





# SOURAVIK DUTTA


Postdoctoral Research Fellow  
University of Alberta  
Robotics and Automation

 Edmonton, Canada

 [souravik@ualberta.ca](mailto:souravik@ualberta.ca)

 [LinkedIn](#)

 [Google Scholar](#)

 [ResearchGate](#)

## RESEARCH INTERESTS

Robotics	Industrial Robots   Mobile Robots   Legged Robots
Autonomous Systems	Motion Planning & Control   Collaborative Task Planning   Underactuated Systems
Computational Intelligence	Multi-Objective Optimization   Evolutionary Computation   Reinforcement Learning

## EDUCATION

### Doctor of Philosophy | Nanyang Technological University (NTU) Singapore

April 2022	<ul style="list-style-type: none"><li>Affiliation : Interdisciplinary Graduate School   Energy Research Institute @ NTU (ERI@N)</li><li>Supervisor : Dr Yiyu Cai   Associate Professor   School of Mechanical and Aerospace Engineering (MAE)</li><li>Thesis : Intelligent Lift Motion Planning for Autonomous Tower Cranes in Dynamic BIM Environments</li></ul> <a href="#">Thesis URL</a>
July 2017	

### Bachelor of Engineering (Honours) | Jadavpur University (JU) Kolkata | India

July 2014	<ul style="list-style-type: none"><li>Affiliation : Department of Mechanical Engineering (ME)</li><li>Courses : Engineering Mechanics   Advanced Mechanism Design   Kinematics and Dynamics of Machines   Robotics</li><li>Activities : Research on Adjustable Mechanisms   Final Year Project on Path Optimization</li></ul>
July 2010	

## EXPERIENCE

### Postdoctoral Research Fellow | University of Alberta | Canada

Present	<ul style="list-style-type: none"><li>Affiliation : Department of Mechanical Engineering</li><li>Project : BIM-Integrated Generative Design and Robotic Manufacturing System for Automated Prefabrication of Structural Steel Components for Buildings</li></ul>
May 2024	<ul style="list-style-type: none"><li>Supervisor : Dr. Rafiq Ahmad   Associate Professor   Department of Mechanical Engineering</li></ul>

### Communication Coach | LCC Communication Cube | NTU Singapore

March 2022	<ul style="list-style-type: none"><li>Assisted with dissertations/theses, articles, reports, assignments and other documents, presentations, and speeches for undergraduate and graduate students</li></ul>
December 2021	<ul style="list-style-type: none"><li>Provided detailed and personalized feedback and suggestions, allowing students to explore options and take ownership in the development of their writing, speaking, and presenting skills</li></ul>

## EXPERIENCE

### Graduate Research and Teaching Assistant | School of MAE | NTU Singapore

- July 2021 | Conducted research on Tower Crane Path Planning for the project Smart Integrated Construction System, sponsored by Housing and Development Board (HDB) Singapore
- August 2018 | Supervised the Laboratory MA3071 - Computer-Aided Engineering (CAE) incorporating the application of 3D Experience Software, by Dassault Systems, for E-Scooter Design
- August 2018 | Supervised Research Interns and Final Year Undergraduate students

### Junior Research Fellow | Indian Institute of Technology (IIT) Kharagpur | India

- June 2017 | Affiliation : Department of Mechanical Engineering
- June 2017 | Supervisor : Dr. Cheruvu Siva Kumar | Professor | Department of Mechanical Engineering
- June 2017 | Responsibilities :
  - Preparation of Virtual Laboratories of Mechanical Signal Processing Systems and Automotive Systems for the Virtual Labs (Simulation Phase) Project
  - Designing Digital Environment and Simulations of Experiments for the Virtual Laboratories using Open Source Tools
- August 2015 |

### Executive Trainee | Balmer Lawrie & Co. Ltd. Kolkata | India

- May 2015 | Job Description : Operations management of Temperature Controlled Warehouse
- May 2015 | Responsibilities :
  - Monitoring of Civil Infrastructure Work at the Site for Temperature Controlled Warehouse
  - Preparation of Technical Specifications for Tender Committee Recommendation of Ammonia Refrigeration System and Fire Fighting Equipment for Cold Storage
- July 2014 | Preparation of Management Information System (MIS) Reports of Site Activities

## PUBLICATIONS

- 2024 | S Dutta, Y Cai, J Zheng, Multi-objective Anti-swing Trajectory Planning of Double-pendulum Tower Crane Operations using Opposition-based Evolutionary Algorithm, *Computer-Aided Civil and Infrastructure Engineering*, In Review [Preprint URL](#)
- S Dutta, Y Cai, Design and Simulation of Time-energy Optimal Anti-swing Trajectory Planner for Autonomous Tower Cranes, *Journal of Computing in Civil Engineering*, In Review [Preprint URL](#)
- 2022 | L Huang\*, R Pradhan\*, S Dutta, Y Cai, BIM4D-based Scheduling for Assembling and Lifting in Precast-enabled Construction, *Automation in Construction*, 133 (2022) [Publication URL](#)
- 2020 | S Dutta, Y Cai, L Huang, J Zheng, Automatic Re-planning of Lifting Paths for Robotized Tower Cranes in Dynamic BIM Environments, *Automation in Construction*, 110 (2020) [Publication URL](#)
- L Huang, S Dutta, Y Cai, Laser Scanned Real Environment for Intelligent Virtualization of Crane Lifting, *Virtual Reality & Intelligent Hardware*, 2 (2020) [Publication URL](#)
- 2018 | L Huang, Y Zhang, J Zheng, P Cai, S Dutta, Y Yue, N Thalmann, Y Cai, Point Cloud Based Path Planning for Tower Crane Lifting, *In Proceedings of Computer Graphics International 2018 (CGI2018)*, New York, NY, USA [Publication URL](#)
- 2013 | S Dutta, T K Naskar, Synthesis of Adjustable Offset Slider-Crank Mechanism for Simultaneous Generation of Function and Path using Variable-Length Links, *In Proceedings of the 1st International and 16th National Conference on Machines and Mechanisms 2013 (iNaCoMM2013)*, IIT Roorkee, Uttarakhand, India [Publication URL](#)

\*Equal Contribution

## JOURNAL ROLES

- 2023-Present | **Reviewer** | Swarm and Evolutionary Computation
- 2020-Present | **Reviewer** | Automation in Construction

## TECHNICAL SKILLS

Operating Systems	Software	Programming Languages
Linux Windows	3DS Max AutoCAD CATIA SOLIDWORKS Revit Gazebo ROS Simulink	MATLAB ●●●●● C++ ●●●●○ HTML ●●●○○

## ACADEMIC ACHIEVEMENTS

- 2015 | **324 out of 340** | Graduate Record Examination (GRE)  
170 out of 170 in Quantitative Reasoning  
154 out of 170 in Verbal Reasoning
- 2010 | **All India Rank 210** | West Bengal Joint Entrance Examination (WBJEE) | India

## STUDENT LEADERSHIP

- 2019-2020 | **Vice President (Welfare)** | NTU Graduate Students' Association (GSA)
- 2018-2019 | **Director of Recreation** | NTU Graduate Students' Association (GSA)
- 2017-2021 | **Founder & Chairman** | NTU Graduate Students' Association (GSA) Dance Crew

## MISCELLANEOUS

Languages	Extra-Curricular
English ●●●●● Bengali ●●●●● Hindi ●●●●○	Trekking Hip Hop Graphic Design Photography Videography Mixology Blogging