Publications

JOURNAL ARTICLES [3]

A Framework for Robotic Clothing Assistance by Imitation Learning
Ravi Prakash Joshi, Nishanth Koganti, Tomohiro Shibata
DOI: 10.1080/01691864.2019.1636715

Calibration and Statistical Techniques for Building an Interactive Screen for Learning of Alphabets by Children
Ribi Abraham Boby, Ravi Prakash Joshi, Subir Kumar Saha, Takafumi Matsumaru, Pratyusha Sharma, Siddhartha Jaitly
DOI: 10.1177/1729881417703939

Robot Kinematics Made Easy using RoboAnalyzer Software
Ratan S. Othayoth, Rajeevlochana G. Chittawadigi, Ravi P. Joshi, Subir K. Saha
DOI: 10.1002/cae.21828

CONFERENCE PROCEEDINGS [14]

Incremental Imitation Learning through Physical Interaction and its Application to Clothing Assistance
Ravi Prakash Joshi, Takayuki Osa, Tomohiro Shibata
Submitted to 2020 IEEE International Conference on Robotics and Automation (ICRA)
URL: http://www.icra2020.org
Paris, France
2020

Intelligent Wheelchair-Humanoid Robot Collaboration for Clothing Assistance of the Elderly
Ravi Prakash Joshi, Jayant Prasad Tarapure, Tomohiro Shibata
Submitted to 2020 IEEE/SICE International Symposium on System Integration (SII)
URL: https://sis-si.org/conf/SII2020
Hawaii, USA
2020

Quantitative Evaluation of Clothing Assistance using Whole-Body Robotic Simulator of the Elderly
Ravi Prakash Joshi, Tomohiro Shibata, Kunihiro Ogata, Yoshio Matsumoto
Accepted in 2019 IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)
URL: https://ro-man2019.org
New Delhi, India
2019

A Study on the Electric Wheelchair-Humanoid Collaboration for Clothing Assistance of the Elderly
Ravi Prakash Joshi, Jayant Prasad Tarapure, Tomohiro Shibata
Accepted in Late Breaking Results at 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
URL: https://www.iros2019.org
Macau, China
2019

Mouse Anatomical Cardinal Planes and Axes Towards Augmentation for Behavior Analysis
Salvador Blanco Negrete, Ravi Prakash Joshi, Rollyn Labuguen, Jumpei Matsumoto, Tomohiro Shibata
Joint 7th International Conference on Informatics, Electronics Vision (ICIENV) and 2nd International Conference on Imaging, Vision Pattern Recognition (icVIPR)
DOI: 10.1109/ICIENV.2018.8641000
Kitakyushu, Japan
2018

Robotic cloth manipulation for Clothing Assistance task using Dynamic Movement Primitives
Ravi Prakash Joshi, Nishanth Koganti, Tomohiro Shibata
Proceedings of the Conference on Advances in Robotics
DOI: 10.1145/3132446.3136878
New Delhi, India
2017

Estimating 3D Hand Location for Clothing Assistance Initialization Using Dynamic Movement Primitives
Ravi Prakash Joshi, Rithul Perathara, Rolyn Labuguen, Nishanth Koganti, Tomohiro Shibata
Proceedings of the 38th Annual Conference of Robotics Society of Japan
Kawagoe, Japan
2017

A Study on Human-Robot Collaboration for Table-setting Task
Krati Saxena, Rollyn Labuguen, Ravi Prakash Joshi, Nishanth Koganti, Tomohiro Shibata
IEEE International Conference on Robotics and Biomimetics (ROBIO)
DOI: 10.1109/ROBIO.2017.8324415
Macau, China
2017

Cloth Extremity Detection from a Clutter of Clothes using Bayesian GP-LVM
Vishal Gaurav, Nishanth Koganti, Riku Nakata, Ravi Prakash Joshi, Tom Shibata
International session on Robotics, Mechatronics and Control, Robotics Society of Japan
Kojirakawa, Japan
2016

Virtual Experiments for Integrated Teaching and Learning of Robot Mechanics Using RoboAnalyzer
Ratan Sadanand, Ravi P. Joshi, Rajeevlochana G. Chittawadigi, Subir Kumar Saha
28th International Conference on CAD/CAM, Robotics and Factories of the Future
ISBN: 978-81-322-2740-3
Kolaghat, India
2016

Force Control of Robot Manipulator using Industrial Servo Drives
Arun Dayal Udal, Subir Kumar Saha, Ravi Prakash Joshi, Ratan Sadanand
International Conference on Evolution in Manufacturing (ICEM)
Ranchi, India
2016
Projects

Robotic Clothing Assistance
KYUSHU INSTITUTE OF TECHNOLOGY

• The recent demographic trend across developed nations shows a dramatic increase in the aging population, fallen fertility rates and a shortage of caregivers.
• Robotic solutions for clothing assistance can significantly improve the quality of life of the elderly.
• We propose a framework for robotic clothing assistance by imitation learning from a human demonstration to a compliant dual-arm robot.

Adaptive Force Control of an Industrial Robot Equipped with F/T sensor
INDIAN INSTITUTE OF TECHNOLOGY DELHI

• The project is aimed to design and implement control mechanism for KUKA KR5 industrial robot
• Perform object manipulation like putting cylindrical pellet into hollow cylindrical tube based on the force feedback.

SAKSHAR
INDIAN INSTITUTE OF TECHNOLOGY DELHI

• An Image-projective Desktop Varnamala Trainer (IDVT) has been designed to improve the learning of alphabets, etc. by children through an interactive audio visual feedback system.
• This device uses a projector to render a virtual display, which permits production of large interactive displays with minimal cost.
• Lead developer.

RoboAnalyzer
INDIAN INSTITUTE OF TECHNOLOGY DELHI

• This is a software which helps in teaching and learning of robotics in an easy and fun way.
• Provides commonly used robot models to perform kinematics and dynamics analysis.
• Developer for file based I/O of robot data, migration from Taot to OpenTK, etc.

Truck driving simulator using Stewart platform
INDIAN INSTITUTE OF TECHNOLOGY DELHI

• This work is aimed to design a Truck driving simulator which uses Stewart platform.
• The simulator has six degree of freedom, thus it can achieve any orientation and position in the space.
Micro-mouse Simulation

INSTITUTE OF INFORMATION TECHNOLOGY DESIGN & MANUFACTURING JABALPUR

• Visual simulation of micro-mouse game.
• Random maze is designed by using DFS (Depth-first search) algorithm.
• Generated maze is solved by using A* search algorithm.

Design and Fabrication of USB2.0 to Multiport Connector

INSTITUTE OF INFORMATION TECHNOLOGY DESIGN & MANUFACTURING JABALPUR

• A multipurpose adaptor to connect various peripheral devices.
• Supports all popular interfaces such as Serial, SATA, PATA, Ethernet, and PS2 via a USB2.0.

Microcontroller-based Line Follower Robot

INSTITUTE OF INFORMATION TECHNOLOGY DESIGN & MANUFACTURING JABALPUR

• The aim was to design a fully automated robot which can follow any curved path with appropriate speed.
• Central part of the robot contains an array of TSOP sensors and an AtMega-8 microcontroller.

CRUISADERS

INSTITUTE OF INFORMATION TECHNOLOGY DESIGN & MANUFACTURING JABALPUR

• This project was aimed for robot war event held in technical festival of Indian Institute of Technology Bombay, India.
• This robot was capable of extreme fight in battle.
• This heavy bot uses its internal inertia and momentum to destroy the opponent.

Experience

Indian Institute of Technology (IIT) Delhi

SENIOR RESEARCH FELLOW

• Worked on the force control of a KUKA robot to perform the task of inserting a peg in a hole.
• Development of RoboAnalyzer software which helps in teaching and learning of robot kinematics and dynamics in an easier and funnier way.

Indian Institute of Technology (IIT) Delhi

PROJECT STAFF

• Involved in a collaborative project “SAKSHAR: An Image-projective Desktop Varnamala Trainer (IDVT) for interactive learning of alphabets”.
• The project aims to make primary education more attractive and fun towards the kids.

Altair Engineering

SOFTWARE QA ENGINEER

• Successfully performed software testing such as performance, load, and functional testing of Altair Web Portal Framework and Compute Manager, a web-based interface for PBS workload manager.
• Developed a framework for automated testing of REST Services.
• Key person for guaranteeing essential functionality such as licensing of Altair Web Portal Framework.

Education

Kyushu Institute of Technology (KyuTech) Wakamatsu

DOCTOR OF PHILOSOPHY IN MACHINE LEARNING IN ROBOTICS

• MAJOR PROJECT: Robotic Clothing Assistance

Kyushu Institute of Technology (KyuTech) Wakamatsu

MASTER OF ENGINEERING IN MACHINE LEARNING IN ROBOTICS

• MAJOR PROJECT: Clothing Assistance using DMP

Indian Institute of Information Technology Design & Manufacturing (IIITDM) Jabalpur

BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE & ENGINEERING

• MAJOR PROJECT: Data Structure Simulator

Hargovind Suyal Saraswati Vidya Mandir Inter College (HGSSVMIC) Haldwani

INTERMEDIATE EXAMINATION

• MAJOR SUBJECTS: Maths, Physics and Chemistry

Hargovind Suyal Saraswati Vidya Mandir Inter College (HGSSVMIC) Haldwani

HIGH SCHOOL EXAMINATION
Technical Skills

**Commercial Robot Used**  Rethink Robotics© Baxter, Toyota© HSR, KUKA Robotics© KR5

**Programming**  C/C++, Python, C#, Embedded C, Java, KUKA Robot Language

**Tools/Libraries**  KukaP, ROS, ØMQ, PCL, OpenCV, Protocol Buffers, MATLAB

**IDE**  Microsoft Visual Studio, Eclipse, NetBeans, WinAVR

**Web**  Drupal, HTML, PHP, JS, JSF

**OS Platform**  WINDOWS (XP, 8 and 10), LINUX (Ubuntu)

Personal Information

**Date of Birth**  August 5, 1990

**Languages**  Hindi, English, Japanese (Beginner)

Honors & Awards

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<thead>
<tr>
<th>Year</th>
<th>Award Description</th>
<th>Location</th>
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<tbody>
<tr>
<td>2017</td>
<td>First prize, HEBI Robotics Hackathon at KyuTech</td>
<td>Japan</td>
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<tr>
<td>2016</td>
<td>Excellent Paper Award, 10th International collaboration Symposium on IPS at Waseda University</td>
<td>Japan</td>
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<tr>
<td>2015</td>
<td>MEXT Scholarship, Ministry of Education, Culture, Sports, Science and Technology of Japan</td>
<td>Japan</td>
</tr>
<tr>
<td>2015</td>
<td>Successfully completing Mechanics of Robots, Classroom course by Prof. S. K. Saha, IIT Delhi</td>
<td>India</td>
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<tr>
<td>2015</td>
<td>MOOC on Image Processing, Prof. G. Sapiro, Duke University, USA</td>
<td>India</td>
</tr>
<tr>
<td>2012</td>
<td>MOOC on Computer Networks, Prof. N. McKeown, Stanford University, USA</td>
<td>India</td>
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