

ISFA 2026 TECHNICAL SESSION PROGRAM

JULY 20, 2026 (Monday)

15:10 - 17:10 | Technical Session A

Cutting and machine tools		Robotics – Embodied intelligence		Lean and sustainable manufacturing		Additive manufacturing sensing and control	
Track 4 (1) Chair: Norikazu Suzuki (Keio University) Co-Chair: Douglas Bristow (Missouri S&T)		Track 5 (1) Chair: Hidekuni Wakamatsu (Nabika University) / Masao Nakagawa (Doshisha University) Co-Chair: Shunshun Dong (Boeing)		Track 7 (1) Chair: Toru Eguchi (Hiroshima University) Co-Chair: Daisuke Morita (Osaka Metropolitan University)		Track 3 Chair: Yasuhiko Kakimura (Keio University) Co-Chair: Peng Wang (Case Western Reserve University)	
0703	On the Anisotropic Distribution of Material Microstructure of Surface Layer Induced by Grinding Process (Jieqiang Deng, Qinglong An, Toru Kizaki, Keisuke Nagato and Naohiko Sugita)	9977	Robotics Enabled Bolt Looseness Inspection Using Percussion Method (Yuh-Kuang Ying, Handi Ben Amer, Gangqing Song and Zheng Chen)	8237	A Proposal for Systemic Optimization Method Considering Energy Flows in Iron and Steel Production Systems (Masanori Hamada and Nobuhata Fujii)	0572	Evaluation of Pore Distribution in Additive Manufacturing Parts by Neutron Phase Imaging (Yuki Kambe, Daisuke Kono, Yoshichika Seki and Masahiro Hino)
2349	4d-Var-Based Inverse Estimation of Mechanical Boundary Parameters in Flexible Multibody Model with Application to Virtual Machine Tools (Kota Ito and Shuntaro Yamaki)	1388	Surrogate-Assisted Integrated Task and Placement Planning for Robotic Shelf-Stocking Using Rollout-Based Lookahead (Shunpei Mizukawa, Tatsushi Nishi and Tomofumi Fujiwara)	0859	Lean Procurement under Sustainability Investments: a Budget-Constrained Joint Newsvendor Model with Demand Interactions and Reverse Factoring (Andy Wu)	0681	Mosaic Mobile Object Segmentation under Adverse Imaging Conditions for Rapid LPRF Keyhole Behavior Characterization (Samir Mathiesen, Kyle Mumm, Carter Taylor and Jan Cao)
1270	Proposal of a Thermal Test for Machine Tool Volumetric Accuracy by a Six-Degrees-of-Freedom Laser Measurement System (Son Nguyen Hoang and Soichi Ibaraki)	1251	Design and Characterization of a Compliant Soft Wrist Joint as a Passive Mechanical Filter for Contact-Rich Robotic Manipulation (Amaliah Banerjee, Yogesh Kumar, Sahithi Velloru, Karishma Patnaik and Wenlong Zhang)	8206	Black-Box Optimization of Priority Dispatching Rules for Job-Shop Scheduling (Chihito Matsunaga and Toru Eguchi)	1826	High-Fidelity Melt Pool Temperature Profile Estimation for Directed Energy Deposition Using Snapshot Hyperspectral Imaging (Wenpan Li, Guangrong Hu, Rujing Zha, Jihoon Jeong and Ping Guo)
2711	Minimal-Order State Space Representations of Machining Models for Efficient Dynamics and Control Analysis (Woraphut Kommaneeasing, Tao-Chin Tsao, Shyh-Leih Chen and Niloufar Eslafandi)	3081	Validation of Robot Arm Motion Planning Based on RRT with Placement Planning in a Unity Environment (Ryosuke Suzuki, Tatsushi Nishi, Tomofumi Fujiwara and Mi Kamejima)	3173	A Personnel Allocation Method in Back-Office Operations Considering Career Path Allocation (Nobuya Hayata, Nobuhata Fujii, Noriaki Uenomachi and Kazuhiko Uehara)	9628	Towards Repeatable Track Deposition in Digital Glass Forming Operations (Cindy Hoang, Puja Paul, Balraj Thean, Elizabeth Richter, Edward Kinzel and Robert Landers)
2884	Impact of Surface Regularity in Hard Milling on Tribological Performance of Hardened Steel (Zongren Ren and Hayato Yoshikawa)	2281	Grip-Less Ball Handling by a Small Humanoid Robot Mounted on an AMR Using Coordinated Dual-Arm Motion During Mobile Transport (Yang Wu, Yasuaki Omi, Masao Nakagawa and Toshiaki Hasegaki)	6436	Optimization of Electrical Equipment Inspection Route Using Obstacle-Aware Traveling Salesman Problem (Tatsuhiko Sakaguchi and Sena Tanaka)	4752	Fast 360° 3D Metrology for Directed Energy Deposition (James Taylor, Jiazhong Wang, Guangchao Hu, Zhan Chen, Ping Guo and Florian Wilimbert)
8031	Effect of Differences in the Cooling Liquid Target Temperature on Turning Center Thermal Behavior under Environmental Temperature Changes (Qin Qia and Naohiro Inoue)	6192	Design of Automatic Telescopic Gripper with Adaptive Perceptual and Task Planning for Automated Shelf-Stocking (Shoya Yamamoto, Shun Ueno, Tomofumi Fujiwara and Tatsushi Nishi)	4397	Job Shop Scheduling via LightWeight Transformer-Based Deep Reinforcement Learning (Toshiya Shinjo and Toru Eguchi)	5082	Bayesian Optimization Method for Throughput Maximization of Semiconductor Manufacturing Cluster Tools (Jun-Ho Lee and Hyun-Jung Kim)

JULY 21, 2026 (Tuesday)

15:10 - 16:30 | Technical Session B

Cutting and machine tools		Robotics – Embodied intelligence		Lean and sustainable manufacturing	
Track 4 (2) Chair: Ryuta Sato (Hagway University) Co-Chair: Jian Cao (Northwestern University)		Track 5 (2) Chair: Hidekuni Wakamatsu (Nabika University) / Masao Nakagawa (Doshisha University) Co-Chair: Robert Landers (University of Notre Dame)		Track 7 (2) Chair: Nobuhata Fujii (Kobe University) Co-Chair: Haruhiko Suwa (Saitama University)	
3919	Evaluating Uncertainty in Vision-Based Measurements for Machine Tool Thermal Error Monitoring (Shunsuke Ohmoe, Teru Yamagawa and Daisuke Kono)	3111	Collaborative Sequential Surface Patterning through Cascaded Ergodic Control and Automatic Task Allocation (Malachi Landis, Ping Guo, Amaliah Taylor and Todd Murphy)	7666	Development of Energy Network Model for Iron and Steelmaking Simulator - Integration of Energy Flow in B&B&F, RH-EAF, and Scrap-EAF Routes - (Ryosuke Nakagawa and Haruhiko Suwa)
7332	Evaluation of Tapping Performance Based on Tapping Force Analysis for Workpiece Materials and Cutting Fluids (Takashi Matsumoto, Tetsu Usui, Yuki Tagawa, Shouichi Tamura, Ryoosuke Sasaki and Ayaka Hirukawa)	8111	Building Robot Brains with FoundationModel: Auto-Labeling and Reasoning About Spatial Movement from Robot Videos (Boyi Li)	2487	Time-Based Management Revisited: How an Indian Manufacturing Company Achieved Salient Growth After the Economic Liberalization (Masami Shimizu)
4988	Towards Automation of Manual Polishing: Characterizing the Relationship Between Polishing Force and Surface Roughness (Takahiro Kaga and Anthony Beaucamp)	6796	Optical Flow-Based Estimation of Crane Load Sway and Orientation (Naoto Murakami, Ryoosuke Kuroki, Shintaro Sasai, Hiroshi Sakurai, Masaki Okubo, Kazufumi Kudama, Hideaki Takahashi, Yotaro Kakehi and Naoki Uchiyama)	1901	Packformer: a Multimodal Transformer Framework with Vision-Language Alignment for Industrial Work Operation Recognition in IoT-Enabled Smart Logistics (Qianyu Zhou, Yang Zhang, Farhad Inani and Jiong Tang)
1597	Residual Stress Formation and Redistribution in Hybrid Drilling Processes: a Numerical Study (Chenming Liu and Peng Wang)	9816	Skillful Operation for Musical Saw Performance Using Coordinated Dual-Arm Motion of a Humanoid Robot Based on Sound Feedback Control (Liu Yuan Man, Santa Kenko, Nakagawa Masao and Hingaki Toshiaki)	1321	A Multi-Period Multi-Objective Optimization Model for Sustainable Supply Chain Network with Circular Economy and Renewable Energy (Mit Sumaya Akter and Tatsushi Nishi)

JULY 22, 2026 (Wednesday)

9:00 - 10:40 | Technical Session C

Manufacturing systems and automation		Cutting and machine tools		AI technologies in manufacturing processes	
Track 2 (1) Chair: Yoshitaka Iwata (Osaka University) Co-Chair: Tatsushi Nishi (Ritsumeikan University)		Track 4 (3) Chair: Daisuke Kuroki (Kyoto University) Co-Chair: Ping Guo (Northwestern University)		Track 6 (1) Chair: Daisuke Kuroki (Kyoto University) Co-Chair: Robert Gao (Case Western Reserve University)	
2536	Real-time Process Control of a Robotic Disk Grinding System (Philip Obudun and Douglas Bristow)	5890	A Design Method for Acceleration Commands to Avoid Current Saturation (Takatsumi Kyo and Takatoshi Yamazaki)	0098	LLM Agent-Driven Control Tower for Cross-Domain Optimization of Manufacturing Supply Chain (Yang Zhang, Farhad Inani and Jiong Tang)
2776	Adaptive Wrench Allocation for Two-Point Contact Non-Prehensile Planning (Max Gao, Karishma Patnaik, Binli Searly and Wenlong Zhang)	6691	Evaluation of Material Removal Characteristics in Force-Controlled Nano-Abrading of Single-Crystal Silicon (Riko Asada and Anthony Beaucamp)	5355	Geometry Prediction of Cone-Shaped Incremental Sheet Forming using a Novel ShVid Deep-Learning Model (Zongze Li, Kazuki Kamekita, Robert Landers, Akira Isogai and Ryuta Sato)
3043	Admittance-Based Surface Alignment for Human-in-the-Loop Robotic Visual Inspection (Antara Banerjee, Colin Acton and Xu Chen)	7305	Research on the Applicability of a Statistical Estimation Method to Thermal Deformation in End-Milling under Parameter Variations (Yue Yang, Koji Teramoto, Mengmeng Yang and Feng Zhang)	1293	Development of Anomaly Detection for Multi-Segment Tool Path in Friction Stir Welding Using Conditional VAE (Kazuma Wada, Kazuya Oda, Koji Murakami and Hanuhiko Suwa)
3916	Development of a Digital Twin System for Machine Tools Using VR: Research on the Estimation and Prediction of Cutting Power (Ayana Uesaka, Akiyo Hayashi and Yoshitaka Morimoto)	3702	Model Parameter Identification of Machine Tools Based on Actual Milling Data for Cutting Force Estimation (Junichi Kouguchi, Yuya Kawase, Shingo Tajima and Hayato Yoshikawa)	8876	LLM-Assisted Equipment Selection and Placement Planning with Self-Verifying Formulation Framework (Kazuki Uehara, Tatsushi Nishi and Tomofumi Fujiwara)
		7685	Periodic Interim Check of Machine Tool Volumetric Accuracy (Katsuo Ohnaka, Kouki Takeuchi, Soichi Ibaraki, Yosuke Taguchi and Masashi Yamaguchi)		

11:00 - 12:20 | Technical Session D

Manufacturing systems and automation		Cutting and machine tools		AI technologies in manufacturing processes	
Track 2 (2) Chair: Bettina M.T. Lin (National Yang Ming Chiao Tung University) Co-Chair: Kazuki Tanida (Sumitomo Heavy Industries (USA))		Track 4 (4) Chair: Anthony Beaucamp (Kito University) Co-Chair: Shuntaro Yamaki (Tokyo University of Agriculture and Technology)		Track 6 (2) Chair: Tatsuhiko Sakaguchi (Kindai University) Co-Chair: Daisuke Kuroki (Kobe University)	
4336	Indoor-Outdoor Consistency of Localization for AMRs Using Adaptive GMM Weighting by Real-Time Multiple Sensor Fusion (Kianguo Long, Hibiki Sasa, Masao Nakagawa and Toshiaki Hasegaki)	8019	Investigation of the Effect of Contact Condition of Damping Material on the Damping Characteristics of Fixtures (Takahito Kubota, Daisuke Kono and Atsushi Matsubara)	8700	Anomaly Detection in Friction Stir Welding Using Variational Autoencoder with Probe Temperature (Kazuya Oda, Koji Murakami and Hanuhiko Suwa)
0241	A Cooperative Task-Aware Manipulation Framework for Multi-Robot Systems Using Surrogate-Guided RRT in Smart Manufacturing (Mi Kamejima and Tatsushi Nishi)	4593	A Contouring Motion Command Design Technique to Suppress Residual Vibration by Natural Frequency Component Elimination Method (Hayato Otsuka, Naoki Fukaya and Ryuta Sato)	6487	R-Sipr: Region-Based Small-to-Large Point-Cloud Registration with Contrastive Learning (Yusen Wan, Zeyuan Chen, Qianshi Zou and Xu Chen)
5154	Development of Algorithms to Maximize Production Volume by Site Using Optimization Techniques (Kimito Masato, Iwata Yoshitaka and Wakamatsu Hidekuni)	9475	Automated Friction Characterization and Analysis of Machine Tool Feed Drive Systems (Hanaki Goto, Yasuhiko Kakimura and Naohiro Inoue)	4321	Automated Nonplanar Slicing for Robotic Additive Manufacturing via Voxelized Simulation and Data-Driven Volting (Tyler Nardi, Sean Rescanski, Jiong Tang and Farhad Inani)
3625	Hybrid Multi-Robot Navigation by Integrating Map-Based Global Planning and Navmesh-Based Local Control in Continuous Space (Masahiro Fujimoto, Tatsushi Nishi, Mi Kamejima and Tomofumi Fujiwara)	9889	Statistics-Based Strain Measuring Point Selection for Deformation Estimation of Thin-Walled Parts (Yu Yan, Koji Teramoto, Yue Yang, Nanao Shoji, Hiroki Matsumoto and Mengmeng Yang)	8271	Deep Learning-Enhanced LPRF Thermal Signature Forecasting Based on In-Situ Melt Pool Monitoring (Dongqing Yan, Yizong Zhang, Andre Forstot, Dong Liu, Wenjun Wang, Sina Malakpour Estaki, Zhaoguo Fan and Robert Gao)

13:30 - 14:50 | Technical Session E

Manufacturing systems and automation		Digital design and manufacturing		AI technologies in manufacturing processes	
Track 2 (3) Chair: Shun Tanaka (The University of Tokyo) Co-Chair: Xu Chen (University of Washington)		Track 1 (1) Chair: Keiichi Nakamoto (Tokyo University of Agriculture and Technology) Co-Chair: Junichi Kouguchi (Beckhoff Automation K.K.)		Track 6 (3) Chair: Daisuke Morita (Osaka Metropolitan University) Co-Chair: Jiong Tang (University of Connecticut)	
0096	A Hybrid Preprocessing Approach for Stamped Character Recognition Using 2d Texture and 3D Shape Features (Kodai Matsuda and Yusui Tsuboi)	4990	Deformation Simulation of Patterned Knit Fabrics Using a Stitch Shape Predictor (Yuki Hayashi, Hidefumi Wakamatsu and Yoshitaka Iwata)	5264	Generative Bayesian Filtering for Manufacturing State Estimation (Lei Cao, Sihang Feng, Jixin Yan, Tao Sun and Naresh Shi)
6019	Digital Twin-Driven Multi-Objective Framework for Atomic Workflow Dispatching Optimizing Left-Tail Demand via RS Trees and Interdependent Ego-Balancing (Tien-Pao Yu and Bettina M.T. Lin)	7853	Knitting Simulation Considering Yarn Supply Without Slack (Shunya Andachi, Hidefumi Wakamatsu, Yoshitaka Iwata and Yoya Yamada)	1617	Estimation Method for Cause of Machined Shape Errors in Five-Axis Machine Tools by a Machine Learning Model (Ryuta Takamura, Ryota Kawai and Ryuta Sato)
8682	A New Mixed-Integer Linear Programming Formulation for the Cyclic Synchronous Flow Shop Scheduling Problem (Shunji Tanaka and Satoshi Yano)	9348	Analysis of the Electrical Properties of Knitted Sensors for Wearable Devices (Takafumi Okawa)	8921	Operationalizing Foundation Agents in Manufacturing via Persistent Workflow Memory (Danny Hoang, David Gorsich, Matthew P. Casteller and Farhad Inani)
				9681	Federated Reinforcement Learning for Multi-Echelon Supply Chain Inventory Management (Kohei Toda, Ziang Liu and Tatsushi Nishi)

15:20 - 16:20 | Technical Session F

Manufacturing systems and automation		Digital design and manufacturing		Robotics – Embodied intelligence	
Track 2 (4) Chair: Akiyo Hayashi (Kanazawa Institute of Technology) Co-Chair: Zheng Chen (University of Houston)		Track 1 (2) Chair: Sumi Nishida (Kobe University) Co-Chair: Farhad Inani (University of Connecticut)		Track 5 (3) Chair: Masao Nakagawa (Doshisha University) Co-Chair: Soichi Ibaraki (Hiroshima University)	
9819	Ultrasonic Vibration-Assisted Chatter Suppression in Fixed-Fine Abrasive Robotic Polishing with a Five-Joint Closed-Link Robot (Yuan Tong, Masao Nakagawa and Toshiaki Hasegaki)	6437	Analyzing Structural Transformation in Machining Fixture Design Processes Using the FOPM Framework: Impact of High-Accuracy Analytical Calculations (Kaita Kuwahara, Satoru Kumagai, Kazuhiro Moriguchi and Shogo Kato)	8036	Real-Time Trajectory Generation for a Mobile Robot Circling Trees and Harvesting Fallen Fruits in Orchards (Ryoosuke Hono, Cuiyi Singa and Naoki Uchiyama)
5189	A Robot-Mounted Machine Vision System for Sub-Millimeter Accurate Localization of Scarce Line and Trim-Edges on Composite Parts (Mitchell Henderson, Tahsin Sajat Sanjay, Shunshun Dong and Shreyes Melotte)	8640	Proposal of a Graph Neural Network to Infer Operation Parameters in Die and Mold Machining (Hideaki Sarenchik, Shugo Usami and Keisichi Nakamoto)	8070	Verification of Stable Speed Based on Arm Posture in Actual Equipment and Simulation for Planning Goods-to-Person Operations Using Mobile Manipulators in Convenience Stores (Taketo Murakami, Tatsushi Nishi and Tomofumi Fujiwara)
6647	Active Control of Structural Temperature Field for Tilt-Angle Compensation in Machine Tools (Masahiro Murashima, Ryota Kobayashi, Shun Tanaka, Toru Kizaki and Naohiko Sugita)	6731	Rapid Topology Optimization via a Continually Trained Machine Learning Surrogate (Zhang Han and Edward Wang)	0845	Prediction of Positioning Errors Caused by Thermal Deformation of a Six-Axis Robot (Mihio Maki, Soichi Ibaraki and Tetsuya Matsushita)