

Ravi P. Joshi

SENIOR ROBOTICS ENGINEER · PH.D. · ML ENTHUSIAST

Koike Cho 44-1, Meito Ku, Nagoya, 465-0047, Japan

✉ ravi2008joshi@gmail.com | 🏠 www.ravijoshi.xyz | 📧 ravijo | 🌐 ravi2008joshi | 📄 Ravi P. Joshi | 🏠 ORCID

Technical Skills

Commercial Robot Used

Denso Robotics© 6-axis and 4-axis Manipulators, Universal Robots© UR5e, Rethink Robotics© Baxter, Toyota© HSR, KUKA Robotics© KR 5

Programming

C/C++, Python, PACScript, C#, Embedded C, Java, KUKA Robot Language

Tools/Libraries

ROS, TensorRT, Keras, PyTorch, TensorFlow, PyBullet, 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)

Experience 9 Yrs (5 Yrs Research + 4 Yrs Industry)

TechMagic Corporation

Nagoya, Japan

SENIOR ROBOTICS ENGINEER

Dec. 2020 - Ongoing

- TensorRT implementation for real-time instance segmentation on the NVIDIA Jetson device.
- Developing module for container position estimation using F/T sensor in the finibo system having a shared workspace between 6-axis and 4-axis manipulators.
- Prototyping work using UR manipulator (UR3e and UR5e) and testing the finibo system

OMRON SINIC X Corporation

Tokyo, Japan

INTERNSHIP

Apr. 2020 - Jun. 2020

- Worked on learning from successful and failed behaviors with a tactile device and soft robot.
- Developed a multimodal learning system to compute a neural network-based latent representation and then utilize it in Deep Reinforcement Learning for the policy learning.

Indian Institute of Technology (IIT) Delhi

New Delhi, India

SENIOR RESEARCH FELLOW

May 2014 - Aug. 2015

- Worked on the force control of a KUKA robot to perform the task of inserting a peg in a hole having clearance of 0.1 mm.
- 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

New Delhi, India

PROJECT STAFF

Feb. 2014 - May 2014

- Developed 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

Bangalore, India

SOFTWARE QA ENGINEER

Jun. 2012 - Jan. 2014

- Successfully performed software testing such as performance testing, load testing, and functional testing of Altair Web Portal Framework and Compute Manager, a web-based interface for PBS workload manager.
- In charge of guaranteeing the licensing and other critical functionalities of the Altair Web Portal Framework.
- Developed a framework for automated testing of REST Services.

Projects

Robotic Clothing Assistance

Kitakyushu, Japan

KYUSHU INSTITUTE OF TECHNOLOGY

Oct. 2015 - Nov. 2020

- Robotic solutions for clothing assistance can significantly improve the quality of life of the elderly.
- Developed a robotic system using a dual-arm Baxter robot to assist the elderly in getting them dressed up.
- Proposed 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

New Delhi, India

INDIAN INSTITUTE OF TECHNOLOGY DELHI

May. 2014 - Aug. 2015

- The goal was to design and implement control mechanism for KUKA KR5 industrial robot.
- Performed object manipulation like putting cylindrical pellet into hollow cylindrical tube based on the force feedback.

SAKSHAR

INDIAN INSTITUTE OF TECHNOLOGY DELHI

- Designed to improve the learning of alphabets, etc. for children through an interactive audio visual feedback system.
- Used a projector and a LiDAR sensor to render a virtual display, which permits production of large interactive displays with minimal cost.

[New Delhi, India](#)

May. 2014 - Aug. 2015

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.
- Developed modules for file based I/O of robot data, migration from Tao to OpenTK, etc.

[New Delhi, India](#)

May. 2014 - Aug. 2015

Truck driving simulator using Stewart platform

INDIAN INSTITUTE OF TECHNOLOGY DELHI

- The goal was to design a truck driving simulator that can achieve any position and orientation in 3D space.
- Designed a controller for the physical simulator by implementing inverse kinematics of the Stewart platform.

[New Delhi, India](#)

Mar. 2015 - Aug. 2015

Micro-mouse Simulation

INDIAN 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.

[Madhya Pradesh, India](#)

Academic Year - 2012

Design and Fabrication of USB2.0 to Multiport Connector

INDIAN 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.

[Madhya Pradesh, India](#)

Academic Year - 2011

Microcontroller-based Line Follower Robot

INDIAN 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.

[Madhya Pradesh, India](#)

Academic Year - 2010

CRUISADERS

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY DESIGN & MANUFACTURING JABALPUR

- The project was aimed for robot war event held in technical festival of Indian Institute of Technology Bombay, India.
- The robot was capable of extreme fight in battle.
- The heavy bot uses a rotating circular disk and momentum due to its internal inertia to destroy the opponent.

[Madhya Pradesh, India](#)

Academic Year - 2010

Publications

JOURNAL ARTICLES [3]

A Framework for Robotic Clothing Assistance by Imitation Learning

Ravi P. Joshi, Nishanth Koganti, Tomohiro Shibata
Advanced Robotics 33.22 (2019) pp. 1156–1174. Taylor & Francis
doi: 10.1080/01691864.2019.1636715

2019

Calibration and Statistical Techniques for Building an Interactive Screen for Learning of Alphabets by Children

Riby A. Boby, Ravi P. Joshi, Subir K. Saha, Takafumi Matsumaru, Pratyusha Sharma, Siddhartha Jaitly
International Journal of Advanced Robotic Systems 14.3 (2017) p. 1729881417703939. SAGE Publications London, UK
doi: 10.1177/1729881417703939

2017

Robot Kinematics Made Easy using RoboAnalyzer Software

Ratan S. Othayoth, Rajeevlochana G. Chittawadigi, Ravi P. Joshi, Subir K. Saha
Computer Applications in Engineering Education 25.5 (2017) pp. 669–680. Wiley Online Library
doi: 10.1002/cae.21828

2017

CONFERENCE PROCEEDINGS [13]

Intelligent Wheelchair–Humanoid Robot Collaboration for Clothing Assistance of the Elderly

Ravi P. Joshi, Jayant P. Tarapore, Tomohiro Shibata
13th International Conference on Human System Interaction (HSI)
doi: 10.1109/HSI49210.2020.9142645

[Tokyo, Japan](#)
2020

Quantitative Evaluation of Clothing Assistance using Whole-Body Robotic Simulator of the Elderly

Ravi P. Joshi, Tomohiro Shibata, Kunihiro Ogata, Yoshio Matsumoto
28th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)
doi: 10.1109/RO-MAN46459.2019.8956308

[New Delhi, India](#)
2019

Mouse Anatomical Cardinal Planes and Axes Towards Augmentation for Behavior Analysis

Salvador B. Negrete, Ravi P. Joshi, Rollyn Labuguen, Jumpei Matsumoto, Tomohiro Shibata
Joint 7th International Conference on Informatics, Electronics Vision (ICIEV) and 2nd International Conference on Imaging, Vision Pattern Recognition (icIVPR)
doi: 10.1109/ICIEV.2018.8641000

[Kitakyushu, Japan](#)
2018

- Robotic Cloth manipulation for Clothing Assistance Task using Dynamic Movement Primitives**
 Ravi P. Joshi, Nishanth Koganti, Tomohiro Shibata
Proceedings of the Conference on Advances in Robotics (AiR)
 DOI: 10.1145/3132446.3134878
 New Delhi, India
 2017
- Estimating 3D Hand Location for Clothing Assistance Initialization Using Dynamic Movement Primitives**
 Ravi P. Joshi, Rithul Perathara, Roly Labuguen, Nishanth Koganti, Tomohiro Shibata
Proceedings of the 35th Annual Conference of Robotics Society of Japan
 URL: http://rsj2017.rsj-web.org/RSJ2017_pg02.pdf
 Kawagoe, Japan
 2017
- A Study on Human-Robot Collaboration for Table-setting Task**
 Krati Saxena, Rolly Labuguen, Ravi P. Joshi, Nishanth Koganti, Shibata Tomohiro
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 GPLVM**
 Vishal Gaurav, Nishanth Koganti, Riku Nakata, Ravi P. Joshi, Tomohiro Shibata
International session on Robotics, Mechatronics and Control, Robotics Society of Japan
 URL: http://rsj2016.rsj-web.org/data/RSJ2016_pg.pdf
 Yamagata, Japan
 2016
- Motor-skill Learning in Latent Spaces for Robotic Clothing Assistance**
 Nishanth Koganti, Ravi P. Joshi, Tomoya Tamei, Tomohiro Shibata, Kazushi Ikeda
Proceedings of the 34th Annual Conference of Robotics Society of Japan
 URL: http://rsj2016.rsj-web.org/data/RSJ2016_pg.pdf
 Yamagata, Japan
 2016
- Virtual Experiments for Integrated Teaching and Learning of Robot Mechanics using RoboAnalyzer**
 Ratan Sadanand, Ravi P. Joshi, Rajeevlochana G. Chittawadigi, Subir K. 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 D. Udai, Subir K. Saha, Ravi P. Joshi, Rattan Sadanand
International Conference on Evolution in Manufacturing (ICEM)
 ISBN: 978-93-86256-11-9
 Ranchi, India
 2016
- Virtual Robots Module: An Effective Visualization Tool for Robotics Toolbox**
 Ratan Sadanand, Rajeevlochana G. Chittawadigi, Ravi P. Joshi, Subir K. Saha
Proceedings of the Conference on Advances In Robotics
 DOI: 10.1145/2783449.2783475
 Goa, India
 2015
- Projectable Interactive Surface using Microsoft Kinect v2: Recovering Information from Coarse Data to Detect Touch**
 Pratyusha Sharma, Ravi P. Joshi, Riby A. Boby, Subir K. Saha, Takafumi Matsumaru
IEEE/SICE International Symposium on System Integration (SII)
 DOI: 10.1109/SII.2015.7405081
 Nagoya, Japan
 2015
- Depth-based Localization for Robotic Peg-in-Tube Assembly**
 Arun D. Udai, Ravi P. Joshi, Subir K. Saha
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
 DOI: 10.1109/IROS.2015.7353871
 Hamburg, Germany
 2015
- PRESENTED (UNPUBLISHED) [6]**
- A Study on the Electric Wheelchair-Humanoid Collaboration for Clothing Assistance of the Elderly**
 Ravi P. Joshi, Jayant P. Tarapure, Tomohiro Shibata
Late Breaking Results at IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
 URL: <https://www.iros2019.org/LBRposter>
 Macau, China
 2019
- Extremity Detection from a Pile of Garments using Bayesian GPLVM**
 Vishal Gaurav, Nishanth Koganti, Riku Nakata, Ravi P. Joshi, Tomohiro Shibata
Workshop on Assistive and Service Robotics in a Human Environment, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
 URL: https://research02.jimu.kyutech.ac.jp/html/100000703_knkyu_prsn_en.html
 Daejeon, Korea
 2016
- Robotic Cloth Manipulation for Clothing Assistance Task using Dynamic Movement Primitives**
 Ravi P. Joshi, Nishanth Koganti, Tomohiro Shibata
4th International Symposium on Applied Engineering and Sciences (SAES)
 URL: <http://www.life.kyutech.ac.jp/~saes2016/SAES3.html>
 Tobata, Japan
 2016
- Use of Kinect Sensor for Building an Interactive Device**
 Ravi P. Joshi, Pratyusha Sharma, Riby A. Boby, Subir K. Saha, Takafumi Matsumaru
10th International collaboration Symposium on Information, Production and Systems (ISIPS)
 URL: <http://www.waseda.jp/assoc-ics/2016/program.html>
 Kitakyushu, Japan
 2016
- SAKSHAR: An Image-projective Desktop Varnamala Trainer (IDVT) for Interactive Learning of Alphabets**
 Ravi P. Joshi, Riby A. Boby, Subir K. Saha, Takafumi Matsumaru
Developing Countries Forum, IEEE International Conference on Robotics and Automation (ICRA)
 URL: <http://icra2015.org/conference/forums/11-conference/37-developing-countries-forum>
 Washington, USA
 2015
- SAKSHAR: An Image-projective Desktop Varnamala Trainer (IDVT) for Interactive Learning of Alphabets**
 Ravi P. Joshi, Riby A. Boby, Subir K. Saha, Takafumi Matsumaru
8th International collaboration Symposium on Information, Production and Systems (ISIPS)
 URL: <http://www.waseda.jp/assoc-ics/2014/program.html>
 Kitakyushu, Japan
 2014

Education

Kyushu Institute of Technology (KyuTech) Wakamatsu

DOCTOR OF PHILOSOPHY IN MACHINE LEARNING IN ROBOTICS

- THESIS TITLE: Design and Development of a Dual-arm Robotic Clothing Assistance System using Imitation Learning

Kitakyushu, Japan

Sep. 2020

Kyushu Institute of Technology (KyuTech) Wakamatsu

MASTER OF ENGINEERING IN MACHINE LEARNING IN ROBOTICS

- MAJOR PROJECT: Clothing Assistance using DMP

Kitakyushu, Japan

Sep. 2017

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

BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE & ENGINEERING

- MAJOR PROJECT: Data Structure Simulator

Madhya Pradesh, India

Aug. 2012

Hargovind Suyal Saraswati Vidya Mandir Inter College (HGSSVMIC) Haldwani

INTERMEDIATE EXAMINATION

- MAJOR SUBJECTS: Maths, Physics and Chemistry

Uttarakhand, India

Jun. 2007

Hargovind Suyal Saraswati Vidya Mandir Inter College (HGSSVMIC) Haldwani

HIGH SCHOOL EXAMINATION

Uttarakhand, India

Jun. 2005

Personal Information

Date of Birth

August 5, 1990

Languages

Hindi, English, Japanese (Beginner)








Honors & Awards

2020	Advanced Robotics Excellent Paper Award by Robotics Society of Japan (RSJ)	<i>Japan</i>
2020	Best Paper – Finalists Award in 13th International Conference on Human System Interaction (HSI)	<i>Japan</i>
2017	First Prize in HEBI Robotics Hackathon at KyuTech	<i>Japan</i>
2016	Excellent Paper Award in 10th International collaboration Symposium on IPS at Waseda University	<i>Japan</i>
2015	MEXT Scholarship by Ministry of Education, Culture, Sports, Science and Technology of Japan	<i>Japan</i>
2015	Successfully Completing Mechanics of Robots in Classroom course by Prof. S. K. Saha, IIT Delhi	<i>India</i>
2015	MOOC on Image Processing by Prof. G. Sapiro, Duke University, USA	<i>India</i>
2012	MOOC on Computer Networks by Prof. N. McKeown, Stanford University, USA	<i>India</i>

Membership

- IEEE, Graduate Student Membership
- IEEE Robotics and Automation Society, Graduate Student Membership
- The Robotics Society of Japan, Graduate Student Membership
- The Robotics Society, India, Graduate Student Membership

Media Coverage

2021	Voice of Graduate : KYUTECH TIMES, Kyushu Institute of Technology 	<i>Japan</i>
2020	HSI Research Work : WHILL Co., Ltd. 	<i>Japan</i>
2019	iREX Exhibition : World Business Satellite (WBS) TV, Live News Alpha (Fuji TV), Ann News (Asahi TV), MIA (Nippon TV), Super J Channel (Asahi TV) 	<i>Japan</i>
2019	Lab Visit : Nishi Nippon Japanese Newspaper 	<i>Japan</i>
2018	Kokura Exhibition : Kyushu Asahi Broadcasting (KBC) TV, Radio Kyushu Broadcasting (RKB) TV, Nikkei Japanese Newspaper 	<i>Japan</i>
2017	iREX Exhibition : Nippon Hoso Kyokai (NHK) TV, World Business Satellite (WBS) TV 	<i>Japan</i>
2017	Lab Visit : DNA Mumbai Newspaper 	<i>India</i>