

MD IMBESAT HASSAN RIZVI

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🌐 github.com/imbesat-rizvi 📄 scholar.google.co.in/citations?user=h435hnQAAAAJ 🌐 linkedin.com/in/md-imbesat-hassan-rizvi-91b30a14

EMPLOYMENT

Robert Bosch Centre for Cyber-Physical Systems, Indian Institute of Science (IISc)

Oct 2020 – Present

■ Technical (Research) Associate

- Working on Human-Robot Interaction (HRI) for social robots.
- Enabled (i) two-way remote speech communication with phoneme segmentation based lip synchronization and (ii) Wav2Vec2 based speech to text conversion followed by NLP based action identification and execution on social tele-robot “Asha”. Part of the work is open sourced as *sonorus* pypi package and *imperio* github repository.
- Our team “Aham” is one of the finalists in the International Conference on Social Robotics (ICSR), 2021 (Competition track) and is among the thirty eight semi-finalists in the ANA Avatar XPRIZE competition.
- Working towards enabling language (NLP) based instruction execution through reinforcement learning (RL).

Hewlett-Packard (HP) Inc.

Jul 2017 – Oct 2020

■ Senior Machine Learning Engineer (Data Scientist III)

Nov 2019 – Oct 2020

■ Machine Learning Engineer (Data Scientist IIIA)

Jul 2017 – Oct 2019

- *Printer part failure prediction for minimal intervention cost* – We introduced sequence-based definition of precision and recall specific to the class of problems for intervention along with an LSTM based learning procedure using multiple-instance learning based hybrid loss.
- *Identifying the relative importance of customer issues on product ratings* – Used self-attention based LSTM network to identify key phrases within a customer review followed by identifying the overall importance of these phrases in determining product ratings.

EDUCATION

Indian Institute of Science (IISc), Bangalore

■ Reinforcement and Deep Reinforcement Learning – Crediting Course

Aug 2021 – Present

■ M.Tech from the Department of Computational and Data Sciences (CDS) – (CGPA : 6.1 / 8.0)

Jul 2015 – Jun 2017

Thesis work – on combinatorial approaches to non-isomorphic graph generation of potential drug molecules by preserving local information-theoretic indices of activity linked nodes in molecular graphs, and chemical properties prediction of hydrocarbons. Project funded by departments under *Ministry of Science & Technology, Government of India (GoI)*.

Indian Institute of Technology - IIT (ISM), Dhanbad

Jul 2008 – Jun 2012

■ B.Tech in Mechanical Engineering – (CGPA : 7.83 / 10.0)

Senior year project – developed a mathematical model for thermal properties of nano-fluids based on a linear conductivity gradient across the interfacial layer between the nano-particles and the base fluid, and solving the resulting steady state heat conduction differential equation.

ONLINE COURSES

Tokyo Data Science (TokyoDS)

Apr 2019 – Mar 2020

■ Deep Learning and Data Science Track

Topics include – Mathematics for machine learning, gradient based optimization techniques, computer vision (CV), natural language processing (NLP), reinforcement learning (RL), generative adversarial networks (GANs), variational autoencoders (VAEs) and causal inference.

PUBLICATIONS

📄 Google Scholar Profile

In Submission

- Vivek Khetan*, Md Imbesat Hassan Rizvi*, Jessica Huber, Paige Bartusiak, Bogdan Sacaleanu, Andrew Fano. **MIMICause : Defining, identifying and predicting types of causal relationships between biomedical concepts from clinical notes.** arXiv:2110.07090 [cs.CL]

*Authors have equal contributions

- Adrian Ahne, Vivek Khetan, Xavier Tannier, **Md Imbesat Hassan Rizvi**, Thomas Czernichow, Francisco Orchard, Charline Bour, Andrew Fano and Guy Fagherazzi. **Identifying causal associations in tweets using deep learning: Use case on diabetes-related tweets from 2017–2021.**

Conference Papers

- Himanshu Tiwari, Shameed Sait, **Md Imbesat Hassan Rizvi** and Niranjan Damera-Venkata. **Identifying the Relative Importance of Customer Issues on Product Ratings through Machine Learning.** In *Proceedings of the ACM Symposium on Document Engineering 2018 (DocEng '18)*.

Journal Papers

- Chandan Raychaudhury, **Imbesat Hassan Rizvi** and Debnath Pal. **Predicting gas phase entropy of select hydrocarbon classes through specific information-theoretical molecular descriptors.** *SAR and QSAR in Environmental Research*. Taylor & Francis. Vol. 30, Issue 7, pp. 491–505, 2019.
- Chandan Raychaudhury, **Md. Imbesat Hassan Rizvi** and Debnath Pal. **Combinatorial Design of Molecule using Activity-Linked Substructural Topological Information as Applied to Antitubercular Compounds.** *Current Computer-Aided Drug Design*. Bentham Science. Vol. 15, Issue 1, pp. 67–81, 2019.
- Ayush Jain, **Imbesat Hassan Rizvi**, Subrata Kumar Ghosh and P.S. Mukherjee. **Analysis of nanofluids as a means of thermal conductivity enhancement in heavy machineries,** *Industrial Lubrication and Tribology*, Emerald Group Publishing. Vol. 66, No. 2, pp. 238–243, 2014.
- **Imbesat Hassan Rizvi**, Ayush Jain, Subrata Kr. Ghosh and P. S. Mukherjee. **Mathematical modelling of thermal conductivity for nanofluid considering interfacial nano-layer.** *Heat and Mass Transfer*. Springer-Verlag. Vol. 49, Issue 4, pp. 595–600, 2013.

Book Chapters

- **Md. Imbesat Hassan Rizvi**, Chandan Raychaudhury and Debnath Pal. **Combinatorial Drug Discovery from Activity-Related Sub-structure Identification.** In: Mohan C. (eds) *Structural Bioinformatics: Applications in Preclinical Drug Discovery Process*. Challenges and Advances in Computational Chemistry and Physics. Springer, Cham. Vol. 27, pp. 71–108, 2019.

TUTORING, SERVICES AND VOLUNTEERING

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| ■ Teaching Assistant, Computational Data Science, Indian Institute of Science (IISc) | July 2021 – Present |
| ■ Reviewer, ML Reproducibility Challenge 2020 | Feb 2021 – Mar 2021 |
| ■ Grading & Master's Thesis Supervision Assistantship, UpGrad Education Pvt. Ltd. | Oct 2020 – Present |
| ■ Volunteer, International Conference on Learning Representations (ICLR) | Apr 2020 |

TECHNICAL SKILLS

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| Programming: | Python, Java, C++, Matlab, CUDA, MPI, Open-MP |
| Software & Frameworks: | PyTorch, Keras, Robot Operating System (ROS), Docker, Scikit-Learn, XGBoost, Flask |

SCHOLARSHIPS, HONOURS AND ACHIEVEMENTS

Scholarships

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| ■ Graduate Student Scholarship, Indian Institute of Science (IISc), Bangalore | Jul 2015 – May 2017 |
| ■ Merit-cum-means Scholarship, Indian Institute of Technology – IIT (ISM), Dhanbad | Jul 2008 – May 2012 |

Honours and Achievements

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| ■ Secured rank of 99 (top 0.06 percentile) in the all India Graduate Aptitude Test in Engineering (GATE) which is a test for country-wide admissions to graduate engineering programs in India. | Mar 2013 |
| ■ 2 nd Prize recipient, Poster Competition, Society of Petroleum Engineers (SPE), Bangalore Section | Sep 2009 |
| ■ Secured a position among the top 2 percentile in the Indian Institute of Technology (IIT) entrance examination which is conducted country-wide for undergraduate admissions to prestigious IIT(s). | Jun 2008 |
| ■ Amul Vidya Bhushan Award – by Amul Foundation for academic excellence | Jun 2008 |
| ■ Hindustan Pratibha Samman – by HT Media Ltd. for academic excellence | Jun 2008 |
| ■ Secured an All India Rank of 131 (top 6 percentile) in National Science Olympiad (NSO) | 2003 |