





Prashant Kumar



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**Google Scholar:** Prashant K.

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Interests

-  Robotic Grasping
-  Soft Robotics
-  Robotic Manipulation and Control
-  Deep Learning
-  Computer Vision
-  Robotics Hardware

Skills

CAD Tools:

SolidWorks

ANSYS

Fusion 360

Programming:

Python

MATLAB

C++

Hardware:

Mechanical prototyping

Electronics prototyping

Tools:

OpenCV, Pandas, Git

ROS, PyTorch

Languages

English (Professional Proficiency)

Japanese (Conversational)

Profiles



Work Experience

Jan 2020 – Sept 2020

Senior Mechanical Engineer

Agrograde Robotics, India

- Designed company’s first automated food grading-sorting machine
- Developed mechanisms to handle delicate food products at high throughput

Apr 2018 – Apr 2019

Lead Mechanical Engineer

Orangewood Labs, India

- Developed a 3-DOF robotic arm for industrial spray painting
- Led a team of six mechanical engineers to build a 6-DOF robotic arm for sanding, buffing, and smoothening of wood
- Led a team of four engineers in developing a 3-axis CNC milling machine with a rack and pinion drive system

Dec 2017 – Mar 2018

Robotics Intern

Orangewood Labs, India

- Designed and manufactured a wooden-acrylic 3-axis robotic arm
- Developed a 3-axis ball screw based 8X4 ft CNC machine

Jun 2017 – Jun 2017

Mechanical Engineering Intern

Larsen and Toubro, India

- Evaluating robotic welding feasibility using KUKA-Kr16-2
- CAD modelling of welding attachments
- Programming the robot to perform welding of nozzles on the shells

Education

Postgraduate Studies

2023 – 2026

Ph.D. in Robotics

Osaka University, Japan

Title: Robotic picking of cluttered food items

Supervisors: Prof. Kensuke Harada, Prof. Weiwei Wan, Dr. Yukiyasu Domae

Robotic Grippers

Robot Manipulation

Robotic Bin picking

2021 – 2023

M.E. in Intelligent Systems

Osaka University, Japan

Title: Soft Robotic Gripper with Multiple Grasp Poses Based on Variable Stiffness Material

Supervisors: Prof. Kensuke Harada, Prof. Weiwei Wan

Soft Gripper

Robotic Grasping

Analytical Modelling

Undergraduate Study

2014 – 2018

B.Tech. in Mechanical Engineering

SRM Institute of Technology, India

Title: Self Stabilizing Airfoil Testrig

Supervisors: Dr. C.Shravan Kumar

Mechanical Prototyping

Structures

Mechanisms

Research Background

2024-2025

Robotic Food Picking of Cluttered Food Items

Patent in progress

- Developed a belt-based gripper to manipulate challenging food items
- Packed different food items in bento boxes with varying weights

Mar2024-May2024

Kaaraage picking and Ikura don competition

1st rank/ Paper submitted

- Developed a gripper and a computer vision approach to pick up a single karaage piece from a clutter
- Picked up a specific weight of Ikura and gari to make a Ikura rice bowl

2021-2023

Soft Robotic Actuator with Multi-Motion Modes

arXiv paper

- Developed a novel soft actuator capable of three separate motion modes with just two inputs

Short Bio

Prashant Kumar is a third-year Ph.D. student in the Robotic Manipulation Group at Osaka University, focusing on robotic picking of cluttered food items for the packaging industry. His research spans soft robotic actuators, dexterous soft hands, and robotic grippers. He earned his B.Tech from SRM University (2018) and M.E. in Intelligent Systems from Osaka University (2023). He was the first employee at Orangewood Labs, a Y Combinator-backed startup, where he developed a series of cost-effective robotic manipulators. In 2024, he received the Young Scientist Award from SICE Japan for his work on multi-modal soft actuators. He also won the ICRA 2024 Food Topping Challenge, achieving top performance in cluttered karaage picking and accurate ikura bowl preparation.

Jun2023-Aug2023

Robotic Food Handling Utilizing Temperature Dependent Variable Stiffness Material

Published

• Soft, adaptable gripper to grasp objects of various sizes, based on a temperature dependent material

Grants and Awards

2023 – 2026	Awarded Ph.D. Scholarship by MEXT	Osaka Univ., Japan
2020 – 2023	Awarded M.Sc. Scholarship by MEXT	Osaka Univ., Japan
May 2024	Winner of Food topping challenge: Robotic karaage picking	ICRA 2024, Japan
May 2024	Second prize in the Food topping challenge: Ikura Don challenge	ICRA 2024, Japan
March, 2024	Young Scientist Award: SICE SI	SI 2024, Japan
Dec, 2022	Best Paper award	SI2022, Japan
Dec, 2017	Y combinator funding: Orangewood Labs	Y Combinator, SF USA
Dec, 2017	World rank 4 in Freestyle round of ROBOGAMES	California,USA
June, 2017	World rank 11th(Flight Readiness) in SUAS(Student Unmanned Aerial Vehicle) Challenge	Maryland, USA
2014 – 2018	Awarded B.Tech Scholarship by Prime Minister Scheme	SRMIST,India

Publications

Journals

- **Kumar Prashant** et. al. "Team OSCAR at FTC 2024: Robotic Handling of Karaage from Clutter and Precise Preparation of Salmon Roe Bowls". Submitted to Advanced Robotics 2025.
- **Kumar Prashant**, Domae Yukiyasu, Wan Weiwei, and Harada Kensuke. "Replaceable Bit-based Gripper for Picking Cluttered Food Items". Submitted to Robotics and Automation Letters 2025.
- **Kumar Prashant**, Wan Weiwei, and Harada Kensuke. "Temperature Driven Multi-modal/Single-actuated Soft Finger." arXiv preprint arXiv:2501.07216 (2025).
- Marco Rozilyn, **Kumar Prashant**, Zhang Xinyi, Wan Weiwei, and Harada Kensuke. "Robotic Food Handling Utilizing Temperature Dependent Variable-Stiffness Material." In , vol. 29, pp. 405-410. A Life Robotics, 2024.

Conferences

- **Kumar Prashant**, Wan Weiwei, and Harada Kensuke. "Temperature Driven Multi-modal/Single-actuated Soft Finger." [Poster Presentation] IEEE RoboSoft 2025, Laussane, Switzerland.
- **Kumar Prashant** et.al. (2024, December). "Replaceable Bit-Based Belt Gripper for Controlled Picking of Cluttered, Entangled Food". 25th Society of Instrument and Control Engineers System Integration Division Lecture, Iwate, Japan.
- **Kumar Prashant** et. al.(2022, December) "Temperature Dependent Soft Robotic Gripper" 23rd Society of Instrument and Control Engineers System Integration Division Lecture, Chiba, Japan.
- **Kumar Prashant** et. al.(2021, December) "Soft Robotic Finger with Multi Motion Modes by Manipulating Fluid Temperature" 22nd Society of Instrument and Control Engineers System Integration Division Lecture, Japan.

Patents

Kumar, Prashant et.al. (2025) .447193-001. Design Patent. Compact and cost-effective robotic arm based automated strainer for histopathology tissue staining.