9:00	—	—	ATC103
	Plenary Lecture 3	9:00-9:50	Distinguished Prof David Epstein (University of California, Irvine, Canada) Computational Complexity and Parameterized Complexity of Folding	Prof Yimin Xie	ATC101
	Plenary Lecture 4	9:50-10:40	Tomoko Fuse (Origami Artist, Japan) Infinite Fold and Repeated Fold		
	Group Photo	10:40-11:00	—	—	ATC Foyer
	Tea/Coffee Break	11:00-11:30	Tea/Coffee Break	—	ATC103
	Parallel Sessions	11:30-12:30	See programme for Engineering 1	—	EN201
			See programme for Engineering 2	—	EN202
			See programme for Mathematics, Computation & History	—	EN204
			See programme for Design & Education	—	EN205
	Lunch	12:30-14:00	—	—	ATC103
	Parallel Sessions	14:00-16:00	See programme for Engineering 1	—	EN201
			See programme for Engineering 2	—	EN202
			See programme for Mathematics, Computation & History	—	EN204
			See programme for Design & Education	—	EN205
	Tea/Coffee Break	16:00-16:30	—	—	ATC103
	Parallel Sessions	16:30-18:10	See programme for Engineering 1	—	EN201
See programme for Engineering 2			—	EN202	
See programme for Mathematics, Computation & History			—	EN204	
See programme for Design & Education			—	EN205	
Pre-dinner Drinks	18:30-19:30	—	—	ATC103	
Conference Banquet	19:30-23:00	—	—	Hawthorn Arts Centre	

8th International Meeting on Origami in Science, Mathematics and Education (8OSME)

Date	Event	Time	Details	Chair	Venue
18 Jul (Day 3)	Registration	8:00-9:00	—	—	ATC103
	Plenary Lecture 5	9:00-9:50	Prof Glaucio H. Paulino (Princeton University, USA) Origami Engineering	Prof Larry Howell	ATC101
	Plenary Lecture 6	9:50-10:40	Prof Zhong You (University of Oxford, UK) Beyond the Miura-ori: Innovations and Applications		
	Tea/Coffee Break	10:40-11:30	—	—	ATC103
	Parallel Sessions	11:30-12:30	See programme for Engineering 1	—	EN201
			See programme for Engineering 2	—	EN202
			See programme for Mathematics, Computation & History	—	EN204
			See programme for Design & Education	—	EN205
	Lunch	12:30-14:00	—	—	ATC103
	Parallel Sessions	14:00-16:00	See programme for Engineering 1	—	EN201
			See programme for Engineering 2	—	EN202
			See programme for Mathematics, Computation & History	—	EN204
			See programme for Design & Education (workshop: 45mins)	—	EN205
	Tea/Coffee Break	16:00-16:30	—	—	ATC103
	Parallel Sessions	16:30-17:30	See programme for Engineering 1	—	EN201
			See programme for Engineering 2	—	EN202
			See programme for Mathematics, Computation & History	—	EN204
See programme for Design & Education			—	EN205	
Closing Ceremony	17:30-18:00	—	—	ATC101	
End of Conference					

Parallel Session I: Engineering 1 (Day 1)

Date: Tuesday, 16 July 2024
 Time: 11:30-18:10
 Venue: EN201

Time	Presenter	Title
Rigid Origami (I) Chair: A/Prof Joe Gattas		
11:30-11:50	Danrong Shi, Jian Feng, Jin Zhang and Jianguo Cai (Southeast University, China)	Out-of-plane impact and energy absorption of origami honeycombs in Truck Mounted Attenuator
11:50-12:10	Changwoo Ha , Yasuhiro Miyazawa and Jinkyu Yang (Seoul National University, South Korea)	Quaternion-Based Loop Closure Method for Precise Kinematic Simulation of Rigid Origami
12:10-12:30	Kentaro Hayakawa and Makoto Ohsaki (Kyoto University, Japan)	Shape Optimization of Rigid Origami for Approximate Self-foldability under Gravity
12:30-14:00	Lunch (ATC103)	
Rigid Origami (II) Chair: Prof Jianguo Cai		
14:00-14:20	Zeyuan He , Kentaro Hayakawa and Makoto Ohsaki (University of Cambridge, United Kingdom)	When will the existence of a non-trivial state guarantee a continuous motion for a quad-mesh rigid origami?
14:20-14:40	Rinki Imada , Thomas C. Hull, Jason S. Ku and Tomohiro Tachi (The University of Tokyo, Japan)	Nonlinear Kinematics of Recursive Origami Inspired by the Spidron
14:40-15:00	Collin Liou and Savannah Cofer (Stanford University, United States)	Programmable multistability and rigid flattenability in origami cubes by adding a minimal cut

Rigid Origami (III) Chair: Prof Jiayao Ma		
15:00-15:20	James P. McInerney , Xiaoming Mao, D. Zeb Rocklin, Glaucio H. Paulino and Diego Misseroni (University of Michigan, United States)	Isometries of trapezoid-based origami
15:20-15:40	Tomotaka Ohba , Kentaro Hayakawa and Makoto Ohsaki (Kyoto University, Japan)	Higher-order infinitesimal mechanism of rigid origami and polynomial approximation of its folding path
15:40-16:00	Alfonso Parra Rubio , Andy Dequin, Neil Gershenfeld and Erik Strand (Massachusetts Institute of Technology, United States)	Modular Origami Approach for Rigid Foldable Steel Load-Bearing Plate Lattices in Arbitrary Sizes
16:00-16:30	Tea/Coffee break (ATC103)	
Rigid Origami (IV) Chair: Dr Manan Arya		
16:30-16:50	Jingsong Wei, Yan Chen and Xiao Zhang (Tianjin University, China)	Rigid-Foldable Hexagon-Twist Origami Patterns
16:50-17:10	Kiumars Sharifmoghaddam (The Vienna University of Technology, Austria)	T-hedral Origami: Towards Unifying Representation of Rigid-foldable and Curved Patterns
17:10-17:30	Klara Mundilova and Georg Nawratil (Massachusetts Institute of Technology, United States)	Rigid-Ruling Folding Compatibility of Planar Creases
17:30-17:50	Malcolm Smith (United States)	Amplifying the Kinematics of Origami Mechanisms Using Spring Joints
17:50-18:10	Kiumars Sharifmoghaddam , Klara Mundilova, Georg Nawratil and Tomohiro Tachi (The Vienna University of Technology, Austria)	Woven Rigidly Foldable T-hedral Tubes Along Translational Surfaces
End of Day 1		

Parallel Session I: Engineering 1 (Day 2)

Date: Wednesday, 17 July 2024
 Time: 11:30-18:10
 Venue: EN201

Time	Presenter	Title
Thick Origami Chair: Prof Jiayao Ma		
11:30-11:50	David Bershady and Glaucio Paulino (Princeton University, United States)	Framework for the fabrication of flat foldable, thick origami structures via non-rigid origami methods
11:50-12:10	Nachat Jatusripitak and Manan Arya (Stanford University, United States)	Regular and Semi-Regular Tessellations of Origami Flashers
12:10-12:30	Hunter Pruett, Spencer Magleby and Larry Howell (Brigham Young University, United States)	Constant-Thickness Accommodation by Pattern Modification for Origami Flashers
12:30-14:00	Lunch (ATC103)	
Curved Origami (I) Chair: A/Prof Jaehyung Ju		
14:00-14:20	Munhyun Lee , Mahmoud Abu-Saleem, Tomohiro Tachi and Joe Gattas (The University of Tokyo, Japan)	A lightweight building construction system using curved-crease origami blocks
14:20-14:40	Ting-Uei Lee, Hongjia Lu and Yi Min Xie (RMIT University, Australia)	Designing Curved Folded Structures through Topology Optimisation
14:40-15:00	Rupert Maleczek, Clemens Preisinger, Georg Lobe, Roland Maderebner and Marcus Bernhard (University of Innsbruck, Austria)	Actuating tubes in multilayer curved folding

Curved Origami (II) Chair: Prof Yoshinobu Miyamoto		
15:00-15:20	Rupert Maleczek , Klara Mundilova, Seri Nishimoto , Tomohiro Tachi and Riccardo Foschi (University of Innsbruck, Austria; The University of Tokyo, Japan)	Slit folding – openings to close along curved foldlines
15:20-15:40	Yiwei Zhang and Tomohiro Tachi (The University of Tokyo, Japan)	Rigid-ruling Curved Folding Origami Implemented with Straight Inflated Air Pouches
16:00-16:30 Tea/Coffee break (ATC103)		
Engineering Other (VI) Chair: A/Prof Joe Gattas		
16:30-16:50	Kai Xiao, Yuhao Wang, Chao Song, Bihui Zou, Zihe Liang, Heeseung Han, Yilin Du, Shane Johnson, Hanqing Jiang and Jaehyung Ju (Shanghai Jiao Tong University, China)	Topologically Variable and Volumetric Morphing of 3D Modular Origami Structures
16:50-17:10	Hongjia Lu, Ting-Uei Lee and Yi Min Xie (RMIT University, Australia)	Optimisation-based analysis of elastic buckling in cylinders with pre-embedded origami patterns
17:10-17:30	Phanisri Pratapa and Siva Poornan Vasudevan (Indian Institute of Technology Madras, India)	Finding the effective Poisson's ratios in stretching and bending of a reconfigurable morph origami
17:30-17:50	Mitch Skinner, Andrew Geyser, Barry Creighton, Collin Ynchausti, Spencer Magleby and Larry Howell (Brigham Young University, United States)	Cyclic Testing of Membrane Hinges for use in Origami-inspired Engineering Design
17:50-18:10	Ying Yu and Yi Wang (Shantou University, China)	Motion analysis of Flexible Modular Origami: A Finite Particle Method Investigation
End of Day 2		

Parallel Session I: Engineering 1 (Day 3)

Date: Thursday, 18 July 2024
 Time: 11:30-18:00
 Venue: EN201

Time	Presenter	Title
Kirigami (I) Chair: A/Prof Xiang Zhou		
11:30-11:50	Markus Holste , Kirsi Peltonen, Marcelo Dias and Leo de Waal (Aalto University, Finland)	Kirigami-inspired rectangular iso-area twist tessellations in architecture
11:50-12:10	Keishi Kawahara, Nagi Nakamura, Satoshi Ikezawa , Kazuya Saito and Eiji Iwase (Waseda University, Japan)	Fabrication of DCRA using Kiri-origami Structure
12:10-12:30	Jiahe Huang, Tuo Zhao, Glaucio Paulino and Yuhang Hu (Georgia Institute of Technology, United States)	Growing kirigami with self-healing and reprogrammable mechanical properties
12:30-14:00	Lunch (ATC103)	
Kirigami (II) Chair: A/Prof Xinmei Xiang		
14:00-14:20	Shuangbo Liu , Jian Feng, Jianguo Cai and Qian Zhang (Southeast University, China)	A kirigami-inspired folding configuration for Muira thick panel
14:20-14:40	Yoshinobu Miyamoto (Aichi Institute of Technology, Japan)	Rotational Erection System (RES) variations: fractals, tessellation, and interlinkage
14:40-15:00	Kodai Nakagawa , Hibiki Totsuka, Miyako Mizuna, Nagi Nakamura, Tomohiro Tachi and Eiji Iwase (Waseda University Iwaselab, Japan)	Folding Condition of Kirigami and Rigid-foldable Kiri-origami Structure with Periodic Incision on Concentric Circles

Kirigami (III) Chair: Prof Ying Yu		
15:00-15:20	Miia Palmu , Kirsi Peltonen, Marcelo Dias, Leo de Waal and Tomi Kankkunen (VTT Technical Research Centre of Finland, Finland)	Design of morphing and multifunctional shape profiles through cutting tessellations
15:20-15:40	Chisaki Kitajima, Kazuya Saito and Kaoru Suehiro (Kyushu University, Japan)	Indusium Deployment of a Dictyophora Indusiata
15:40-16:00	Xinmei Xiang , Yingjing Liang, Jing Sun and Jingjing Wang (Guangzhou University, China)	Mechanical Properties of Gradient Miura-ori Metamaterials
16:00-16:30	Tea/Coffee break (ATC103)	
17:30-18:00	Closing Ceremony	
End of Day 3		

Parallel Session II: Engineering 2 (Day 1)

Date: Tuesday, 16 July 2024
 Time: 11:30-18:10
 Venue: EN202

Time	Presenter	Title
Engineering Other (I) Chair: A/Prof Sachiko Ishida		
11:30-11:50	Tomohiro Arimune and Yuki Kobayashi (Osaka Metropolitan University, Japan)	A Flat Foldable Solid Consisting of Rhombitruncated Cuboctahedra and Regular Octagonal Prisms
11:50-12:10	Yihe Wang , Wenze Zhang and Kai Tang (Hong Kong University of Science and Technology, China)	Kinematic Modeling of Cylindrical Origami Tessellations for Programmable Local Motion Control
12:10-12:30	Yves Klett and Marc Grzeschik (Foldcore GmbH, Germany)	Fahrenheit 1832: Folding for Fire Protection
12:30-14:00	Lunch (ATC103)	
Engineering Other (II) Chair: A/Prof Jiangmei Wu		
14:00-14:20	Mi Li , Huijuan Feng and Jian S. Dai (Southern University of Science and Technology/Tianjin University, China)	Topological manifold based parametric design of chiral origami mechanisms
14:20-14:40	Jingyi Yang and Zhong You (University of Oxford, United Kingdom)	From Flexagon to Flexahedron – Infinitely Turning Objects
14:40-15:00	Sicong Liu , Changjian Shen and Guoxing Lu (Southern University of Science and Technology, China)	Theoretical Analysis on the Deformation of the Miura-Ori Patterned Sheet

Engineering Other (III)		
Chair: A/Prof Chao Chen		
15:00-15:20	Feng Qiao , Hong Xiao, Hongwei Guo, Rongqiang Liu and Zongquan Deng (Harbin Institute of Technology, China)	Deformable Origami Structure Design Based on Two-Dimensional Geometric Face Shape Collocation
15:20-15:40	Zihang Ma, Keyao Song and Xiang Zhou (Shanghai Jiao Tong University, China)	Parametric Study of the Porous Origami-based Mechanical Metamaterials with Curvatures
15:40-16:00	Kazuya Saito , Chisaki Kitajima, Kouki Nishi and Jun Sato (Kyushu University, Japan)	Earwig Fan Inspired Deployable Structures
16:00-16:30	Tea/Coffee break (ATC103)	
Metamaterials		
Chair: Dr Jingyi Yang		
16:30-16:50	Akito Adachi , Seri Nishimoto , Hibiki Totsuka, Kanata Warisaya , Asao Tokolo and Tomohiro Tachi (The University of Tokyo, Japan)	Origami Cellular Material Switching Between Single and Multiple DOF Modes
16:50-17:10	Savannah Cofer and Collin Liou (Stanford University, United States)	A flat-foldable, transformable metamaterial from octahedral origami unit cells
17:10-17:30	Kevin T. Liu , Tuo Zhao and Glaucio H. Paulino (Princeton University, United States)	Kresling-Inspired Constant Size Magnetically-Reconfigurable Metamaterials
17:30-17:50	Sachiko Ishida , Xinyi Zhang, Guoxing Lu and Kohei Okayasu (Meiji University, Japan)	Design and Fabrication of Quasi-isotropic Origami Metamaterials
17:50-18:10	Kaili Xi , Xiaoyi Jiang, Jiayao Ma, Chuhan Xu and Yan Chen (Tianjin University, China)	Reconfigurable Mechanical Logic Module
End of Day 1		

Parallel Session II: Engineering 2 (Day 2)

Date: Wednesday, 17 July 2024
 Time: 11:30-17:50
 Venue: EN202

Time	Presenter	Title
Engineering Other (IV) Chair: Prof Yusuke Maeda		
11:30-11:50	Matthew Gardiner (Ars Electronica Futurelab, Austria)	Adding more bite to the origami chomper
11:50-12:10	Tomoko Taniguchi and Ryuhei Uehara (Japan Advanced Institute of Science and Technology, Japan)	Research on construction of double cubic core and its application
12:10-12:30	Jingyi Yang and Zhong You (University of Oxford, United Kingdom)	Kinematics analysis of Rubik's Magic puzzle and beyond
12:30-14:00	Lunch (ATC103)	
Engineering Other (V) Chair: A/Prof Sicong Liu		
14:00-14:20	Nupur Udipi , Tuo Zhao and Glaucio Paulino (Georgia Tech, United States; Princeton University, United States)	New Kresling Origami Geometry: The Offset Cell
14:20-14:40	Matthew Gardiner , Anna Oelsch, Simon Schmid, Alexandre Bezri, Dan Wilcox, Anne Wichmann and Miller Puckette (Ars Electronica Futurelab, Austria)	Making origami musical instruments
14:40-15:00	Matthias Weber and Jiangmei Wu (Indiana University, United States)	Geometric Constructions of Bifoldable Polyhedral Complexes

Robotics (I) Chair: A/Prof Cynthia Sung		
15:00-15:20	Matthew Gardiner , Simon Schmid, Anna Oelsch and Alexandre Bezri (Ars Electronica Futurelab, Austria)	Fold Sensing origami gestures - a case study with Kresling kinematics
15:20-15:40	Kevin Moreno Gata , Alex Seiter, Juan Musto, Judith Merz, Franziska Wieja, Georg Jacobs, Burkhard Corves and Martin Trautz (RWTH-Aachen University, Germany)	Design and development of a foldable and transformable hemispherical enclosure for robotic manufacturing
15:40-16:00	Jiang Lin , Lizi Deng, Huijuan Feng and Jian S. Dai (Southern University of Science and Technology, China)	Chiral origami robot with wheeled and quadcopter modes
16:00-16:30	Tea/Coffee break (ATC103)	
Robotics (II) Chair: Matthew Gardiner		
16:30-16:50	Yusuke Maeda , Shoma Sugisawa and Akitoshi Sakata (Yokohama National University, Japan)	A robotic origami folder for paper cranes
16:50-17:10	Duy Phuong Nguyen, Daphne Barretto , Darren Chiu, Elizabeth Cotter, Tuo Zhao, Jaime Fernandez Fisac and Glaucio H. Paulino (Princeton University, United States)	Miura-Bot: Modular Origami Robots for Self-Folding Miura-Ori Tessellations
17:10-17:30	Megan Ochalek , Manan Arya and Alexandra Haraszti (Stanford University, United States)	Adaptive Stiffness and Shape Control of a Modular Origami-Inspired Robot
17:30-17:50	Gabriel Unger and Cynthia Sung (University of Pennsylvania, United States)	Re-programmable Matter by Folding: Magnetically-Controlled Origami that Self-Folds, Self-Unfolds, and Self-Reconfigures On-Demand
End of Day 2		

Parallel Session II: Engineering 2 (Day 3)

Date: Thursday, 18 July 2024
 Time: 11:30-18:00
 Venue: EN202

Time	Presenter	Title
Engineering Other (VI) Chair: A/Prof Jiangmei Wu		
11:30-11:50	Simon Thissen, Yves Klett and Peter Middendorf (Foldcore GmbH, Germany)	Tessellation Manufacture by Sequential Quasi-Isometric Gradual Folding
11:50-12:10	Tuo Zhao and Glaucio Paulino (Princeton University, United States)	Programming Origami Instabilities via Topology Optimization
12:10-12:30	Qian Zhang, Jian Feng and Jianguo Cai (Southeast University, China)	Cut design of pop-up origami with fixed planar substrate
12:30-14:00	Lunch (ATC103)	
Engineering Other (VII) Chair: Dr Jianjun Zhang		
14:00-14:20	Kaori Kuribayashi-Shigetomi , Takashi Horiyama and Ryuhei Uehara (Hokkaido University, Japan; Japan Advanced Institute of Science and Technologies, Japan)	3D tissues using truncated octahedron blocks produced by Origami and micro/nano processing technologies
14:20-14:40	Mao Qin, Qiuyue Zhong, Runmin Qian, Qian Zhang and Jianguo Cai (Southeast University, China)	Integrated non-destructive development design of oblique cutting four pyramid frustum origami shading cover
14:40-15:00	Ke Liu and Glaucio Paulino (Peking University, China)	Symmetric self-folding of N-gon hyper origami
16:00-16:30	Tea/Coffee break (ATC103)	
17:30-18:00	Closing Ceremony	
End of Day 3		

Parallel Session III: Mathematics, Computation & History (Day 1)

Date: Tuesday, 16 July 2024
 Time: 11:30-17:50
 Venue: EN204

Time	Presenter	Title
Mathematics (I) Chair: Miyuki Kawamura		
11:30-11:50	Michael Assis (University of Melbourne, Australia)	Folding Pi
11:50-12:10	Erik D. Demaine, Robert Lang, Klara Mundilova and Tomohiro Tachi (Massachusetts Institute of Technology, United States)	Analysis of Huffman’s Hexagonal Column with Cusps
12:10-12:30	Tonan Kamata , Takumi Shiota and Ryuhei Uehara (Japan Advanced Institute of Science and Technology, Japan)	A Characterization of the Overlap-free Polyhedra
12:30-14:00	Lunch (ATC103)	
Mathematics (II) Chair: Ryuhei Uehara		
14:00-14:20	Kazuki Matsubara and Chie Nara (Saitama University, Japan)	Continuous flattening of quadrangular prisms with all edges rigid except one
14:20-14:40	Chie Nara (Meiji university, Japan)	Continuous flattening of the surface of regular star-polyhedra
14:40-15:00	Manami Nijima (JVCKENWOOD Corporation, Japan)	On Beloch’s curve that appears when solving real cubics with origami

Mathematics (III) Chair: A/Prof Kaori Shigetomi		
15:00-15:20	Travis Nolan (Southern Methodist University, United States)	22.5-degree References via Continued Fractions
15:20-15:40	Ryuhei Uehara (Japan Advanced Institute of Science and Technology, Japan)	A survey of rep-cube
15:40-16:00	Yoshikazu Yamagishi (Ryukoku University, Japan)	Star unfolding, source unfolding, and the farthest point mapping on the 4-cube
16:00-16:30	Tea/Coffee break (ATC103)	
Mathematics (IV) Chair: Dr Mike Assis		
16:30-16:50	Tianhao Zhang and Ken'Ichi Kawaguchi (Meijo University, Japan)	Preliminary research on the bending behavior of curved origami in shape determination
16:50-17:10	Robert Geretschläger (BRG Kepler, Austria)	Finding Solutions to Origami Boundary Value Problems with Edges of Platonic Solids
17:10-17:30	Hussein Nassar and Andrew Weber (University of Missouri, United States)	Asymptotically-isometric deformations of periodic piecewise-smooth surfaces
17:30-17:50	Hiroko Murai (Nara Women's University, Japan)	Some applications of topology on origami
End of Day 1		

Parallel Session III: Mathematics, Computation & History (Day 2)

Date: Wednesday, 17 July 2024
 Time: 11:30-18:10
 Venue: EN204

Time	Presenter	Title
Computation (I) Chair: Prof Tomohiro Tachi		
11:30-11:50	Hugo Akitaya, Erik D. Demaine and Jason S. Ku (National University of Singapore, Singapore)	Computing Flat-Folded States
11:50-12:10	Michael Assis (University of Melbourne, Australia)	An origami Universal Turing machine design
12:10-12:30	Wojtek Burczyk (Artist, Portugal)	A Layering Algorithm for Flat Modular Origami
12:30-14:00	Lunch (ATC103)	
Computation (II) Chair: Prof Jun Mitani		
14:00-14:20	Lily Chung, Erik D. Demaine , Martin Demaine, Jenny Diomidova, Jayson Lynch, Klara Mundilova and Hanyu Zhang (Massachusetts Institute of Technology, United States)	Folding a Strip of Paper into Shapes with Specified Thickness
14:20-14:40	Daniel Feshbach , Wei-Hsi Chen, Daniel Koditschek and Cynthia Sung (University of Pennsylvania, United States)	Kinegami: Open-source Software for Creating Kinematic Chains from Tubular Origami
14:40-15:00	Wessel van der Heijden, Irina Kostitsyna and Jason S. Ku (National University of Singapore, Singapore)	Equilateral triangle map folding

Computation (III) Chair: Dr Mike Assis		
15:00-15:20	Yiyang Jia and Jun Mitani (Seikei University, Japan; University of Tsukuba, Japan)	Valid Boundary Orders in Principal Diagonal Grid Patterns via Simple Folds
15:20-15:40	Jason S. Ku , Akira Terao and Kenji N. Terao (National University of Singapore, Singapore)	An Algebraic Approach to Layer Ordering Constraints for Origami Flat-Foldability
15:40-16:00	Yusuke Maeda , Hiroki Tabata, Naruya Suzuki and Yuji Nakajima (Yokohama National University, Japan)	An Origami Simulator for Papers with Nonzero Thickness and Its Application to Support Folding Nonelementary Origami Works
16:00-16:30	Tea/Coffee break (ATC103)	
Computation (IV) Chair: Dr Robert Lang		
16:30-16:50	Chihiro Nakajima (Tohoku Bunka Gakuen University, Japan)	An Efficient Enumeration of Flat-Foldings: Study on Random Single Vertex Origami
16:50-17:10	Koji Ouchi, Hideo Komatsu and Ryuhei Uehara (Japan Advanced Institute of Science and Technology, Japan)	Efficient enumeration of rectangles in origami design
17:10-17:30	Sora Seshima and Jun Mitani (University of Tsukuba, Japan)	Shape Modeling of Developable Surfaces with a Curve Crease by Extending the Handle Curve Approach
17:30-17:50	Ryuhei Uehara (Japan Advanced Institute of Science and Technologies, Japan)	Optimal Simple Fold-and-Cut of a Polygonal Line
17:50-18:10	Brandon Wong and Erik D. Demaine (Massachusetts Institute of Technology, United States)	Algorithmic transitions between parallel pleats
End of Day 2		

Parallel Session III: Mathematics, Computation & History (Day 3)

Date: Thursday, 18 July 2024
 Time: 11:30-18:00
 Venue: EN204

Time	Presenter	Title
History Chair: Clare Chamberlain		
11:30-11:50	Koshiro Hatori (Japan Origami Academic Society, Japan)	Pseudohistories of the origin of origami in Japan and Europe
11:50-12:10	Eiko Matsuura (Japan Origami Academic Society, Japan)	“Origami” as a Universal Term: Akira Yoshizawa’s Perspective
12:10-12:30	Adam Woodhouse and Joseph Munro (British Origami Society / University of Essex, United Kingdom)	Decision making in an Origami Archive – A story of the British Origami Society Library
12:30-14:00	Lunch (ATC103)	
Demonstration (I) Chair: Winnie Leung		
14:00-15:00	Jun Maekawa (Origami artist, Japan Origami Academic Society, Japan)	Making some geometric models
Demonstration (II) Chair: Sukanya Deshmukh		
15:00-15:30	Matthew Elvey Price (Independent, Australia)	Interlocking modular origami (wireframe) design with geometry creation and optimisation tools
15:30-16:00	Koya Narumi and Tomohiro Tachi (Keio University, Japan)	Inkjet 4D print
16:00-16:30	Tea/Coffee break (ATC103)	

Demonstration (III) Chair: Sukanya Deshmukh		
16:30-17:30	Raymond Feng (Monta Vista High School)	Principles and Applications of Kusudama Design
17:30-18:00	Closing Ceremony	
End of Day 3		

Parallel Session IV: Design & Education (Day 1)

Date: Tuesday, 16 July 2024
 Time: 11:30-17:30
 Venue: EN205

Time	Presenter	Title
Design Theory Chair: Dr Jason Ku		
11:30-11:50	Brandon Wong (MIT, United States)	New techniques in hex pleating for representational origami design
11:50-12:10	Madonna Yoder (Gathering Folds, United States)	Symmetry Requirements and Design Equations for Origami Tessellations
12:10-12:30	Mu-Tsun Tsai and Robert J. Lang (langorigami.com, United States)	On the Constructions of Generalized Offset Pythagorean Stretch Patterns
12:30-14:00	Lunch (ATC103)	
Tessellations (I) Chair: Winnie Leung		
14:00-14:20	Sukanya Deshmukh and Michael Assis (RMIT University, Australia; University of Melbourne, Australia)	Exploring criteria for designing novel waterbomb tessellations using triangular convex polygons
14:20-14:40	Mamoru Doi (Independent Researcher, Japan)	Flat-back 3D gadgets in origami extrusions completely downward compatible with the conventional pyramid-supported 3D gadgets
14:40-15:00	Madonna Yoder (Gathering Folds, United States)	Hybrid Hexagon Twist Interface

Tessellations (II) Chair: Benjamin Parker		
15:00-15:20	Tetsuya Yoshida (Nara Women's University, Japan)	Generating Smocking Patterns of Twist Folds for Clothing Design
15:20-15:40	Tetsuya Yoshida and Misa Tada (Nara Women's University, Japan)	Twist Fold Modules for Combinatorial Design of Petaloid Smocking in Clothing
15:40-16:00	Tetsuya Yoshida and Ayako Nakanishi (Nara Women's University, Japan)	Visualizing Petaloid Smocking based on Rotation of Decorations and Pleat Length
16:00-16:30 Tea/Coffee break (ATC103)		
Tessellations (III) Chair: Madonna Yoder		
16:30-16:50	Yohei Yamamoto and Jun Mitani (University of Tsukuba, Japan)	Comparing Twist Pattern Design Method and Design Methods of Primal-Dual Tessellations
16:50-17:10	Jiangmei Wu (Indiana University, United States)	Fabric Origami Tessellation: From Sewing Patterns to Crease Patterns
17:10-17:30	Benjamin DiLeonardo-Parker (Ben Parker Studio, United States)	A Systematic Notation to Pleat Intersection Operations
End of Day 1		

Parallel Session IV: Design & Education (Day 2)

Date: Wednesday, 17 July 2024
 Time: 11:30-18:10
 Venue: EN205

Time	Presenter	Title
Education (I)		
Chair: Thais Regina Ueno Yamada		
11:30-11:50	Norma Boakes (Stockton University, United States)	Exploring participant perspectives through a collaborative art project in a university origami mathematics course
11:50-12:10	Carolina Gracioli (São Paulo State University (UNESP), Brazil)	Origami and Video Production in Mathematics Education
12:10-12:30	Carolina Gracioli and Franciele Teixeira (São Paulo State University (UNESP), Brazil)	Euclidean, Spherical and Origami Geometry: possibilities in Mathematics Education
12:30-14:00	Lunch (ATC103)	
Education (II)		
Chair: Norma Boakes		
14:00-14:20	Rebecca Ottinger, Kristin Komatsubara, Perla Myers , Lisa Smith and Anna Walsh (University of San Diego, United States)	Enhancing Elementary Education: Enhancing the Teaching of Visuospatial Skills through Professional Learning and Implementation of a Unique Origami Curriculum
14:20-14:40	Tiina Kraav and Anne Rudanovski (University of Tartu, Estonia)	Educational Origami: The Design and Implementation of the Course 'Mathematical Paper Folding' in Upper Secondary School
14:40-15:00	Hisae Miyauchi (University of Tsukuba, Japan)	Exploring Origami's Impact: Nurturing Spatial Skills to Enhance STEM Access among Individuals with Blindness

Education (III) Chair: Prof Perla Myers		
15:00-15:20	Laure Ninove (UCLouvain, Belgium)	Approaching proof in geometry by folding problems with pre-service middle school mathematics teachers
15:20-15:40	Larissa S. Novelino and Glaucio H. Paulino (Rice University, United States; Princeton University, United States)	Simplifying the Fold-and-One-Cut Problem: A Pedagogical Approach for Origami Engineering Education
15:40-16:00	Jacoliene van Wijk , Anna Shvarts, Bos Rogier and Michiel Doorman (Utrecht University, Netherlands)	Engaging secondary school students in building formulas based on mathematical folding
16:00-16:30	Tea/Coffee break (ATC103)	
Education (IV) Chair: Laure Ninove		
16:30-16:50	Kaori Shigetomi (Hokkaido University, Japan)	Critical thinking class using Origami
16:50-17:10	Thais Regina Ueno Yamada (São Paulo State University (UNESP), Brazil)	The use of cutting and folding techniques in the creative process by Arts and Product Design students
17:10-17:30	Anna Walsh, Perla Myers , Kristin Komatsubara and Rebecca Ottinger (University of San Diego, United States)	Mathigami, 6OSME Documentary, and Learning Visual Spatial Teaching in 2023
17:30-17:50	Perla Myers , Lisa Smith, David Geary, Alora Li, Rebecca Ottinger, Vitaliy Popov and Zehra Unal (University of San Diego, United States)	Origami and Mathematics in the classroom: Increasing Spatial Vocabulary and Decreasing Mathematics Anxiety through Paper Folding
17:50-18:10	Robert Fletcher and Michael Assis (University of Melbourne, Australia)	Vision impaired origami teaching and folding - a Melbourne experience
End of Day 2		

Parallel Session IV: Design & Education (Day 3)

Date: Thursday, 18 July 2024
 Time: 11:30-18:00
 Venue: EN205

Time	Presenter	Title
Design Other (I) Chair: Matthew Gardiner		
11:30-11:50	Daniel Brown and Jason S. Ku (National University of Singapore, Singapore)	Folding all 4 × 4 Rotationally-Symmetric Diagonal-Grid 2-Color Patterns
11:50-12:10	Wenwu Chang , Siheng Yu and Jinrui Zhang (PUTUO Institute of Modern Educational technology, China)	From A4 paper to Tangram Puzzles: The Math Behind the Paper Folding
12:10-12:30	Naddhawara Mahanukul , Stuart Favilla and Erica Tandori	Pop-up multisensory science books and STEM exhibition design for people living with low vision, blindness, and diverse needs.
12:30-14:00	Lunch (ATC103)	
Design Other (II) Chair: Mike Assis		
14:00-14:20	Mamoru Doi (Independent Researcher, Japan)	Rotational origami of polyhedral type and reduction of flanges
14:20-14:40	Anne Rudanovski and Tiina Kraav (Pallas University of Applied Sciences, Estonia)	The multifaceted dialogue initiated by the origami-based artistic process
14:40-15:00	Jun Mitani (University of Tsukuba, Japan)	Pillow Box Design

Design Other (III) (Workshop: 45mins)		
Chair: Winnie Leung		
15:00-16:00	Goran Konjevod (organicorigami.com, United States)	Folding curves over pleats
16:00-16:30	Tea/Coffee break (ATC103)	
Design Other (IV)		
Chair: Goran Konjevod		
16:30-16:50	Stephen Lerangtes and Winnie Leung (Sydney Origami Inc, Australia)	Topological Transformation of the Miura Ori Crease Pattern
16:50-17:10	Adam Woodhouse, Abdellah Salhi and Joseph Munro (University of Essex, United Kingdom)	Exploring Collapsible Origami Structures for Beehives, Portable Toilets and Wheelchairs - Challenges and Opportunities in Design Innovation
17:10-17:30	Frances Winters (University of New England, Australia)	Folding investigations led to the design of multiplanar tessellations linked by circular 4 colouring permutations. Folding across this array of geometric coloured glyphs results in 3D enantiomorphic, non-numeric "dice"
17:30-18:00	Closing Ceremony	
End of Day 3		

List of Posters and Exhibits

Venue: ATC103 Date: 16-18 July

Authors	Title
Tetsuya Yoshida (Nara Women's University, Japan)	Generating Strings from Crease Patterns for Facilitating the Folding of Petaloid Smocking
Mamoru Doi (Independent Researcher, Japan)	Triangle-supported negative 3D gadgets in origami extrusions with a canonical correspondence to flat-back positive 3D gadgets
Mamoru Doi (Independent Researcher, Japan)	Truncated 3D gadgets in origami extrusions
Mamoru Doi (Independent Researcher, Japan)	A variational approach to the paper bag problem for flanged origami packages folded from dihedrons of convex polygons
Ren Hashiguchi, Chisaki Kitajima and Kazuya Saito (Kyushu University, Japan)	Designing of a Novel Umbrella Based on the Bricard Linkage
Malcolm Smith (United States)	Amplifying the Kinematics of Origami Mechanisms Using Spring Joints
Gabriel Unger (University of Pennsylvania, United States)	Re-programmable Matter by Folding: Magnetically-Controlled Origami that Self-Folds, Self-Unfolds, and Self-Reconfigures On-Demand
Madonna Yoder (Gathering Folds, United States)	Origami Exhibits
Yohei Yamamoto (University of Tsukuba, Japan)	Origami Exhibits
Jun Mitani (University of Tsukuba, Japan)	Origami Exhibits

Jiangmei Wu (Indiana University, United States)	Origami Exhibits
David Bershadsky (Princeton University, United States)	Origami Exhibits
Alfonso Parra Rubio (Massachusetts Institute of Technology, United States)	Origami Exhibits
Markus Holste (Aalto University, Finland)	Origami Exhibits
Brandon Wong (Massachusetts Institute of Technology, United States)	Origami Exhibits
Miia Palmu (VTT Technical Research Centre of Finland, Finland)	Origami Exhibits
Akito Adachi, Seri Nishimoto, Kanata Warisaya and Tomohiro Tachi (The University of Tokyo, Japan)	Origami Exhibits
Darryl Bedford (Drawstring Origami, UK)	Origami Exhibits
Matthew Gardiner (Ars Electronica Futurelab, Austria)	Origami Exhibits
Malcolm Smith (United States)	Origami Exhibits
Nupur Udipi (Georgia Tech, United States)	Origami Exhibits
Tomohiro Arimune and Yuki Kobayashi (Osaka Metropolitan University, Japan)	Origami Exhibits

Rupert Maleczek (University of Innsbruck, Austria; The University of Tokyo, Japan)	Origami Exhibits
Yoshinobu Miyamoto (Aichi Institute of Technology, Japan)	Origami Exhibits
