

Pratik Ingle

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EDUCATION

IT University of Copenhagen (ITU), Denmark

October 2023 - Expected October 2026

PhD, Computer Science

Dissertation: Learning and Control for grasp-free manipulation robots

University College London (UCL)

Mar 2026 - Aug 2026

Visiting PhD, Computer Science

Indian Institute of Science Education and Research Bhopal (IISERB)

2017 - May 2023

Integrated BSMS, Electrical Engineering and Computer Science (EECS)

Minor in Data Science and Engineering

PUBLICATIONS

Pratik Ingle, Jørn Lambertsen, Kasper Støy, and Andres Faina (2026). *Scalable Surface-Based Manipulation Through Modularity and Inter-Module Object Transfer*. arXiv: [2601.21884](https://arxiv.org/abs/2601.21884) [cs.R0]. URL: <https://arxiv.org/abs/2601.21884>.

Pratik Ingle, Kasper Støy, and Andres Faiña (2025). “Heterogeneous object manipulation on nonlinear soft surface through linear controller”. In: *2025 IEEE 21st International Conference on Automation Science and Engineering (CASE)*, pp. 1780–1787. DOI: [10.1109/CASE58245.2025.11163787](https://doi.org/10.1109/CASE58245.2025.11163787).

Pratik Ingle, Kasper Støy and Andres Faiña (2025). “Soft Manipulation Surface With Reduced Actuator Density For Heterogeneous Object Manipulation”. In: *2025 IEEE 8th International Conference on Soft Robotics (RoboSoft), Selected for oral presentation*, pp. 1–8. DOI: [10.1109/RoboSoft63089.2025.11020841](https://doi.org/10.1109/RoboSoft63089.2025.11020841).

WORK EXPERIENCE

REAL Lab

October 2023 - Present

PhD, supervisor: Dr.Kasper Støy and Dr. Andrés Faiña

ITU

CRISP lab

May 2026 - Aug 2026

Lab Member

London

- In hand object shape and quantity inference with tactile sensing and leapXela robot
- Train self-supervised models, Masked Autoencoder (MAE) and Joint Embedding Predictive Architecture (JEPA)
- Replicate the 3 channel (normal, shear-x and shear-y force) leapXela touch sensor in MuJoCo for data collection and training.

SCIoI & ISAB Summer School 2023

Berlin, DE August 2023

- Presented a poster on ”Moving Depot (MOD): An Efficient Depot Motion Strategy for Multi Robot Foraging”

Master's Thesis

Aug 2022 - April 2023

supervisor: Dr. Simon Garnier and Dr. P.B. Sujit.

NJIT, IISERB

Bio-inspired Collective Robotics: Multi-Robot Foraging and Division of Labour

Computational Summer school on Modeling Social and collective behavior(COSMOS)

Konstanz, DE July 2022

- Learnt computational skills required to tackle emerging challenges in understanding social learning and collective behaviour.
- Presented a poster on "A Dynamic Individual Memory Results in Better Probability of Consensus in Animal Collectives"
- Modelled Collective behaviours projects during the School.

Swarm Lab

May 2021 - April 2023

Lab Member

NJIT

- Decision Making in Collectives in Dynamic Environments leads to more consensus with Dynamic Individual Memory
- Computational Modeling of decision making and complex systems
- Animal Behaviour and Bio-inspired Swarm Robotics

MOON Lab

Jan 2020 - May 2023

Lab Member

IISERB

- Researching on Swarm Robotics
- Working with hardware components required in robotics, like Arduino, raspberry pi, Pixhawk, Nvidia-Jetsons, cameras, lidars, etc
- Build a remotely controlled UV-sanitization aerial vehicle for The frontline volunteers to tackle covid.

Coral Lab

Dec 2018, May - July 2019

Winter and Summer Internship

IIIT Delhi

- Obstacle avoidance using Turtlebot. Learning Robot Operating System (ROS) framework and applying obstacle avoidance algorithms on Turtlebot to navigate through a closed environment.

Touch the Jovian Moon

Dec 2017 - May 2018

competition organized by the Indian Space Research Organiza- tion (ISRO)

India

- Was a member of the 6-membered team of IISER Bhopal that took part in the Touch the Jovian Moon Contest, organized by LPSC/ISRO, as a part of their Pearl Jubilee celebration.
- Developed a preliminary mission plan for conducting scientific experiments on Callisto, a Jovian moon
- Qualified for the final round and were among the top 10 teams from India.

PROJECTS

Moving Depot(MOD): An Efficient Depot Motion Strategy for Multi-Robot Foraging

We present an algorithm called MovingDepot (MOD), which adaptively moves the depot location to maximize performance using a combination of weighted centroid and potential field-based path planner.

Warehouse space distribution using PSO and evolutionary algorithm

The goal of the research is to optimize the utilization of storage space in warehouses to minimize collisions between robots during online path-finding processes such as Multi-Agent Path Finding (MAPF) through optimal arrangement of the racks using Particle swarm optimization and evolutionary algorithm.

Decision Making in Collectives

[Report](#)

Implementing a modified version of the Arganda et al. (2012) model to prove the hypothesis, Decision Making in Collectives in Dynamic Environments leads to more consensus with Dynamic Individual Memory

Identifying Influencer Agents in swarms with Quantum Circuits

[Report](#)

The goal of this project was to utilize quantum computing (QC) to solve NP-hard problems in the field of complexity science, collective behaviour and robotics. So the focus was to harness the power of entanglement and superposition of QC to address problems as ising model, which can further be related to flock control in robotics and collective behaviour research.

VQE to Finding ground-state energy of Hamiltonian

[Report](#)

Using Variational Quantum Eigensolver (VQE) on quantum computers to find the lowest-energy eigenstate (also known as the ground state) of a given Hamiltonian

Hybrid Quantum-classical Machine Learning for Covid 19

Classify COVID-19 cases based on 16 input features, including hematocrit, hemoglobin, platelets, red blood cells, lymphocytes, and mean corpuscular hemoglobin concentration (MCHC). To achieve this, the classical data was first transformed into quantum data using amplitude embedding, and then transfer learning (from quantum to classical) was utilized for the classification task. The aim of this approach was to improve the accuracy and efficiency of COVID-19 classification using quantum techniques.

UVC Disinfection Aerial Robots

The aim of this project was to develop an autonomous UAV for UVC disinfection to tackle Covid-19. The aim of this project was to design and build an autonomous unmanned aerial vehicle (UAV) specifically designed for disinfecting large, enclosed spaces such as universities, hospitals, and public buildings.

Never Sinking Robotic Boats for Tackling Floods

[Report](#)

The aim of this project is to utilize superhydrophobic (SH) materials to fabricate robotic boats that are incapable of sinking and are able to increase their loading capacity as needed

Optical Radiational pressure Springs for applications in Metrology

[Report](#)

Project aims to come up with a theoretical model for the use of optical radiational pressure in the detection of Casimir effects and other fundamental forces. This was achieved by passing high-intensity laser beams at an angle through a specific arrangement of Highly reflective mirrors, which forms a number of reflections on both sides of mirrors.

Linguistics-Computational models of English Language

[Github](#)

Implementation of an HMM-based POS tagger for the English language. HMM is a special case of Bayesian inference.

TALKS/PRESENTATIONS

RoboSoft 2026	<i>Scalable Surface-Based Manipulation Through Modularity and Inter-Module Object Transfer</i>
CASE 2025	<i>Heterogeneous object manipulation on nonlinear soft surface through linear controller</i>
RoboSoft 2025	<i>Soft Manipulation Surface With Reduced Actuator Density For Heterogeneous Object Manipulation</i>
EI 2025	<i>Harnessing Fabric Softness and Scalability for Object Manipulation</i>
ANTS 2024	<i>Moving Depot (MOD): An Efficient Depot Motion Strategy for Multi-Robot Foraging</i>

POSITIONS OF RESPONSIBILITY

Teaching Assistant: Deep Learning, Intelligent Robotics, Computer Vision, Digital Image Processing and applications in Bioimage Analysis
Volunteer: ALIFE 2024, Neural Information Processing Systems(NeurIPS 2021)

SKILLS

Programming languages	Python, MATLAB, C, Mathematica, R
Softwares and Simulators	MuJoCo, Webots, pyrosim, ROS, Gazebo, Rviz, MavROS, Ardupilot, PX4, Autocad
Robots	TurtleBot, Crazyflie, UAVs
Libraries	PyTorch, TensorFlow, Qiskit, PennyLane, NLTK, OpenCV, OpenAI Gym

COURSES

Completed at university:	Intelligent Robotics, Deep Learning, Computer Vision, Advanced Programming in Python, Digital Image Processing and applications in Bioimage Analysis, Control Systems, Algorithms, Computer Organisation, Introduction to Quantum Computer Science, Smart Sensing Technologies, Internet of Things, Computational Linguistics, Data Structures and Algorithms, Data Science and Machine Learning, Signals and Systems
Completed on online platforms:	Neural Networks and Deep Learning, Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization, Structuring Machine Learning Projects, Sequence Models, Convolutional Neural Networks, Deep Learning Specialization

CONTEST/WORKSHOPS

Advanced Course on Data Science & Machine Learning link	June 2025
IEEE RAS Summer School on Multi-Robot Systems link	July 2024
SCIoI & ISAB Summer School on Embodied Intelligence – Perception and Learning link	Aug 2023
Computational Summer school on Modeling Social and collective behavior (COSMOS)	June 2022
PRAIRIE/MIAI Artificial Intelligence Summer School	July 2021
IBM Quantum Challenge - Fall 2020	Dec 2020
Qiskit India challenge	Sep 2020
IBM Quantum challenge	May 2020
The Forth Paradigm conference: from data to discovery	Jan 2020
Matlab for higher research workshop	Mar 2019
Vijyoshi - Indian national science camp	Dec 2018

REFERENCES

Kasper Støy

Professor

Data, Systems, and Robotics Machine Learning

Head of the Phd School

IT University of Copenhagen, Denmark

Email - ksty@itu.dk

Webpage - [here](#).

Andrés Faíña

Associate Professor

Data, Systems, and Robotics Machine Learning

IT University of Copenhagen, Denmark

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Sujit P.B

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Simon Garnier

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