

Proceedings of  
The 5th International Conference on Design Engineering and Science  
ICDES 2020  
Online << Kitakyushu, Japan, November 4-5, 2020

■ Program Schedule

November 4, Wed.

Room A	Room B
<b>Opening 10:20</b>	
<p><b>Session A1 10:30-11:50</b> <b>Design Education</b> Chair: Tamotsu MURAKAMI (The University of Tokyo)</p> <p>A11: Development of Training Method and New Materials for Novice Designers (Aiming at development of design ideas) Shigeo HIRANO (Tokyo City University / Artner Co. Ltd); Susumu KISE (Artner Co. Ltd); Sozo SEKIGUCHI (Artner Co. Ltd); Kazuya OKUSAKA (Artner Co. Ltd); Tsutomu ARAKI (Tsukuba University of Technology)</p> <p>A12: A Case Study of Introducing Learning Elements into A Mechanical Engineering Classroom (Utilizing Hands-on Materials and Small Workshops on Machine Elements and Design) Toshiharu KAZAMA (Muroran Institute of Technology)</p> <p>A13: Trial of Design Creativity Education Based on Consideration of Creativity Factors Tamotsu MURAKAMI (The University of Tokyo)</p>	<p><b>Session B1 10:30-11:50</b> <b>Design and Emotion</b> Chair: Takeo KATO (Keio University)</p> <p>B11: Mathematical Model of Emotions Associated with Novelty Hideyoshi YANAGISAWA (The University of Tokyo)</p> <p>B12: Kansei and Ergonomic Consideration on Slanted and Horizontal Car Seat Levers Masayuki KIKUMOTO (Toyo Seat Co., Ltd. / Hiroshima University); Yuichi KURITA (Hiroshima University); Shigekazu ISHIHARA (Hiroshima International University)</p> <p>B13: Comparative Culture Research on the Emotional Impact of Humanoid Robots (Comparing Japanese and other-nationalities participant responses to humanoid robot motion) Shinobu NAKAGAWA (Osaka University of Arts)</p>
<b>Lunch 11:50-13:00</b>	
<p><b>Special talk 13:00-14:00</b> Chair: Tamotsu MURAKAMI (The University of Tokyo)</p> <p>“Possibility of AI in Design and Manufacturing toward Next Decade”</p> <p>Yutaka MATSUO, Professor at RACE (Research into Artifacts, Center for Engineering) and TMI (Department of Technology Management for Innovation) The University of Tokyo</p>	
<b>Break 14:00-14:20</b>	
<p><b>Session A2 14:20-15:40</b> <b>Computer Aid for Design</b> Chair: Koki KIKUCHI (Chiba Institute of Technology)</p>	<p><b>Session B2 14:20-16:00</b> <b>Design and Production</b> Chair: Michihiko FUKUNAGA (Oita University)</p>

<p>A21: Study on Feature Analysis of CAD Operation Log and Its Application Kaoru KITAJIMA (The University of Tokyo); Kazuhiro OIKAWA (The University of Tokyo); Tamotsu MURAKAMI (The University of Tokyo)</p> <p>A22: Quantification of "complexity" in curved surface shape using Gaussian curvature entropy Akihiro OKANO (Keio University); Taishi MATSUMOTO (Keio University); Takeo KATO (Keio University)</p> <p>A23: Shape Generation System Based on Three-dimensional Classification Method Masaya Okamoto (Keio University); Takeo KATO (Keio University); Yoshiyuki MATSUOKA (Keio University)</p> <p>-</p>	<p>B21: Design and Manufacture of CNC Plasma Cutting Machine Yugo MIYACHI (Happy Science University); Genjiro ABE (Otani Corporation); Keiji SONODA (Happy Science University); Hiroshi OKAWA (Happy Science University); Kazuki TAKENOUCI (Kyushu University)</p> <p>B22: Design of tree-like infill structures for metal material extrusion type of additive manufacturing Koki JIMBO (Meiji University); Toshitake TATENO (Meiji University)</p> <p>B23: Combined Processing of Electrochemical Machining and Anodic Oxidation Machining using Phosphoric Acid Aqueous Solution Nozomi KODUTSUMI (Kanto Gakuin University); Hayato KOMATSU (Kanto Gakuin University); Takumi SUZUKI (Kanto Gakuin University); Mitsuo UCHIYAMA (Kanto Gakuin University)</p> <p>B24: Structural design of conformal lattice structure in consideration of the geometrical constraint in fabrication Takumi NOGUCHI (Tokyo University of Science); Kuniharu USHIJIMA (Tokyo University of Science)</p>
<b>Break</b>	
<b>Session (Backup)</b>	<b>Session (Backup)</b>

November 5, Thu.

<b>Room A</b>	<b>Room B</b>
<p><b>Session A3 10:00-11:40</b> <b>CAD &amp; Measurement</b> Chair: Nobuyuki IWATSUKI (Tokyo Institute of Technology)</p> <p>A31: Development of method to suggest efficient measuring condition of stylus profilometer (Using virtual stylus instrument) Kai ZAIZEN (Tokyo Institute of Technology); Seiichiro HARA (Tokyo Institute of Technology)</p> <p>A32: Wide-area Surface Profile Measurement by Confocal Laser Microscope Using Tilted Focal Plane Nobuyuki TAKAHASHI (Tokyo Institute of Technology); Seiichiro HARA (Tokyo Institute of Technology); Takashi NAKANO (Tokyo Institute of Technology)</p> <p>A33: Model-Based Design of a Haptic Control Law of SBW on Experimental Vehicle Toshio OHTA (Meijo University); Jianming YANG</p>	<p><b>Session B3 10:00-11:40</b> <b>Design and Development 1</b> Chair: Toshitake TATENO (Meiji University)</p> <p>B31: Design of Pitch Difference Nut to Improve Both Anti-Loosening Performance and Fatigue Strength Nao-Aki NODA (Kyushu Institute of Technology); Biao WANG (Kyushu Institute of Technology); Yoshikazu SANO (Kyushu Institute of Technology); Xi LIU (Kyushu Institute of Technology); Kosuke TATEISHI (Kyushu Institute of Technology); Yuto INUI (Kyushu Institute of Technology); Beifen SIEW (Kyushu Institute of Technology); Yasushi TAKASE (Kyushu Institute of Technology)</p> <p>B32: Performance of Circ-Arc Tooth Profile Gearing Ema TAMURA (Tokyo Metropolitan College of Industrial Technology); Ryoza NEMOTO (Tokyo Metropolitan College of Industrial Technology / Theo-Marks Co., Ltd.); Natsuhiko SEYAMA (Tokyo Metropolitan College of Industrial Technology)</p> <p>B33: Design and Evaluation of an Intermittent Conveyor Driven with Elliptic Gears Sande GAO (Meisei University); Taiga SIBASAKI</p>

<p>(Meijo University); Kyouka YASUZUMI (Meijo University); Kenji TAKAHATA (Hiroshima Institute of Technology)</p> <p>A34: Minimal Trees on the Plane (An Evolutionary Computing Perspective)</p> <p>Victor PARQUE (Waseda University); Satoshi MIURA (Waseda University); Tomoyuki MIYASHITA (Waseda University)</p>	<p>(Meisei University); Loulin HUANG (Auckland University of Technology)</p> <p>B34: Design and proto-typing of an independent splaying equipment system for agricultural multi-copters</p> <p>Mizuki ONO (National Institute of Technology, Tsuyama College); Toshiro KOBAYASHI (National Institute of Technology, Tsuyama College); Jun-ichi FUKUDA (Farm Sky Technologies Co., Ltd.); Manabu KOKUMAI (Farm Sky Technologies Co., Ltd.)</p>
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**Lunch 11:40-12:50**

<p><b>Session A4 12:50-14:30</b></p> <p><b>General in Design</b></p> <p>Chair: Masato INOUE (Meiji University)</p> <p>A41: Experimental Study on Lubrication Characteristics of Dimpled Seal-like Thrust Bearings</p> <p>Reo MIWA (Kanto Gakuin University); Norifumi MIYANAGA (Kanto Gakuin University); Jun TOMIOKA (Waseda University)</p> <p>A42: Research on Public Service Facility Arrangement and Function Distribution in Shopping Malls</p> <p>ZHANG QIAN (Kyushu University)</p> <p>A43: Effects of Injection Speed on Mechanical Properties in High-Pressure die casting of Mg-RE alloy</p> <p>Yuki KASHIWABARA (Tokai University); Mohd Danial IBRAHIM (Universiti Malaysia Sarawak); Lidyana Binti ROSLAN (Universiti Malaysia Sarawak); Hitoshi WATANABE (Kyokuto Die-Casting Co., Ltd.); Yuta SUNAMI (Tokai University)</p> <p>A44: Start-up Characteristics of a Loop Heat Pipe</p> <p>Kenya TAKENOUCHI (Kanto Gakuin University); Atsushi TSUJIMORI (Kanto Gakuin University); Masashi MARUOKA (Kanto Gakuin University); Kai TOGASHI (Kanto Gakuin University)</p>	<p><b>Session B4 12:50-14:30</b></p> <p><b>Design and Development 2</b></p> <p>Chair: Toshiyuki HIRANO (Hosei University)</p> <p>B41: Accuracy of Virtual Shadow for Forceps Position Cognition in Laparoscopic Surgery</p> <p>Satoshi MIURA (Waseda University); Masaki SEKI (Waseda University); Yuta Koreeda (Waseda University); Yang CAO (Waseda University); Kazuya Kawamura (Chiba University); Yo Kobayashi (Waseda University); Masakatsu G. FUJIE (Waseda University); Tomoyuki MIYASHITA (Waseda University)</p> <p>B42: Autonomous Operation System of Caisson Shovels in Narrow Underground Space at High Air Pressure</p> <p>Kazumasa TAKADA (Chiba Institute of Technology); Shoma SATO (Chiba Institute of Technology); Morito ITO (Chiba Institute of Technology); Renato SATO (Chiba Institute of Technology); Ryota TSUCHIYA (Chiba Institute of Technology); Koki KIKUCHI (Chiba Institute of Technology); Masahiro SHINDO (Oriental Shiraishi Corp.); Akira KAMEI (Oriental Shiraishi Corp.); Toshihiro KONDO (Oriental Shiraishi Corp.)</p> <p>B43: Tensile Property Evaluation of Meshed Plates for Medical Application through Analytical and Experimental Approaches</p> <p>Masana SASAKI (Kogakuin University); Jianmei HE (Kogakuin University)</p> <p>B44: Design of Pneumatic Controlled Hybrid Suspension by Using Nonlinear Series Springs for Solar Powered Vehicle</p> <p>Yuta HAYAKAWA (Kogakuin University); Soji AIHARA (Kogakuin University); Tatsuya ABE (Kogakuin University); Hiroto HAMANE (Kogakuin University); Akihiko NAKAMURA (Kogakuin University)</p>
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**Break 14:30-14:50****Session A5 14:50-16:30****Design Methodology**

Chair: Kenichi P. KOBAYASHI, (Meiji University)

A51: Effect of Tip Clearance on the Performance Characteristics of Micro Axial Fan (Influence of casing with different size tip clearance)

Toshiyuki HIRANO (Hosei University); Toshio OTAKA (Kokushikan University); Gaku MINORIKAWA (Hosei University)

A52: Design optimization of long-scale deployable mast structure considering thermally induced disturbance

Shunnosuke SHIMIZU (Waseda University); Tomoyuki MIYASHITA (Waseda University)

A53: The Effect of the Weakened or Contracted Muscles to the Optimal Design of an Ergometer Crank

Michihiko FUKUNAGA (Oita University); Yusuke TAKEMOTO (Oita University); Keita OKAWA (Oita University)

A54: Design and Control of Fluid-driven Origami-inspired Artificial Muscles to Drive the Spatial Rolling Contact Pair

Naoto KIMURA (Tokyo Institute of Technology); Nobuyuki IWATSUKI (Tokyo Institute of Technology); Ikuma IKEDA (Tokyo Institute of Technology)

**Session B5 14:50-16:30****Design and Development 3**

Chair: Yoshiaki YAMAZAKI (Meisei University)

B51: Development of a parallel gripper with an extension nail mechanism using a stainless-steel belt

Junya TANAKA (Toshiba Corporate); Nobuto MATSUHIRA (Shibaura Institute of Technology)

B52: Development of a Bathtub-scrubbing Robot (Design of a Wall/Bottom Surface Locomotion Mechanism)

Koki KIKUCHI (Chiba Institute of Technology); Chihiro MASUDA (Chiba Institute of Technology); Keisuke ISHIGAMI (Chiba Institute of Technology)

B53: Development of a Bathtub-scrubbing Robot (Performance Evaluation of Driving and Scrubbing Screw)

Keisuke ISHIGAMI (Chiba Institute of Technology); Chihiro MASUDA (Chiba Institute of Technology); Koki KIKUCHI (Chiba Institute of Technology)

B54: A Study on a Butterfly-style Flapping Robot (Development of a Long-distance Flight Model Driven by a Motor)

Masahiro KAWASAKI (Chiba Institute of Technology); Taro FUJIKAWA (Tokyo Denki University); Koki KIKUCHI (Chiba Institute of Technology)

**Break 16:30-16:50****Session (Backup)****Session (Backup)****Closing**