PRANAB DUTTA

CHIEF EXECUTIVE OFFICER

CONTACT

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EDUCATION

2011 - 2013

GAUHATI UNIVERSITY

- Master of Science

2008 - 2011

GAUHATI UNIVERSITY

- Bachelor of Science

SKILLS

- Quantum Sensing
- Quantum Optics
- Precision Electronics
- Programming Language (Python)
- Leadership
- Effective Communication
- Critical Thinking
- Technical document drafting
- Financial Management

PROFILE

An accomplished leader in quantum sensor development with a proven track record, including spearheading the creation of India's first quantum gravimeter. Demonstrates deep expertise in designing and implementing diverse quantum sensors such as atomic clocks and atomic magnetometers, with a comprehensive understanding of the quantum technology ecosystem and its wide-ranging applications. Highly skilled in system architecture, algorithm design, hardware integration, and field deployment, and has successfully founded and led India's pioneering quantum sensing company, setting new benchmarks in the field.

WORK EXPERIENCE

GDQLABS Private Limited 2022 - PRESENT

CEO and Co-founder

- Strong coordinated with directors and senior management team to ensure the strategic alignment and optimal utilization of resources, driving company-wide efficiency and growth.
- Lead, mentor, and manage a high-performing scientific team, fostering a collaborative and results-driven work environment.
- Ensured appropriate allocation of resources to various projects, balancing short-term needs with long-term strategic goals to maximize impact.
- Engaged in diverse projects including the development of pulse generators, acousto-optic modulator drivers, free-space quantum communication systems, and indigenous single-photon avalanche diodes, contributing to advancements in quantum technologies.
- Designed and implemented robust evaluation systems for development processes, significantly improving productivity and operational performance across teams.

IISER Pune Aug 2017 - 2024

Research Scholar

- Developed and experimented with a quantum gravimeter in a laboratory setting, utilizing Bose-Einstein Condensates.
- Contributed to the development of a compact cold atom chamber for a neural atom quantum computer.
- Participated in the development of a cold atom-based atomic clock using strontium atoms.
- Worked on the creation of an oxygen generator through chemical processing techniques.

PROFESSIONAL ACHIVEMENTS

- Secured seed funding to advance the development of a Quantum Magnetometer.
- Contributed to creating a compact, automated microscope for a startup focused on malaria detection.
- Designed an indigenous system for position acquisition and tracking in free-space quantum communication.
- Leading a team in the development of a pulse generator with a 20 ns pulse duration.
- Heading the development of a four-channel acousto-optical modulator for a quantum optics laboratory.
- Collaborating with a dedicated team to create India's first indigenous single-photon avalanche diode.
- Coordinated partnerships with companies to develop quantum sensors, including quantum gravimeters and atomic clocks.
- Contributed in drafting three patents, two for Quantum Sensors and one for microscope development.

PUBLICATIONS

1. **Comparative Analysis of Phase Noise for different configurations of Bragg lattice for an Atomic Gravimeter with Bose-Einstein Condensate; Pranab Dutta**, S. Sagar Maurya, Korak Biswas, Kushal Patel, Umakant D. Rapol, AIP Advances , 14, 015352 (2024)
2. **A Decade of Advancement of Quantum Sensing and Metrology in India Using Cold Atoms and Ions. J Indian Inst Sci**; **Pranab Dutta,** S. Sagar Maurya, Kushal Patel, Korak Biswas, Umakant D. Rapol, et al. J Indian Inst Sci, 103, 609–632 (2023)
3. Effects of finite momentum width on the reversal dynamics in a BEC based atom optics delta-kicked rotor. Jay Mangaonkar, Chetan Vishwakarma, S. Sagar Maurya, Sumit Sarkar, Jamie L MacLennan, **Pranab Dutta** and Umakant D Rapol, 2020, J. Phys. B: At. Mol. Opt. Phys., 53 235502 (2020)
4. Interplay between quantum diffusion and localization in the atom-optics kicked rotor; S. Sagar Maurya, J. Bharathi Kannan, Kushal Patel, **Pranab Dutta,** Korak Biswas, Jay Mangaonkar, M. S. Santhanam, and Umakant D. Rapol; Phys. Rev. E 106, 034207 (2022)
5. Machine-learning-based automated loading of strontium isotopes into magneto-optical trap; Korak Biswas, Kushal Patel, S. Sagar Maurya, **Pranab Dutta,** Umakant D. Rapol; AIP Advances},13 075313 (2023)
6. Spectroscopy of the 5s5p 3P0 → 5s5d 3D1 Transition of Strontium Using Laser Cooled Atoms; Kushal Patel, Palki Gakkhar, Korak Biswas, S Sagar Maurya, **Pranab Dutta**, Vishal Lal, B K Mani, and Umakant D Rapol, Journal of Physics B: Atomic, Molecular and Optical Physics, 57, 105501 (2024)
7. Electromagnetically Induced Transparency (EIT) aided cooling of strontium atoms; Korak Biswas, Kushal Patel, S. Sagar Maurya, **Pranab Dutta**, Umakant D. Rapol, Yeshpal Singh, arXiv:2311.08318 (2023) (Under review)
8. Asymmetric dynamical localization and precision measurement of BEC micromotion; S. Sagar Maurya, J. Bharathi Kannan, Kushal Patel, Pranab Dutta, Korak Biswas, M. S. Santhanam, Umakant D. Rapol, arXiv:2406.12358 (2024)
9. Evaporative Cooling by Switching the Optical Dipole Traps On and Off; S Sagar Maurya, **Pranab Dutta**, Korak Biswas, Kushal Patel, and Umakant D. Rapol
10. OVEN FOR GENERATION AND COLLIMATION OF AN ATOMIC BEAM, Umakant D Rapol, Kushal Patel, Korak Biswas, S. Sagar Maurya, **Pranab Dutta**, Indian Patent Application Number 202421000590. Filed on January 03, 2024.
11. CHEMICAL OXYGEN GENERATOR Umakant D Rapol, Kushal Patel, Korak Biswas, S. Sagar Maurya, **Pranab Dutta**, Indian Patent Application Number 202121020842, Filed on May 07, 2021. The patent has been granted
12. Hybrid oxygen system using passive and active systems Umakant D Rapol, Kushal Patel, Korak Biswas, S. Sagar Maurya, **Pranab Dutta**, Indian Patent Application Number 202111029508, Filed on June 30, 2021

WORKSHOPS AND EXHIBITION

1. **Participated in the Conference, International Conference on Signal Processing and Communications conducted by IISC, Bangalore (2020).**
2. **Participated in the Conference Quantum Enabled Science and Technology (QuEST) , organized by Centre for Quantum Science and Technology (CQST) at International Institute of Information Technology (IIIT), Hyderabad(2022).**
3. **GDQLabs was a part of the exhibition where we successfully demonstrated live trapping and cooling of Rubidium atoms at the States S&T Ministers' Conclave, Ahmedabad, held on 11-13 September 2022 in a public exhibition for the first time in ASIA with the help of IISER Pune and I-HUB QTF.**
4. **GDQLabs was a part of 2nd National Workshop on Technology Innovation in Cyber-Physical Systems (TIPS) under National Mission on Interdisciplinary Cyber Physical Systems (NM-ICPS) organized by India DST , Govt of India hosted by at IITDELHI, during 6-8 April 2023 where we demonstrated our pulse generator (first product of the startup).**

REFERENCE

Pranab Dutta

GDQLABS Pvt. Ltd. / CEO