

Abishek Kafle

Contact Information

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Career Summary

I am a passionate, self-motivated researcher working in the field of Additive Manufacturing, automation, robotics, and artificial intelligence.

Professional History

Research Assistant, University of Houston <u>Key Responsibilities:</u> Cold Spray 3D printing, Design of harvesting system for floating aquation plants, Robotics, Machine Learning	08/2023-Present
Research Associate, Design Lab, School of Engineering, Kathmandu University, Kavre, Nepal (Full Time) <u>Key Responsibilities:</u> Innovation in Healthcare Technology	07/2022-12/2023
Research Assistant, Design Lab, School of Engineering, Kathmandu University, Kavre, Nepal (Full Time) <u>Key Responsibilities:</u> 3D Printing, 3D Scanning, Turbine Manufacturing, Control System	03/2019 - 06/2022
Visiting Faculty, Department of Mechanical Engineering, Kathmandu University, Kavre, Nepal (Part-Time) <u>Key Responsibilities:</u> Course Instructor for Engineering Drawing (EDRG 101) and Elements of Engineering (ENGG 111)	12/2019 - Present
Advisor, Students for the Exploration and Development of Space Nepal, Bhaktapur, Nepal (Part-Time) <u>Key Responsibilities:</u> Advisor to the executive board members and external networking committee	01/2019 - Present
Mechanical Engineer, Nepal Innovation Lab, World Vision International Nepal, Lalitpur, Nepal (Full Time) <u>Key Responsibilities:</u> Manufacturing of heavy-lift airbags	01/2019 - 01/2019
R&D Engineer, Orion Space, Bhaktapur, Nepal (Full Time) <u>Key Responsibilities:</u> Development and analysis of structural sub-system of a PocketQube (miniaturized satellite)	09/2018 - 12/2018
Intern, SunFarmer Nepal, Lalitpur, Nepal (Full Time) <u>Key Responsibilities:</u> Product development, commissioning and troubleshooting of solar water pumping systems, on-grid solar systems	06/2018 - 08/2018

Educational History

PhD, University of Houston Mechanical Engineering	08/2023- Present
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Master by Research, Kathmandu University, Nepal Mechanical Engineering Thesis: Development of Procedures for the Manufacturing of Francis Turbine in Nepal	12/2019 – 06/2022
Bachelor of Engineering, Kathmandu University, Nepal Mechanical Engineering Thesis: Study on Centrifugal Fan based Unmanned Aerial Vehicle	08/2014-10/2018

Research Interest

Additive Manufacturing, material science, machine learning and artificial intelligence

Technical Skills

- **3D Printing techniques:** CSAM, DIW, FDM, SLS and SLA
- **Machining Techniques:** Haas mill 3axis-CNC, Lathe
- **Software:** SolidWorks, PTC Creo, Autodesk Fusion 360, ANSYS, MATLAB
- **Programming Languages:** C/C++, Python, HTML
- **Other Skills:** CNC Machining, 3D Scanning, Reverse Engineering, Automation

Awards and Achievements

- Best project presentation award at AVIYANTAA 2016 (*Project title: "Design and fabrication of microcontroller baser color sensing and wire cutting robot"*)
- 2nd Runner up at Startup weekend at Kathmandu University (*Project: "IOT based Smart Agriculture system"*)
- 3rd Runners up IOE ROBOCON 2016 (*National level robotic competition*)
- IELTS
British Council
Overall Score: 8

Involvement in Research Projects

- Demonstrating the nutrient removal in urban-dominated watersheds using floating(2023-Present)
- Enhancement of Design and Manufacturing Capacity of Francis Turbine in Nepal (Design Lab, Kathmandu University, 2019 - 2022)
- One student One Hand Initiative (Design Lab, Kathmandu University, 2020 – 2021)
- Development of "Nepal PQ1" PocketQube (Orion Space, 2015- 2022)

Publications

Journal (s)

1. **A. Kafle**, E. Luis, R. Silwal, Houwen M P, P L Shrestha, and A. K. Bastola, "3D/4D Printing of Polymers: Fused Filament Modelling (FDM), Selective Laser Sintering (SLS), and Stereolithography (SLA)" *Polymers*, 13, 3101 (2021)
2. B. Koirala, **A. Kafle**, HC Nguyen, J. Kang, A. Zakeri, V Balen, F. Merchant, D. Benhaddou, W. Zhu,, "A Hybrid Three-Finger Gripper for Automated Harvesting of Button Mushrooms" *Actuators* 2024, 13, 287(2024)

Conference Proceeding (s)

1. A. Bhattarai, A. Gupta, **A. Kafle**, P. Sapkota, S. Chitrakar, O. G. Dahlhaug & S. Pradhan," Application of Machine Learning Algorithm for Fault Detection in Pump", Proceedings of the UNified Conference of DAMAS, InCoME and TEPEN Conferences (UNified 2023), Mechanisms and Machine Science, vol 151. Springer, Cham.

2. P. Tiwari, **A. Kafle**, P. Bijukchhe, A. Bhattarai "A review on Energy Storage Systems" 2023 *J. Phys.: Conf. Ser.* 2629 012024, March 2023
3. **A. Kafle**, N. Sapkota, R. Silwal, P. L. Shrestha, N. Sharma, and B. Thapa, "Determination of Casting Parameters for Affirmative Directional Solidification in 750 KW Francis Runner," *IOP Conf. Ser. Earth Environ. Sci.*, vol. 1037, no. 1, p. 12010, Jun. 2022
4. **A. Kafle**, P. L. Shrestha, R. Silwal, B. Thapa, A. Ghimire, and S. Chitrakar, "Use of 3D Printing technology for developing novel procedure to manufacture runner of Francis Turbine," *IOP Conf. Ser. Earth Environ. Sci.*, vol. 1037, no. 1, p. 12012, Jun. 2022
5. R. Silwal, **A. Kafle**, P. S. P. L. Shrestha, D. O. G. Dahlhaug, and D. B. Thapa, "Vibration Analysis of 3D printed runner with CNN for using deep learning in hydropower for condition monitoring," *IOP Conf. Ser. Earth Environ. Sci.*, vol. 1037, no. 1, p. 12054, Jun. 2022
6. **A. Kafle**, P. L. Shrestha, S. Chitrakar, B. Thapa, B. S. Thapa, and N. Sharma, "A review on casting technology with the prospects on its application for hydro turbines" *J. Phys. Conf. Ser.*, vol. 1608, no. 1, 2020
7. S. Kattel, J.P. Bhatta, R. Subedi, B. Thapa, S. Sujakhu, **A. Kafle**, T. M. Shakya "Investigation of Mechanical Properties of Brass Francis Turbine Manufactured by Local Investment Casting Technique in Nepal" *J. Phys. Conf. Ser.*, vol. 1608, no. 1, 2020
8. R. R. Mainali, S. Adhikari, **A. Kafle**, and P. L. Shrestha, "Francis Turbine: Manufacturing in the context of Nepal Francis Turbine: Manufacturing in the context of Nepal Design Lab", *CRHT IX, 2020*.
9. R. C. Prajapati, S. Poudel, J. Thapa, S. Shrestha, R. Pathak, **A. Kafle**, S. Shrestha, R. Shrestha, Y. Rajbhandari, R. Kafle, S. Khatiwoda, "Development of students pico-Satellite Based on PocketQube Standard for Space Radiation Measurement", *1st IAA North east Asia symposium on small satellites symposium on small satellites, 2017*.