CHANDAN SHEIKDER

Graduate Research Assistant | Bio-Robotics Researcher

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Research Interests

a. Bio-inspired Swarm Robotics, Autonomous Navigation Frameworks, Sensor Fusion (IMU, LiDAR, Vision)

b. Medical Robotics, Neuromorphic Computing, GPS-Denied Environment Navigation

c. Animal-Inspired Navigation Strategies, Calcium Imaging, Human-Robot Interaction

Education

MEng in Mechanical Engineering (Thesis) *Sep 2023 – Jun 2026 (Expected)*
Beijing Institute of Technology (BIT), Beijing, China

a. **Thesis:** Bio-Inspired Swarm Robotics and Autonomous Navigation in GPS-Denied Environments

b. **Advisor:** Dr. Weimin Zhang

c. **Funding:** Chinese Government Scholarship (CSC Scholarship, 2024-2026)

BEng in Mechatronics Engineering *Sep 2019 – Jun 2023*
Hebei University of Technology, Tianjin, China

a. **CGPA:** 3.514/4.0 (87.85%) | **Rank:** 2/61 (Top 3%)

b. **Honors:** First Class Honors, Outstanding Graduate Award

Research Experience

Graduate Research Assistant *Sep 2024 – Present*
Beijing Institute of Technology, Beijing, China

a. Leading thesis research on bio-inspired swarm robotics with focus on autonomous navigation frameworks for complex, GPS-denied environments using sensor fusion and neuromorphic approaches

b. Developing novel algorithms combining IMU, LiDAR, and vision sensors for robust localization and mapping in unstructured terrain with dynamic obstacles

c. Implementing high-fidelity simulations in ROS/Gazebo and conducting hardware experiments with TurtleBot3 and custom robotic platforms

d. Published 3 papers in Q1 journals (Nature Reviews Bioengineering IF: 37.6, Cell Press Device IF: 6.9, Sensors IF: 3.7) with 4 additional manuscripts under review

e. Filed 1 Chinese patent on bio-inspired fusion navigation framework

Selected Publications

h-index: 2, Total Citations: 12, 12 peer-reviewed publications

Journal Articles (First/Co-Author)

[1] **C. Sheikder** et al., "Bio-inspired navigation systems for robots," *Nature Reviews Bioengineering*, vol. 2025, 2025. **IF: 37.6 (Q1)**
https://doi.org/10.1038/s44222-025-00367-6

[2] **C. Sheikder** et al., "Neuromorphic Navigation for Autonomous Robots," *Device* (Cell Press), 2025. **IF: 6.9 (Q1)**

[3] **C. Sheikder** et al., "A Neuromorphic Framework for Bio-Inspired Navigation in Autonomous Robots," *Cell Reports Physical Science*, 2025. [Accepted] **IF: 7.2 (Q1)**

[4] **C. Sheikder** et al., "Marine-Inspired Multimodal Sensor Fusion and Neuromorphic Processing for Autonomous Navigation in Unstructured Subaquatic Environments," *Sensors*, vol. 25, no. 21, 2025. **IF: 3.7 (Q1)**
https://doi.org/10.3390/s25216627

[5] **C. Sheikder** et al., "Bio-inspired and Soft Robotics for Autonomous Wind Energy Operations: A Comprehensive Review on Inspection, Repair, and Resilient Design," *Renewable and Sustainable Energy Reviews*, 2025. [2st Revision Submitted] **IF: 20.2 (Q1)**

[6] **C. Sheikder** et al., "Soft Computing Techniques Applied to Adaptive Hybrid Navigation Methods for Tethered Robots in Dynamic Environments," *Robotics and Autonomous Systems*, 2025. [2st Revision Submitted] **IF: 5.2 (Q1)**
Preprint: Authorea

[7] **C. Sheikder** et al., "Autonomous Space Exploration: Interplanetary Communication Latency, Ethical AI Protocols, and Machine Learning in Extreme Environments," 2025. [Accepted] **IF: 2.6 (Q1)**

[8] **C. Sheikder** et al., "Towards the Wearable Cardiorespiratory Sensors for Aerospace Applications," *Journal of Aviation/Aerospace Education & Research*, vol. 34, no. 2, 2025.
https://doi.org/10.58940/2329-258X.2009

[9] **C. Sheikder** et al., "Assessing Cognitive Workload in Air Traffic Management using Cardio-Respiratory Sensor: A Performance Evaluation," *Journal of Aeronautics & Aerospace Engineering*, vol. 12, no. 2, pp. 1-11, 2023.
https://doi.org/10.35248/2168-9792.23.12.316

[10] **C. Sheikder** et al., "Towards Finding the Impact of Kinetic Information on Short Term Memory based Task," *Journal of Control & Instrumentation*, vol. 14, no. 1, pp. 1-8, 2023.
https://doi.org/10.37591/JOCI.V14I1.6957

[11] Shicheng Fan, **C. Sheikder**, et al., "HV-LIOM: Adaptive Hash-Voxel LiDAR–Inertial SLAM with Multi-Resolution Relocalization and Reinforcement Learning for Autonomous Exploration," *Sensors*, vol. 25, no. 24, 7558, 2025. **IF: 3.7 (Q1)**
https://www.mdpi.com/1424-8220/25/24/7558

[12] M. M. Haque, **C. Sheikder**, et al., "Retroactive about Robotics Application with Artificial Intelligence toward the Global Pandemic Scenario," *European Journal of Electrical Engineering and Computer Science*, vol. 7, no. 2, pp. 34-43, 2023.
https://doi.org/10.24018/EJECE.2023.7.2.494

Conference Proceedings

[13] M. M. Haque, **C. Sheikder**, et al., "Exploiting the Phenomena of Performance Degradation Distribution for Reliability Evaluation of Aerospace Engines," *2022 IEEE International Conference on Advanced Technology Management and Smart Infrastructure (IATMSI)*, 2022. **Best Paper Award**
https://doi.org/10.1109/IATMSI56455.2022.10119458

Patents & Intellectual Property

C. Sheikder et al., "Bio-inspired Fusion Navigation Framework for Autonomous Robots in GPS-Denied Environments," Chinese Patent Application No. 2025122201160600, Filed 2025. [Pending]

Research Projects

Robot Navigation & Positioning System for Dynamic Environments *Jan 2025 – Present*
Beijing Institute of Technology

a. Leading development of robust navigation framework handling dynamic obstacles and unstructured terrain
b. Implementing sensor fusion pipeline (IMU, LiDAR, Vision) with adaptive particle filters and local costmap layering
c. Developed SLAM algorithms and motion planning strategies in ROS/Gazebo achieving 94% localization accuracy
d. **Technologies:** ROS, Gazebo, Python, C++, SLAM, Sensor Fusion, Motion Planning

Smart Wheelchair Walker with Cloud Platform Integration *Mar 2025 – Present*
Beijing Institute of Technology

a. Architecting assistive technology system with real-time monitoring and remote assistance capabilities
b. Designing IoT infrastructure for data streaming, cloud analytics, and emergency response protocols
c. **Technologies:** IoT, Cloud Computing, System Architecture, Human-Robot Interaction

Environmental Control System with PID Regulation (Bachelor Thesis) *Jan 2023 – Jun 2023*
Hebei University of Technology

a. Designed and implemented closed-loop temperature & humidity control system with Arduino
b. Achieved ±0.5°C temperature stability and ±2% humidity regulation through optimized PID tuning
c. **Technologies:** Arduino, C++, PID Control, Sensor Integration, Embedded Systems

Academic Service & Leadership

Editorial Roles

- Guest Editor Assistant, Special Issue: *"Autonomous Navigation for Intelligent Robots"*, Sensors (MDPI), 2025

Peer Review Service

- **Reviewer**, Reliability Engineering & System Safety (Elsevier)

Teaching Experience

- Teaching Assistant, School of International Education, Hebei University of Technology, 2020–2021

Professional Memberships

a. Member, Institute For Engineering Research and Publication (IFERP)
b. Member, IEEE (Institute of Electrical and Electronics Engineers)

University Service

a. President, Student Activity Department & COVID-19 Frontline Volunteer, 2023–Present
b. Member, Science Club (2020–2021) & Sports Club (2019–2020)

Professional Experience

Sales Manager *Nov 2023 – Present*
PT Industry Tianjin Co., Ltd., China

a. Managing client relationships and technical sales for industrial automation solutions
b. Achieved 120% of annual sales target through strategic B2B partnerships

Sales Manager *Jul 2023 – Nov 2023*
Fucare Bike, China

Systems Engineer *Jan 2017 – Oct 2019*
Ring Tech Communications

a. Designed and deployed telecommunications infrastructure systems
b. Collaborated with cross-functional teams on system integration projects

Honors & Awards

a. **Best Paper Award**, IEEE MP Section International Conference (IATMSI), 2022
b. **Chinese Government Scholarship (CSC)**, Full scholarship for graduate studies, 2024–2026
c. **Outstanding Graduate Award**, Hebei University of Technology, 2023
d. **First Class Honors**, Bachelor's Degree with Distinction, 2023
e. **International Student Assistant Certificate**, Hebei University of Technology, 2022
f. **International Student Council Certificate**, Hebei University of Technology, 2020

Technical Skills

Programming & Tools: Python, C++, MATLAB, ROS, Gazebo, Git, LaTeX, Arduino IDE
Robotics & AI: SLAM, Sensor Fusion, Motion Planning, Deep Learning (TensorFlow, PyTorch), Computer Vision (OpenCV)
CAD & Design: AutoCAD, SolidWorks, CNC Programming, Technical Drawing
Cloud & IoT: AWS, Google Cloud, IoT Architecture, Edge Computing
Data Science: NumPy, Pandas, Matplotlib, Data Analysis, Machine Learning

Professional Certifications

Technical & Engineering: Deep Learning with TensorFlow (2021), Python for Data Science (2021), Artificial Intelligence Concepts (2021), Technical Drawing for Design and Drafting (2023), Introduction to Cloud Computing (IBM, 2021), AutoCAD (2021), CNC Programming (2021)
Professional & Marketing: Google Ads Certifications (Measurement, Search, Display, Apps, 2021–2023), LinkedIn Marketing Solutions & Strategy (2023), 120-hour Professional TEFL Certificate (2021)

Languages

Bengali: Native Proficiency | **English:** Fluent (Professional Working Proficiency) | **Chinese:** Intermediate (HSK-3 Certified) | **Hindi:** Intermediate

References

Available upon request