

Arkadeep Narayan Chaudhury

Homepage

[LinkedIn](#), [GitHub](#)

[ResearchGate](#)

Email: arkadeepnc@cmu.edu

Cell: +1 412-626-4231

4225 Newell-Simon Hall, 5000 Forbes Avenue
Carnegie Mellon University, Pittsburgh, PA, ZIP: 15232

EDUCATION

Carnegie Mellon University

PhD in Computer Science (Robotics); GPA: 4.00/ 4.00

Pittsburgh, PA

Aug. 2018 – Now

Indian Institute of Science

Master of Science in Mechanical Engineering; GPA: 6.3/8.0

Bangalore, India

Aug. 2015 – Dec. 2017

Indian Institute of Engineering Science and Technology

Bachelor of Engineering in Mechanical Engineering; GPA: 8.58/10.00

Shibpur, India

Jul. 2011 – May 2015

EXPERIENCE

Atkeson Lab & Robotouch Lab, CMU RI

Graduate Research Assistant

Pittsburgh, PA

Nov. 2019 – Present

Advisors:

Profs. Christopher Atkeson and Wenzhen Yuan

FingerVision II: Developing FingerVision II – a sensor and set of algorithms for tactile object recognition through local surface information. We aim to combine the best of two well known camera based tactile sensors – GelSight and FingerVision.

CI2CV Lab, CMU RI

Graduate Research Assistant

Pittsburgh, PA

Aug. 2019 – Nov. 2019

Advisor:

Prof. Simon Lucey

Learning Based Registration: Researched learning based algorithms for registration of human organ models. A summary my work: [Link](#).

Biorobotics Lab, CMU RI

Graduate Research Assistant

Pittsburgh, PA

Aug. 2018 - Jul. 2019

Advisor:

Prof. Howie Choset

Medical device prototype: Co-developed and prototyped a hand held soft tissue investigation device for low-cost tumor diagnosis [publication 1].

Non-rigid registration: Surveyed algorithms for human organ registration and proposed faster algorithms with comparable accuracy to handle larger volumes of data. [Link](#)

Robotics and Design Lab, IISc

Research Staff

Bangalore, India

Jan. 2018 - Jul. 2018

Advisor:

Prof. Ashitava Ghosal

Optimal Motion Planning: Derived optimal, polynomial time motion plans for snake-like robots in confined spaces such as endoscopes, pipe inspection robots and robots in cluttered search and rescue scenarios. [Publication 2]

Robotics and Design Lab, IISc

Graduate Research Assistant

Bangalore, India

Jul. 2015 - Dec. 2017

Advisor:

Prof. Ashitava Ghosal

Design of Parallel Robots: Designed Monte Carlo simulations to model workspaces of parallel robots. Modeled the human 3-fingered grasp and proposed techniques for optimal design of parallel robots. [Publications 3 & 4]

Solid Mechanics Lab, IIST

Undergraduate Researcher

Shibpur, India

Jul. 2014 - Apr. 2015

Advisor:

Prof. Debasis Datta

Design of Springs: Formulated closed form expressions for design of springs of un-conventional shapes to estimate their stresses, natural frequencies, buckling loads etc. [Publication 5]

SELECTED COURSE PROJECTS

Planning on Manifolds: Devised algorithms for path planning of collaborative robot arms to manipulate ultra-sound probes on a human body phantom. The algorithm may be used to automate femoral artery catheterization. [[Video](#)]
SLAM for Legged Robots: Used GTSAM and OpenCV to co-develop a framework for visual state estimation in legged robots using their gait information. [[Report](#)]

SELECTED PUBLICATIONS. [[GOOGLE SCHOLAR PAGE](#)]

- [1] Zodge T., **Chaudhury, A. N.**, Srivatsan, R.A. Zevallos, N. & Choset H. (2019) “Hand held stiffness measuring device for preliminary tissue analysis.” *In proceedings of the Hamlyn Symposium for Medical robotics 2019* [Link](#)
- [2] Ashwin K.P., **Chaudhury A.N.**, and Ashitava Ghosal. (2020) “Efficient representation of ducts and cluttered spaces for realistic motion planning of hyper-redundant robots through confined paths.” *J. Computer-Aided Design*, 119, 102777. [Link](#)
- [3] **Chaudhury, A. N.**, & Ghosal, A. (2017). “Optimum design of multi-degree-of-freedom closed-loop mechanisms and parallel manipulators for a prescribed workspace using Monte Carlo method”. *Mechanism and Machine Theory*, 118, 115-138. [Link](#)
- [4] **Chaudhury, A. N.**, & Ghosal, A. (2018). “Workspace of Multi-fingered Hands Using Monte Carlo Method”. *Journal of Mechanisms and Robotics*, 10(4), 041003. [Link](#)
- [5] **Chaudhury, A. N.**, & Datta, D. (2017). “Analysis of prismatic springs of non-circular coil shape and non-prismatic springs of circular coil shape by analytical and finite element methods”. *Journal of Computational Design and Engineering*, 4(3), 178-191. [Link](#)

SKILLS

Programming Languages: Python and C++
Modelling Tools: Matlab, Maple (Symbolic Mathematics)
Computing Environments: Windows, Ubuntu
Machine Learning Toolboxes: PyTorch, TensorFlow, SciKit-Learn
Software Libraries: ROS, OpenCV, PCL, GTSAM
Languages: English (full proficiency), Bengali (native proficiency) and Hindi (bi-lingual proficiency)

RELEVANT COURSES

At CMU: Computer Vision (16-720), Advanced Nonlinear Control Theory (16-748), Robot Localization (16-833), Geometric Methods in Computer Vision (16-822), Linear Systems (18-771), Statistical Techniques in Robotics (16-831), Deep Reinforcement Learning (10-703), Machine Learning (10-701)
At IISc: Robotics (Kinematics, Dynamics and Control), Numerical Linear Algebra, Geometric Modelling, Linear and Non-Linear Optimization,

AWARDS

DST-SERB Overseas PhD fellowship [Declined]	08/2018 – 08/2023
Graduate Research Fellowship (CMU)	08/2018 – 08/2019
DST Graduate Scholarship (at IISc)	08/2015 – 12/2017

INTERESTS

Academic: Tactile sensing and object recognition, Computational geometry, 3D Surface modelling.
Sports: Biking and badminton.

REFERENCES

Dr. Christopher Atkeson Professor, CMU, cga@cmu.edu [advisor]
Dr. Ashitava Ghosal Professor, IISc Bangalore. asitava@iisc.ac.in [ex. advisor]
Dr. Wenzhen Yuan Assistant Professor, CMU RI, yuanwz@cmu.edu [collaborator]