Rakesh Sharma

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http://rakshrma.github.io/

Research Interests

My research interests lie in biomedical signal processing including image reconstruction, image analysis, and applications of AI in diagnostics and therapeutics.

Employment History

2024 – Curr
Advisor - Data Science, Eli Lilly and Company, Bengaluru.
Area of work: Injection Physiology, CBCT reconstruction, Bio-informatics.
Tools used: *Python, OpenCV, HPC, R, Tensorflow, PyTorch, Scikit-learn, Pillow*.

2023 – 2024
Senior Manager - Data Science, Eli Lilly and Company, Bengaluru.
Area of work: Injection Physiology, CBCT reconstruction, Bio-informatics.
Tools used: *Python, OpenCV, HPC, R, Tensorflow, PyTorch, Scikit-learn, Pillow*.

2020 – 2023
Manager - Data Science, Eli Lilly and Company, Bengaluru.
Area of work: Medical image analysis, CBCT reconstruction, Process automation.
Tools used: *Python, OpenCV, Slicer3D, HPC, R, Tensorflow, PyTorch, Scikit-learn, Pillow*.

2018 – 2020
CTO and Co-founder, Comofi Medtech Private Limited, Bengaluru.
Area of work: Medical image analysis, Image Registration, Robotics.
Tools used: *Python, OpenCV, Tensorflow, ROS, Slicer3D, Scipy, Numpy*.

2017 – 2018
Lead - Product Development, Achira labs Private Limited, Bengaluru.
Area of work: Immunoassay development, Data analysis and visualization.
Wet Lab exp: *Fluorescence imaging, Microfluidics, Medical product development*.

2015 – 2017
Scientist, Achira labs Private Limited, Bengaluru.
Area of work: Immunoassay development, Microfluidics.
Wet Lab exp: *Fluorescence imaging, Microfluidics, Biosensor development*.

2013 – 2015
Project Engineer (Star Batch). Wipro Technologies, Bengaluru.
Area of work: Computer Vision, Android Development.
Tools used: *Java, Python, C, OpenCV*.

Education

2008 – 2013
M.Tech. Biomedical Technology, Indian Institute of Technology (BHU), Varanasi
Dissertation title: *Synthesis and characterization of nano-composites of graphene and f-graphene with Bone-Cement*.

B.Tech. Bioengineering, Indian Institute of Technology (BHU), Varanasi
Thesis title: *Fabrication and validation of Low-cost pressure sensor embedded contact lens*.

Certification

2021 – 2022 **Artificial Intelligence Professional Program**. Awarded by Stanford University.
XCS229- Machine Learning,
XCS221- Artificial Intelligence: Principles and Techniques,
XCS224W- Machine Learning with Graphs.

Patent Publications

Published Patent Applications

1. H. Desai, M. Kawiecki, **R. Sharma**, A. Tiwari, and J. Venderley, *WO2023044089A1 - Methods and apparatuses for detecting anomalies when filling a container with fluid*, US Patent App. PCT/US2022/043937, Mar. 2023.
2. K. Gururaj, S. Kalme, S. Raghunath, and **R. Sharma**, *System for renal puncturing assistance*, US Patent App. 17/294,009, Jan. 2022.
3. **R. Sharma** and M. Madhusudhanan, *Image processing method of enabling financial transaction and an image processing system thereof*, US Patent App. 14/459,428, Dec. 2015.

Research Publications

Journal Articles

1. X. Dang, H. Shih, **R. Sharma**, *et al.*, "Clinical investigations of large volume subcutaneous delivery up to 25ml for lean and non-lean subjects," *Under review*, 2023.
2. S. Goyal, P. Bist, and **R. Sharma**, "Optimal sample pooling: An efficient tool against sars-cov-2," *medRxiv*, 2020.
3. **R. Sharma**, G. Kapusetti, S. Y. Bhong, *et al.*, "Osteoconductive amine-functionalized graphene–poly (methyl methacrylate) bone cement composite with controlled exothermic polymerization," *Bioconjugate chemistry*, vol. 28, no. 9, pp. 2254–2265, 2017.

Two articles in draft stage.

Conference Proceedings

1. J. Pai, M. Azad, B. Goyal, R. Nair, **R. Sharma**, and D. Dendukuri, "A point-of-care immunoassay platform for thyroid function based on hydrogel sensors embedded inside a microfluidic device," in *23rd International Conference on Miniaturized Systems for Chemistry and Life Sciences, MicroTAS 2019*, Chemical and Biological Microsystems Society, 2019, pp. 102–103.

Invited Talk

2019 **36th Annual Seminar And 20th Triguna Sen Memorial Lecture "The Artificial Intelligence Revolution, Are You Ready?**
Indian Institute Of Chemical Engineers, New Delhi.

Skills

Coding Python, R, C, Java, Lua

Skills (continued)

Libraries and Tools	OpenCV, Numpy, Scipy, Tensorflow, PyTorch, Scikit-Learn, Pillow, Slicer3D, PyQT, Tkinter
Languages	Strong reading, writing and speaking competencies for English, Hindi and Nepali.

Awards and Achievements

H2,2023	**Lilly Innovator Award (Individual and Team)**, Lilly Research Labs
H1,2022	**Lilly Innovator Award**, Lilly Research Labs
Q4,2021	**Lilly Innovator Award**, Lilly Research Labs
2014	**Top 6 coders**, hackathon among $\sim$ 0.15million Wipro employees
2013	**2nd Rank**, Undergraduate and Master's Degree
2008	**Top 1.56%**, among 0.32million Indian students appearing in IIT entrance exam

References

Available upon request