

Ravi P. Joshi

SENIOR ROBOTICS ENGINEER · PH.D. · ML ENTHUSIAST

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

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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, LaTeX, MATLAB

IDE

Microsoft Visual Studio, Eclipse, NetBeans, WinAVR

Web

Drupal, HTML, PHP, JS, JSF

OS Platform

WINDOWS (XP, 8 and 10), LINUX (Ubuntu)

Patent

- Automatic Dishwashing System and Storage Medium. Publication No.: WO/2021/006306 [↗](#)

Experience 10 Yrs (5 Yrs Research + 5 Yrs Industry)

TechMagic Corporation

SENIOR ROBOTICS ENGINEER

Nagoya, Japan

Dec. 2020 - Ongoing

- Designing efficient strategies for food picking for an in-house invented gripper.
- Building and investigating CNN-based models for accurate food picking.
- TensorRT implementation for real-time instance segmentation on the NVIDIA Jetson device.
- Developing a module for container position estimation using an F/T sensor in a workspace shared between 6-axis and 4-axis manipulators.

OMRON SINIC X Corporation

INTERNSHIP

Tokyo, Japan

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

SENIOR RESEARCH FELLOW

New Delhi, India

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

PROJECT STAFF

New Delhi, India

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

SOFTWARE QA ENGINEER

Bangalore, India

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.

Reviewers

- 2022 : Russian Journal of Nonlinear Dynamics (RJND), ISSN: 2658-5324
- 2022 : International Conference on Nonlinearity, Information and Robotics (NIR)
- 2022 : IEEE International Conference on Robotics and Automation (ICRA)
- 2022 : IEEE IEEE Robotics and Automation Letters (RA-L)
- 2020 : IEEE International Conference on Robotics and Automation (ICRA)
- 2020 : IEEE-RAS International Conference on Humanoid Robots (Humanoids)
- 2020 : Computer Applications in Engineering Education(CAE), ISSN: 1099-0542
- 2019 : IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

Lectures

2022	: VIT-AP University ↗	Vijayawada, India
2022	: National Institute of Technology Patna ↗	Patna, India
2022	: Robotics@Ireland ↗	Dublin, Ireland
2022	: Indian Institute of Information Technology, Design and Manufacturing, Jabalpur ↗	MP, India
2022	: Adamas University	Kolkata, India
2022	: Karmaveer Kakasaheb Wagh Institute of Engineering Education & Research, Nashik ↗	Maharashtra, India
2021	: I-Hub Foundation for Cobotics (A Joint initiative of IIT Delhi and DST, Govt. of India) ↗	Delhi, India

Projects

Robotic Clothing Assistance [↗](#)

KYUSHU INSTITUTE OF TECHNOLOGY

- 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.

Kitakyushu, Japan

Oct. 2015 - Nov. 2020

Adaptive Force Control of an Industrial Robot Equipped with F/T sensor [↗](#)

INDIAN INSTITUTE OF TECHNOLOGY DELHI

- 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.

New Delhi, India

May. 2014 - Aug. 2015

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

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

Media Coverage

- 2022 **M-Robo** : World's first robot for serving sticky side dishes with high accuracy [↗](#) *Japan*
- 2021 **W-Robo** : finibo has been installed successfully at ANAC Tokyo Airport (Haneda) factory [↗](#) *Japan*
- 2021 **Voice of Graduate** : KYUTECH TIMES, Kyushu Institute of Technology [↗](#) *Japan*
- 2020 **HSI Research Work** : WHILL Co., Ltd. [↗](#) *Japan*
- 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) [↗](#) *Japan*
- 2019 **Lab Visit** : Nishi Nippon Japanese Newspaper [↗](#) *Japan*
- 2018 **Kokura Exhibition** : Kyushu Asahi Broadcasting (KBC) TV, Radio Kyushu Broadcasting (RKB) TV, Nikkei Japanese Newspaper [↗](#) *Japan*
- 2017 **iREX Exhibition** : Nippon Hoso Kyokai (NHK) TV, World Business Satellite (WBS) TV [↗](#) *Japan*
- 2017 **Lab Visit** : DNA Mumbai Newspaper [↗](#) *India*