

Rashik Shrestha

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Kathmandu, Nepal

More about me: rashik.info.np

About Me

My research interest lies in the intersection of **Robotics** and **Computer vision**. I am fascinated by how human brains can perceive the 3D environment and act accordingly.

I have worked on

Computer Vision	Robotics	Artificial Intelligence
Photogrammetry, Multi View Geometry	ROS	Transformers
3D reconstruction	Probabilistic Robotics	Diffusion Models
NeRFs	Kinematics	etc..
Visual SLAM	Embedded Programming	
	Circuit design and fabrication	

Projects

- **NeRF based pose estimation:** Traditional feature-based hierarchical localization works really great until the environment lacks textures for point feature extraction. This project leverages the power of NeRFs and diffusion models for robust pose estimation in low textured environment.
- **Residual Learning for Image Point Descriptors:** Handcrafted point features like SIFT, SURF still work good for most of the tasks (3D reconstruction, localization) with a properly tuned pipeline. This project focuses on enhancing the existing handcrafted features by learning only what they already don't know. This creates a lightweight model that is fast and more robust.
- **Visual Localization for Mobile Robot:** This project uses a monocular camera as its only sensor to build a 3D map of the entire room and localize itself in the built map using Visual SLAM algorithm.
- **ABU Robocon 2019:** Designed, fabricated and tested the robots to take part in ABU Robocon 2019 competition held at Ulaanbaatar, Mongolia
- **Streetfood Vending Machine:** Designed, built and launched fully automated vending machine for a popular Nepali street food
etc ...

[\[More details on my Projects\]](#)

Academics

- **Pulchowk Campus, Tribhuvan University** Lalitpur, Nepal
Bachelor in Electronics and Communication engineering Nov 2016 - Mar 2021

Work Experiences

- **NAAMII (naamii.org.np)** (on-site) Kathmandu, Nepal
Research Assistant May 2021 - Present
 - Working on project **NeRF based pose estimation** under the supervision of [Dr. Danda Pani Paudel](#) and [Prof. Francois Rameau](#)
 - Worked on project **Residual Learning for Image Point Descriptors** under the supervision of [Dr. Ajad Chhatkuli](#)
- **GeoAutomation (geoautomation.com)** (remote) Montréal (QC), Canada
Computer Vision Engineer Jan 2022 - Present
 - Develop softwares for Structure from motion (SFM), Panorama Stitching and image retrieval algorithms
 - Worked with various GenICam standard machine vision cameras for the data acquisition system for mobile mapping
- **TransCad (transcadegypt.com)** (hybrid) Cairo, Egypt
Software Engineer June 2021 - Dec 2021
 - Experienced developing the highly efficient systems in **C++** to handle huge amount of real-time data (3GBps) for data acquisition
 - Develop and Deploy programs for AWS Lambda, Batch and EC2 instances

- **NAAMII (naamii.org.np)** (on-site) Kathmandu, Nepal
Research Intern
Jun 2020 - Nov 2020
 - Worked on Visual SLAM, Feature Matching, Indoor navigation, ROS
- **Robotics Club, Pulchowk Campus (robotics.pcampus.edu.np)** (on-site) Lalitpur, Nepal
Robotics Engineer
Nov 2016 - March 2019
 - Embedded Programming for AVR and ARM processors
 - Circuit design, fabrication
 - Control Systems, forward/reverse kinematics, 3D modeling

Teaching Experiences

- **Fourth Annual Nepal AI School (nepalschool)** (on-site) Kathmandu, Nepal
Teaching Assistant
May 2023
 - Assisted in teaching following topics: Mobile robotics, Photogrammetry, SLAM, NeRF, Image retrieval techniques, Hierarchical localization
- **Third Annual Nepal AI School (nepalschool)** (on-site) Bhaktapur, Nepal
Teaching Assistant
Dec 2021
 - Conducted lab sessions, assisted in Lab exercises and lecture assignments, prepared teaching materials for lab sessions in 10 days-long school in AI
- **Hardware Fellowship, LOCUS (locus)** (on-site) Lalitpur, Nepal
Trainer/Mentor
Nov 2019
 - Worked as trainer/mentor for 10 days hardware fellowship program. I got to share my knowledge about basic electronics, sensors, actuators, Arduino programming, soldering, and many more.

Leadership and Volunteering Experiences

- **Cohere For AI - The Aya Project (aya.for.ai)** (remote)
Nepali Language Ambassador
Sep 2023 - Present
 - Aya is an Open Science Initiative to Accelerate Multilingual AI Progress. I volunteer to represent Nepali Language by helping in data collection.
- **IEEE Pulchowk (ieee-pulchowk)** (on-site) Lalitpur, Nepal
Events Supervisor
Feb 2020 - Feb 2021
 - Conducted and supervised events such as talk shows, blood donations, reading sessions, trainings etcetera.
- **Engineering Students Group of Bhaktapur (esgb)** (on-site) Bhaktapur, Nepal
President
Nov 2019 - May 2021
 - Successfully organized and executed a variety of programs and initiatives to support and engage the engineering student community
 - Provided assistance with study materials and transportation services

Trainings

- **Nepal AI School (nepalschool)** Pokhara, Nepal
Dec 2019
 - Topics covered: Geometric Deep Learning, NLP, 3D Vision, VAEs and GANs, Computational Neuroscience, Robotic Vision (SLAM)
- **First Nepal winter school in AI (firstwinterschool)** Kathmandu, Nepal
Dec 2018
 - Participated in a 10 days long winter school about machine learning and AI. Topics covered: Probability and Statistics, Linear Algebra, Computer Vision, AI and Society, Bioinformatics, Reinforcement Learning, Graphical Modeling, Deep learning

Certifications

- [Machine Learning with Python-From Linear Models to Deep Learning](#)
- [Code Foundation for ROS](#)
- [ROS For Beginners](#)
- [Neural Networks and Deep Learning](#)

Honors and Awards

- **Rohm Award (Team):** 2019 - ABU Robocon 2019
- **LOCUS Best Thematic Hardware:** 2019 - Winner of National Level Competition held by LOCUS, Pulchowk
- **Institute of engineering (IOE) full scholarship:** 2016 - Full scholarship for studying Bachelor degree in one of the most reputed engineering college of Nepal

References

Dr. Danda Pani Poudel

Postdoctoral Researcher at Computer Vision Lab, [ETH Zurich](#)

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Prof. Francois Rameau

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Dr. Ajad Chhatkuli

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