Preliminary program (v2) Dagstuhl Seminar 21471; Geometric Modeling: Interoperability and New Challenges

November 21 – 26, 2021. (Note: CET is the time zone used) (Version 7 – November 23, 2021. 9AM CET)

Monday 22/11	**Session**	**Talks**	
09:00 am-09-15 am	100 Introduction		
09:15 am -10:45 am	110 Fast forward 1	Participant presentations 2 minutes each	
10:45am-11:00am	120 Coffee break		
11:00 am -11:40am	130 Mixed 1	Tom Grandine	If I could do it over, I would . . .
Lunch break	140 Lunch		
02:00pm - 02:40pm	150 Splines 1	Rimvydas Krasauskas (Vilnius University, LT)	Cyclidic splines and kinematic interpretation of quaternionic curves/surfaces
		Jiri Kosinka (University of Groningen, NL)	Triangular Splines: CAD and Quadrature
02:40pm – 03:00pm	155 Fast forward 2	Fast forward for those not able to present in the morning, 2 minutes each	
03:00pm - 03:30pm	160 Coffee break		
03:30pm - 04:30pm	170 Additive 1	Stefanie Hahmann (INRIA Grenoble Rhône-Alpes, FR)	Geometric construction and fabrication of auxetic metamaterials
		Sylvain Lefebvre (LORIA & INRIA – Nancy, FR)	Generating oriented structures and trajectories within part volumes
		Gershon Elber (Technion – Haifa, IL)	Volumetric Representations: Design, Analysis, Optimization, and Fabrication of Porous/Heterogeneous Artifacts
04:30pm - 05:30pm	180 Additive 2	Xiaoping Qian (University of Wisconsin – Madison, US)	Topology Optimization for Additive Manufacturing
		Elissa Ross (Metafold 3D – Toronto, CA)	3D printed metamaterials in industry
		Yongjie Jessica Zhang (Carnegie Mellon University – Pittsburgh, US)	An Isogeometric Analysis Based Topology Optimization Framework for Additive Manufacturing of 2D Cross-Flow Heat Exchangers
05:30pm -05:50pm	190 Discussions		

Tuesday 23/11	**Session**	**Talks**	
09:00am - 10:40am	210 Geometric machine learning 1	Arturs Berzins (SINTEF – Oslo, NO)	Exploring challenges in shape analysis, generation, and optimization with neural networks
		Yang Liu (Microsoft Research – Beijing, CN)	Deep Implicit Moving Least-Squares Functions for 3D Reconstruction
		Juyong Zhang (Univ. of Science & Technology of China – Anhui, CN)	A Deep Learning Approach for Non-rigid Registration
		Rene Hiemstra, Univ Hannover	Deep learning of quadrature for implicitly defined domains
			Spline discussion following talks on the Monday
10:40am - 11:00am	220 Coffee break		
11:00am - 12:00am	230 Curves, Surfaces, Volumes 1	Ulrich Reif (TU Darmstadt, DE)	ABC-Surfaces
		Péter Salvi (Budapest University of Technology and Economics, HU)	I-patch - An implicit representation for multi-sided surfaces
		Xiaohong Jia (Chinese Academy of Sciences)	Complete Classification and Efficient Determination of Arrangements Formed by Two Ellipsoids
Lunch Break	240 Lunch		
02:00pm - 03:00pm	250 Discussions		
03:00pm - 03:30pm	260 Coffee break		
03:30pm – 04:30pm	270 Geometric machine learning 2	Ilke Demir (Intel – Hermosa Beach, US)	AI and Beyond in the World's Largest 3D Capture Stage
		Qi-xing Huang (University of Texas)	Geometric Regularizations and Representations for Neural 3D Synthesis
		Wenping Wang (Texas A&M University)	Studies on Neural Implicit Surface Modeling
04:30pm - 05:50pm	280 Curves, Surfaces, Volumes 2	Géraldine Morin (IRIT – University of Toulouse, FR)	Tubular parametric volume objects
		Tamas Várady (Budapest University of Technology and Economics, HU)	Multi-sided surface patches over curved, multi-connected domains
		Gudrun Albrecht (Universidad Nacional de Colombia – Medellin, CO)	On the new class of spatial PH B-Spline curves
		Ron Goldman (Rice University – Houston, US)	Subdivision Mod M

Wednesday 24/11	**Session**	**Talks**	
09:00am – 10:20pm	310 IGA 1	Carlotta Giannelli (University of Firenze, IT)	Recent advances on adaptive isogeometric methods with hierarchical spline models
		Bert Jüttler (Johannes Kepler Universität Linz, AT)	Numerical integration on trimmed planar domains via high-order transport theorems for implicit curves
		Carla Manni (University of Rome "Tor Vergata", IT)	Outlier-free isogeometric discretizations
			Reserve slot
10:20am – 10:40am	320 Coffee break		
10:40am – 12:00pm	330 IGA 2	Ernst Rank (TU München, DE)	Interoperability of Geometric Models and Numerical Analysis by Immersed Boundary Methods
		Espen Sande (EPFL – Lausanne, CH)	Explicit error estimates for isogeometric discretizations of partial differential equations
		Giancarlo Sangalli (University of Pavia, IT)	C^1 isogeometric spaces
		Deepesh Toshniwal (TU Delft)	Quadratic unstructured bivariate and trivariate splines
	350 Lunch break		
02:00pm – 02:40pm	360 Discussion		
02:40pm - 03:00pm	365 Award	Gregory Award	
03:00pm - 03:30pm	370 Coffee break		
03:30pm - 05:10pm	380 Design Optimization	Konstantinos Gavriil (SINTEF – Oslo, NO)	Computational Design of Cold Bent Glass Façades
		Panagiotis Kaklis (The University of Strathclyde – Glasgow, GB)	Supporting Expensive Physical Models with Geometric Moment Invariants to Accelerate Sensitivity Analysis for Shape Optimisation
		Helmut Pottmann (KAUST – Thuwal, SA)	Paneling architectural freeform surfaces: Design optimization for fabrication
		H (Alicia) Kim (UC – San Diego, US)	Level set topology optimization
		Jeff Poskin (The Boeing)	Mixed Surrogate Modeling Methods in Multidisciplinary Design Optimization
05:10pm-05:50pm	Mixed 2	Suraj R. Musuvathy (nTopology –,US)	Implicit Modeling : Driving A CAD Renaissance
		Jörg Peters (University of Florida –, US)	Polyhedral net spline modeling

Thursday 25/11	**Session**	**Talks**	
09:00am – 10:40pm	410 Splines 2	Tom Lyche (University of Oslo, NO)	Construction of C2 Cubic Splines on Arbitrary Triangulations
		Hendrik Speleers (University of Rome "Tor Vergata", IT)	Smooth polar spline representations suited for design and analysis
		Falai Chen (Univ. of Science & Technology of China – Anhui, CN)	Constructing planar domain parameterization with HB-splines via quasi-conformal mapping
		Maria Lucia Sampoli (University of Siena, IT)	Geometric interpolation of ER frames with G^2 Pythagorean-hodograph curves of degree 7
		Francesco Patrizi (Max-Planck, Munich)	Effective grading refinement for locally linearly independent LR B-splines
10:40am – 11:00am	420 Coffee break		
11:00am – 12:00am	430 Mixed 3	Tae-wan Kim (Seoul National University, KR)	Efficient Multimodal Belief Propagation for Robust SLAM using Clustering-Based Reparameterization
		Tor Dokken (SINTEF – Oslo, NO)	On the effect of scaled B-splines for different approaches to locally refined splines
			Reserve slot
	450 Lunch break		
02:00pm - 02:40pm	460 Splines 3	Malcolm A. Sabin (Numerical Geometry Ltd. – Cambridge, GB)	CAD Model Details via Curved Knot Lines and Truncated Powers
		Nelly Villamizar (Swansea University, GB)	Multivariate superspline spaces
02:40pm – 03:00pm	465 Mixed 4	Hiromasa Suzuki (University of Tokyo, JP)	Segmentation of X-Ray CT Volume of Binned Parts by Constructing Morse Skeleton Graph of Distance Transform
			Reserve slot
03:00pm - 03:30pm	470 Coffee break		
03:30pm - 03:50pm	Geometric Machine learning 3	Nicolas Mellado (CNRS – Toulouse, FR)	Scale-Space for Machine Learning on 3d Point Clouds
03:50pl – 05.30pm	480 Discussion		

Friday 26/11		
09am-11:40 am	510 Follow up	Follow-up of the meeting : • Documentation + Written parts. • Special issue ? • Discussion for next committee —> application time : deadline April 22 ? for 2024