







## PERSONAL INFORMATION

Rajan Prasad



-  Khalifa University, Abu Dhabi (UAE)
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## POSITION APPLIED FOR

Post Doctoral / Researcher / Assistant Professor

## EDUCATION AND TRAINING

11/09/2012–23/12/2016

Bachelor in Mechanical Engineering

First division (79.65%)

Institute of Engineering, Western Region Campus, Pokhara (Nepal)

- Topper of BME/069 Batch
- Bachelor Final Year Project Title: "Design and Development of Reaper 'Mechanical Hausa' ",  
Intended to help small-scale farmers' problems and drudgery. It was designed using locally available parts so that the dependency on imports could be reduced.
- Focused on 'Design and Dynamics'
- Elective subjects: 'Machine design' and 'Tool design'

15/07/2017–30/06/2019

Master in Mechanical Engineering

Grade A (Approx. 90 %)

Beijing Institute of Technology, Beijing (China)

- Honored with 'Distinguish International Student Award 2017-2018'
- Research direction: "Dynamics and Control"
- Thesis title: "Real-time torque vectoring control of an off-road unmanned ground vehicle with multi-complex nonlinear constraints"
- Worked on Control co-ordination of AWID vehicles and Implementation using an embedded platform for practical verification

05/09/2019–15/07/2023

Ph.D. in Mechanical Engineering

Grade A (GPA 3.97)

Khalifa University, Abu Dhabi, United Arab Emirates (UAE)

- Thesis title: "Development of Innovative Bio robotic Assistive Exoskeletons for Stroke Patients Rehabilitation".
- Thesis Defense Date: 15 June 2023
- Developed a simulation-based framework for analysis of cable-driven lower limb rehabilitation exoskeletons (C-LREX): <https://github.com/rajanprasad460/C-LREX-Tool/releases>
- Teaching assistance (TA) for undergraduate courses: Mechatronics, Solid Mechanics.

02/11/2023–31/06/2024

Post Doctoral Fellow, Medical Sciences

Khalifa University, Abu Dhabi, United Arab Emirates (UAE)

- Focus area: "Influence of Biofeedback on reducing mental stress"; a non-invasive approach to study and analyze stress variation.
- Recording bio-signals such as heart rate, ECG, EEG, PPG, and other related signals to study the stress level.
- Incorporating biofeedback, mindfulness, and similar approach to study influence on stress variation
- Assisting MD students with their projects and undergraduate courses (Rehabilitation Engineering and Introduction to Neuroscience) students in recording and analyzing bio-signals.

01/07/2024–Ongoing

## Post Doctoral Fellow, Department of Mechanical and Nuclear Engineering

Khalifa University, Abu Dhabi, United Arab Emirates (UAE)

- Focus area: “Underwater hybrid manipulator: soft robotic arm for support and manipulation”
- N-link serial chain based discrete rigid manipulator design, dynamics and control (Elephant trunk inspired).
- Development of generalized framework for n-link serial chain with 1/2/3 rotational DOF at each joint (working toward inclusion of ODE partial derivatives for faster solution to match real time response).

## PERSONAL SKILLS

Mother tongue(s) Bhojpuri, Nepali

Foreign language(s) Hindi, English (IELTS 7 Band 2019)

Communication skills Good communication skills gained through my experience as an international student at Beijing Institute of Technology and Khalifa University.

Otherskills

- Software for Design: CATIA, PTC CREO, Auto-CAD
- Software for Analysis: ADAMS, ABAQUS, MATLAB/Simulink, Python (basic), AnyBody
- Documentation/Reporting: MS-OFFICE, Visio, etc.
- Other software: CAN calibration software, C Language, Pismoop for OpenECU

## PUBLICATIONS

- Conference(s)
- **Online**
  - Prasad, R. & Ma, Y. Hierarchical Control Coordination Strategy of Six Wheeled Independent Drive (6WID) Skid Steering Vehicle. IFAC-PapersOnLine 52, 60–65 (2019).
  - Prasad, R. et al. A Generalized Framework for the Assessment of Various Configurations of Cable-Driven Mobile Lower Limb Rehabilitation Exoskeletons. in Proceedings of the 12th International Conference on Biomedical Engineering and Technology 133–140 (ACM, 2022). doi:10.1145/3535694.3535716.
  - Prasad, R., Khalaf, K., Awad, M. I. & El-Rich, M. Assisting Stroke Gait with Cable Driven Lower Limb Rehabilitation Exoskeleton (C-LREX): Simulation Study. in 13th International Conference on Biomedical Engineering and Technology (ICBET) 6 (2023).
  - Prasad, R., Khalaf, K., Awad, M. I. & El-Rich, M. Influence of Controller on Cable Driven Lower Limb Rehabilitation Exoskeleton (C-LREX): PD vs MPC. in 9th International Conference on Control, Decision and Information Technologies (CoDIT) (ed. IEEE) 6 (2023).
  - M. Alani, F. et al. Complex Correlation Method Identifies Efficacy of One-week Mindfulness Training in College Students. in 2023 Computing in Cardiology (CinC) 1–2 (IEEE, 2023).
  - Ihsan Khan, M. S. et al. Baevsky's Stress Index as a Sensitive Indicator for Biofeedback Efficacy in Medical Students: a Pilot Study. in 2024 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC) 1–4 (IEEE, 2024). doi:10.1109/EMBC53108.2024.10782708.
  - Nasrat, S. et al. Multiscaled crucial events complexity analysis of heart rate signals during Tibetan singing bowls meditation. in 2024 13th Conference of the European Study Group on Cardiovascular Oscillations (ESGCO) 1–2 (IEEE, 2024). doi:10.1109/ESGCO63003.2024.10766966.
  - Prasad, R., Nasrat, S., Dimassi, Z., Alefishat, E. & Jelinek, H. F. Participants tend to Synchronize with the Tibetan Singing Bowl. in 2024 13th Conference of the European Study Group on Cardiovascular Oscillations (ESGCO) vol. 4 1–2 (IEEE, 2024).

- Conference(s)
- **Accepted**
  - Prasad, R., Rosyid A., Renda F., El-Khasawneh B., Cable Driven Elephant Trunk-Inspired Robot: Analytical Derivatives and Computational Insights. 6th International Conference on Artificial Intelligence, Robotics, and Control (AIRC 2025) 2025.

- Journal(s)
- **Online**
  - Prasad, R., Ma, Y., Wang, Y. & Zhang, H. Hierarchical coordinated control distribution and experimental verification for six-wheeled unmanned ground vehicles. Proc. Inst. Mech. Eng. Part D J. Automob. Eng. 095440702094082 (2020) doi:10.1177/0954407020940823.
  - Prasad, R. et al. A Framework for Determining the Performance and Requirements of Cable-Driven Mobile Lower Limb Rehabilitation Exoskeletons. Front. Bioeng. Biotechnol. 10, (2022).
  - Prasad, R., El-Rich, M., Awad, M. I., Agrawal, S. K. & Khalaf, K. Bi-Planar Trajectory Tracking with a Novel 3DOF Cable Driven Lower Limb Rehabilitation Exoskeleton (C-LREX). Sensors 23, (2023).
  - Prasad, R., El-Rich, M., Awad, M. I., Agrawal, S. K. & Khalaf, K. Muscle-inspired bi-planar cable routing: a novel framework for designing cable driven lower limb rehabilitation exoskeletons (C-LREX). Sci. Rep. 14, 5158 (2024).

**-Accepted**

Prasad R., El-Rich M., Awad M.I., Khalaf K., Simulation of Stroke Gait Impairment Correction Using a Cable Driven Lower Limb Rehabilitation Exoskeleton (C-LREX). *Wearable Technologies*.

**- Submitted, Under Revision**

Prasad R., Dimassi, Z., Jelinek H.F., Towards Reliable ECG-derived Respiratory Monitoring via Baseline Wander Removal Techniques. *Scientific Reports*.

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ADDITIONAL INFORMATION

**Honors and Awards**

- Distinguish International Student Award 2017-2018, Beijing Institute of Technology, China
- 2nd Prize in Rocket Competition 2018 held at Beijing Institute of Technology
- Chinese Government Scholarship (CSC) Scholarship for Master Study
- HSEB Scholarship by HSEB, Nepal
- Best Paper Presentation Award at ICBET 2022 and 2023 conference

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REFERENCES

**Dr. Marwan El-Rich**

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