






# Dr. Rajkrishna Mondal

 <https://rajkrishna92.github.io>

 <https://github.com/rajkrishna92>

 <https://www.linkedin.com/in/rajkrishna92>

 [rajkrishna.math@gmail.com](mailto:rajkrishna.math@gmail.com)

  7843909820



## OBJECTIVE

To be honest towards my work and to achieve a position in industry and research world to utilize my skills and abilities in a renowned organization that allows me to expand upon my knowledge and skills by contributing in the best way and offers security and growth while being resourceful, innovative, and flexible.

## AREA OF INTEREST (SPECIALIZATION)

- Artificial Intelligence
- Generative AI, Agentic AI
- Natural Language Processing
- Prompt Engineering
- Data Science
- Big Data
- Soft Computing
- Mathematical Modeling
- Design and Development of Algorithms

## EDUCATIONAL PROFILE

- Doctor of Philosophy** Motilal Nehru National Institute of Technology Allahabad  
*Mathematics* August-2022
  - Topic of Research: “A study on Design and Development of Soft Computing Diagnostic information system in Medical Science”
- Master of Science** Motilal Nehru National Institute of Technology Allahabad  
*Mathematics and Scientific Computing, CPI: 7.62* June-2016
  - Project Title: “On Perspectives and Application of Fuzzy Initial Value Problems”
- Bachelor of Science** Calcutta University  
*Mathematics Honours, Marks obtained: 61.25%* July-2014

4. **Higher Secondary**  
*Class XII, Marks obtained: 79.40%*

Contai Model Institution, WBCHSE  
*May-2009*

5. **Madhyamik**  
*Class X, Marks obtained: 79.75%*

Majilapore Birendra Vidyapith, WBBSE  
*May-2007*

## WORK EXPERIENCE

### Data Scientist (Project Lead Developer)

Infinity Analytics Pvt. Ltd., Mumbai  
*26 September, 2021- Present*

Lead design, development, and deployment of an AI-powered cognitive search engine that transforms data interaction through advanced NLP, large language models (LLMs), and agent-based workflows.

### Technical Overview

#### Technical Vision & Architecture:

- Define and implement system architecture integrating LLMs, NLP modules, and agent-based processes.
- Design core modules: Natural language query processing, document ingestion, entity extraction, and automated SQL generation using LangChain and LangGraph.

#### Team Leadership & Project Management:

- Mentor a multi-disciplinary team of developers, data scientists, and engineers.
- Manage timelines, coordinate cross-functional teams, and mitigate risks to meet milestones within budget and time.

#### Development & Integration:

- Integrate AI components (LLMs like OpenAI, Ollama; vector stores like Chroma; agent frameworks) into a cohesive platform.
- Build pipelines for processing unstructured data using document loaders, text splitters, and memory management.
- Automate tasks such as converting natural language queries to SQL, generating visualizations, and interfacing with APIs (FastAPI).

#### Quality Assurance & Deployment:

- Enforce coding standards via code reviews and rigorous testing.
- Oversee CI/CD pipelines for scalable, secure deployments while ensuring data security and compliance.

#### Stakeholder Communication:

- Act as the technical liaison, translating complex AI concepts into actionable business insights.
- Prepare documentation, reports, and presentations for stakeholders.

## Impact

- **Enhancement of Business Operations:** The AI-powered cognitive search engine improves efficiency, accuracy, and accessibility of data across the organization, leading to substantial business growth, revenue increase, and superior customer engagement.
- **Business Growth:**
  - Facilitates faster and more accurate data retrieval, improving decision-making across all departments.
  - Streamlines internal processes by automating data extraction, reducing manual effort and operational costs.
  - Enhances innovation by enabling employees to focus on strategic initiatives instead of data wrangling.
- **Revenue Growth:**
  - Provides deeper business insights, helping identify new revenue streams and optimizing existing ones.
  - Improves marketing and sales strategies by analyzing customer interactions and preferences.
  - Automates reporting and analytics, reducing time-to-insight and enabling proactive business strategies.
- **Customer Experience & Satisfaction:**
  - Enhances customer service by delivering accurate, AI-driven responses to queries in real-time.
  - Personalizes user experience by leveraging AI to understand and predict customer needs.
  - Reduces response times and increases customer retention by providing relevant information instantly.
- **Competitive Advantage:**
  - Enables intelligent automation, reducing operational costs and improving productivity.
  - Strengthens data-driven decision-making, allowing for more strategic business moves.
  - Enhances user engagement and retention by offering seamless and efficient data accessibility.

By integrating this advanced AI solution, the company gains a competitive advantage through intelligent automation, data-driven decision-making, and improved user engagement, ultimately ensuring long-term success.

## TECHNICAL SKILLS




- **Operating Platform :** Linux; MacOS; Windows
- **Programming Language :** C, C++, Python, R, mySQL
- **Other Software/Tools :** Scikit-Learn, Numpy, Pandas, Statsmodels, Seaborn, Plotly, Matplotlib, TensorFlow, Keras, Spacy, NLTK, MATLAB, Excel, Tableau, Power BI, PySpark, PyTorch, LangChain, LangGraph, CrewAI, Llama Index, OpenAI
- **Database/Server:** My SQL, SQL Server
- **Typeset Software :** L<sup>A</sup>T<sub>E</sub>X, Microsoft Word

## LICENSES & CERTIFICATIONS

- **Complete SQL Mastery** (<https://codewithmosh.com/p/complete-sql-mastery>)
- **Machine Learning A-Z™: Hands-On Python & R In Data Science**  
(<https://www.udemy.com/course/machinelearning/>)
- **Deep Learning Specialization :**
  - **Neural Networks and Deep Learning** by DeepLearning.AI on *Coursera*  
(Certificate: <https://coursera.org/share/9198bf9e5641668612752b5cd17be8a2>)
  - **Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization** by DeepLearning.AI on *Coursera*  
(Certificate: <https://coursera.org/share/def05c9d5e90c88e02398c19677d6bfc>)
  - **Sequence Models** by DeepLearning.AI on *Coursera*  
(Certificate: <https://coursera.org/share/9db5dc52cfdba73e6bd6cdd756d19839>)
- **Deep Neural Networks with PyTorch** by IBM Skills Network on *Coursera*  
(Certificate: <https://coursera.org/share/93538b50a9cefdb14804a6a08efdd10c>)
- **Natural Language Processing Specialization :**
  - **Natural Language Processing with Sequence Models** by DeepLearning.AI on *Coursera*  
(Certificate: <https://coursera.org/share/9a37b3c58962cc01cdc6c628acd96168>)
  - **Natural Language Processing with Attention Models** by DeepLearning.AI on *Coursera*  
(Certificate: <https://coursera.org/share/1bf5c53cb5d028ddd77c80dec86affbf>)
- **Big Data Specialization :**
  - **Introduction to Big Data** by University of California San Diego on *Coursera*  
(Certificate: <https://coursera.org/share/204624b9502b77d2b2c68e43ab3361f6>)
  - **Big Data Modeling and Management Systems** by University of California San Diego on *Coursera*  
(Certificate: <https://coursera.org/share/c1447ddbfc6ecf8a79f97fe33b8aa6c2>)
- **Generative AI with Large Language Models** by DeepLearning.AI on *Coursera*  
(Certificate: <https://coursera.org/share/5a3a44036e2e0271fc6370f3d9bbcf59>)
- **Short Courses on Generative AI** on *DeepLearning.AI*
  - LangChain for LLM Application Development
  - LangChain Chat with Your Data
  - Finetuning Large Language Models
  - Large Language Models with Semantic Search
  - Building Systems with the ChatGPT API
  - Functions Tools and Agents with LangChain
  - Building and Evaluating Advanced RAG
  - Advanced Retrieval for AI with Chroma
  - Knowledge Graphs for RAG
  - Preprocessing Unstructured Data for LLM Applications
  - Building Agentic RAG with LlamaIndex
  - Building Your Own Database Agent
  - Serverless Agentic Workflows with Amazon Bedrock

- Multi AI Agent Systems with crewAI
- Practical Multi AI Agents and Advanced Use Cases with crewAI
- Reasoning with o1

## COMPLETED SELF PROJECT

- Design a MATLAB Application using self developed algorithm for diagnosing the various level of a Diabetic Patient with the help of complex life factors. 
- Design a MATLAB Application to assess the Kidney Performances of a Persons who is suffering from Diabetes. 
- Design an Intelligent Diet recommendation MATLAB Application to maintain daily Nutritional Macros (like carbohydrate, protein, fat) percentage without help of a Nutritional Experts. 

## ATTEND WORKSHOPS, CONFERENCES & SUMMER PROGRAMS

1. **II International Scientific Internet Conference on  
ACTUAL PROBLEMS OF PHYSICAL CULTURE, SPORTS AND HEALTH** 27-28 May, 2021  
Jointly Organized by The Bohdan Khmelnytsky National University of Cherkasy
2. **Application of MATLAB in Science and Technology (AMST-2019)** 1-5 April, 2019  
Jointly Organized by MNNIT Allahabad and KNIT Sultanpur
3. **National Instructional Workshop on Cryptology** 6-10 Jun, 2018  
Organized by MNNIT Allahabad in collaboration with Cryptology Research Society of India
4. **Fuzzy Techniques for Intelligent Decision Making** 11-15 Dec, 2017  
Organized by IIT Patna in collaboration with Global Initiative of Academic Networks (GIAN)
5. **Big Data** 7-11 Aug, 2017  
Organized by IIT Kanpur in collaboration with Knowledge Incubation for TEQIP
6. **Data Analytics and Machine Learning with R (DAMLR-17)** 29 May -2 Jun, 2017  
Organized by the Department of Computer Science & Engineering, MNNIT Allahabad
7. **Application of MATLAB in Science, Technology and Management (AMSTM-2016)** 1-7 Dec, 2016  
Organized by MNNIT Allahabad
8. **Role of Mathematical Sciences in Engineering and Technology (RMSET-16)** 19-23 Oct, 2016  
organized by the Department of Mathematics, MNNIT Allahabad
9. **Summer Program in Mathematics (SPIM)** 8-26 Jun, 2015  
organized by Harish-Chandra Research Institute, Prayagraj

## PAPER PRESENTED IN CONFERENCES

1. **24th FAI International Conference on Global Trends of Data Analytics in Business Management, Social Sciences, Medical Sciences and Decision making(24th FAI-ICDBSMD 2021)**  
Presented a paper entitled "*Fuzzy Utility Matrix based Intelligent Decision-Making Mathematical model and its application in Diet recommendation system for Metabolic Disorders patient*".  
Organized by FATER Academy of India; Institute of Technology, Gopeshwar & UNIFACVEST – University Center, Brazil during 25-27 June, 2021.
2. **International Conference on Computing, Communication, and Intelligent Systems(ICCIS-2021)**  
Presented a paper entitled "*QUALIFLEX based ranking system by using Interval Valued Hesitant Fuzzy Set and its application to rank the Diabetic patients*".  
IEEE Conference Record 51004; ISBN No.: 978-1-7281-8529-3  
Organized by Sharda University, Greater Noida, India during 19-20 February, 2021 .
3. **International Conference on Recent Trends and Innovations in Multidisciplinary Research (ICRTIMR-2020)**  
Presented a paper entitled "*Diabetes Diagnostic Intelligent Information System*".  
Organized by IEC University, Baddi, H.P., India Jointly organized by Globally Multidisciplinary Research and Education Association (GMREA) during 14 Mar, 2020.
4. **International Conference on Engineering, Mathematical and Computational Intelligence (ICEMCI-2019)**  
Presented a paper entitled "*Design and Development of Intelligent Information System using Hesitant Fuzzy Weighting Linguistic Term Sets for Computing with Words*".  
Organized by Jabalpur Engineering College, Jabalpur, Madhya Pradesh, India in association with FATER Academy of India and Walchand Engineering College, Sangli, Maharashtra, India during 21 Dec -23 Dec, 2019.
5. **Conference on Modern Analysis and Applications – An International Meet (CMAA -2019)**  
(67th Annual Conference of Bharat Ganita Parishad)  
Presented a paper entitled "*Intelligent Diet Recommendation System for Metabolic Disorders Patient*".  
Organized by The Department of Mathematics and Computer Science, Babu Banarasi Das University, Lucknow 226028 (Uttar Pradesh), India in collaboration with Bharat Ganita Parishad, Lucknow, India during 16 Nov-17 Nov, 2019.
6. **National Conference on Recent Trends in Devices, Circuits and Communication(RTDC<sup>2</sup>-2019)**  
Presented a paper entitled "*A Hesitant Fuzzy based expert system in Human Decision making*".  
Organized by Department of Electronics and Communication Engineering, Madan Mohan Malaviya University of Technology, Gorakhpur, UP, India during 15 Apr-16 Apr, 2019.
7. **International Conference on VLSI, Communication and Signal Processing(VCAS 2018)**  
Presented a paper entitled "*A Medical diagnostic information system with Computing with Words using Hesitant Fuzzy Sets*".  
Organized by ECED MNNIT Allahabad, during 29 Nov-1 Dec, 2018.
8. **International Conference on Recent Trends in Mathematical Sciences (ICRTMS-2018)**  
Presented a paper entitled "*Application of Hesitant Fuzzy Set for multi-criteria decision making Soft Computing Model in Diabetes Diagnostics*".  
Organized by The Department of Applied Mathematics, Maharaja Bir Bikram University, Tripura, India in collaboration with Tripura Mathematical Society, Tripura, India, during 24-25 Mar, 2018.

## PUBLICATIONS

1. **Mondal, R., & Srivastava, P.** (2022). Fuzzy Utility Matrix-Based Intelligent Decision-Making Model and Its Application to Diet Recommendation System for Metabolic Disorder Patients. *International Journal of Fuzzy System Applications (IJFSA)*, 11(1), pp. 1-22. <http://doi.org/10.4018/IJFSA.303563>
2. Srivastava, P & **Mondal, R..** (2021). Design and Development of Intelligent Information System using Hesitant Fuzzy Weighting Linguistic Term Sets for Computing with Words. *Lecture Notes in Networks and Systems (Springer)*, 214(1), 2022, pp. IV, 446, Series ISSN: 2367-3370. <http://doi.org/10.1007/978-981-16-3807-7>.
3. Srivastava, P & **Mondal, R..** (2021). QUALIFLEX based ranking system by using Interval Valued Hesitant Fuzzy Set and its application to rank the Diabetic patients. *2021 International Conference on Computing, Communication, and Intelligent Systems (ICCCIS 2021)*, pp.78-85. <http://doi.org/10.1109/ICCCIS51004.2021.9397179>.(IEEE)
4. **Mondal, R.** & Srivastava, P. (2021). Design and Development of an Intelligent System to Assess Kidney Performances of Persons Suffering from Diabetes. *International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies*, 12(4), 12A4A, 1-14. <http://doi.org/10.14456/ITJEMAST.2021.64>
5. Srivastava, P. & **Mondal, R.** (2020). A Hesitant Fuzzy Envelope Based Expert System in Human Decision Making. *Nepal Journal of Mathematical Sciences*, 2(1), 1-6. ISSN: 2738-9928 (online), 2738-9812 (print). <https://doi.org/10.3126/njmathsci.v2i1.36503>
6. Srivastava, P. & **Mondal, R.** (2020). Diabetes Diagnostic Intelligent Information System. *TEST Engineering & Management*, 82(Jan-Feb 2020), 14455-4467. <http://www.testmagazine.biz/index.php/testmagazine/article/view/3136>
7. **Mondal, R.,** Verma, A. & Gupta, P.K. (2020). A Medical Diagnostic Information System with Computing with Words Using Hesitant Fuzzy Sets. *Advances in VLSI, Communication, and Signal Processing*, pp.971-980 (Springer).[https://doi.org/10.1007/978-981-32-9775-3\\_86](https://doi.org/10.1007/978-981-32-9775-3_86).
8. Verma, A., **Mondal, R.,** Gupta, P. & Kumar, Arvind (2018). Neural based energy-efficient stable clustering for multilevel heterogeneous WSNs. *2018 First International Conference on Secure Cyber Computing and Communication (ICSCCC)*, pp.208-212 (IEEE).<https://doi.org/10.1109/ICSCCC.2018.8703353>

## AWARDS

- Best Paper Presentation on **International Conference on Recent Trends and Innovations in Multidisciplinary Research (ICRTIMR-2020)** organized by IEC University, Baddi, H.P., India Jointly organized by Globally Multidisciplinary Research and Education Association (GMREA) during 14 Mar, 2020.


## ORGANIZED CONFERENCES & WORKSHOPS

1. **IT Advisory Committee Member** of 24th FAI International Conference on Global Trends of Data Analytics in Business Management, Social Sciences, Medical Sciences and Decision making (24th FAI-ICDBSMD 2021) during 25, 26, 27 June 2021.  
(<https://www.faterindia.org/24thfai2021>)
2. **IT Advisory Committee Member** of 23rd FAI International Conference 2021 on Emerging Trends & Adaptation of Spirituality in Management, Artificial Intelligence, Education, Health, Tourism, Science & Technology (23rd FAI-ICS 2021) during 19, 20 & 21 February 2021.  
(<https://faterindia2020.wixsite.com/23fai>)
3. **IT Advisory Committee Member** of 22nd FAI International Conference on Mathematical, Computational Intelligence and Engineering Approaches to Healthcare, Business and Tourism Analytics 2020 (22nd FAI-ICMCIE 2020) during 20, 21 & 22 December, 2020.  
(<https://faterindia2020.wixsite.com/22fai-icmcie2020>)
4. **IT Advisory Committee Member** of India, Ukraine, Brazil & Greater Mekong Subregion International Conference - 2020 (IUBGMS 2020) on Global Challenges and Threats to National Economies Nowadays during 20, 21, 22 November 2020.  
(<https://faterindia2020.wixsite.com/iubgms2020>)

## TEACHING EXPERIENCE

- Programming Languages Lab (Course Code: MA-5151). M.Sc.(1st Semester). MNNIT Allahabad
- MATHEMATICS II (Course Code: MA-1201). B.Tech.(2nd Semester). MNNIT Allahabad

## EXTRA-CURRICULAR ACTIVITIES

- Academic Board Members: **Learnbay** in accreditation with **Woolf University**  
(<https://learnbay.woolf.university>)
- Teaching on Youtube  **“Mathematics behind Data Science”**  
(<https://www.youtube.com/c/MathematicsbehindDataScience>)
- Founder of **Mathematical ML** (<https://mathematicalml.wixsite.com/mathml>)
- **Share Market Investment**
- IT Advisory Committee member of **FATER Academy of India** (<https://www.faterindia.org/>)
- Website Design, Development and Data maintenance
  - **FATER Academy of India** (<https://www.faterindia.org/>)
  - **FAI Publications** (<https://www.faipublications.com/>)
- Worked as a volunteer in **“Rabin Hood Army”**
- Participated in
  - **ZILLA VIGYAN MANASIKATA-O-MEDHA AVIKSHA** (2006)
  - **TALENT SEARCH TEST ON GEOGRAPHY** (2005)



## HOBBIES AND PERSONAL INTEREST

- Drawing Logical Pictures
- Listening Audio Books Summary
- Yoga, Gym, Calisthenics, Travel, Photography and Adventurer Sports

## PERSONAL DETAILS

- **Father's Name:** Mr. Ramkrishna Mandal
- **Mother's Name:** Mrs. Jharna Mandal
- **Date of Birth:** 19/04/1992
- **Sex:** Male
- **Linguistic Proficiency:** Bengali, Hindi and English
- **Permanent Address:** Vill-Patharghata, Post- Dakshin Dauki, Police Station- Contai(Junput Coastal), Dist-  
Purba Medinipur, West Bengal-721450, India.

## DECLARATION

I hereby declare that all the information filled above is very authentic, genuine to the best of my knowledge. I take full responsibility of the authenticity of the above information.

*Rajkrishna Mondal*

**Place:** Contai, West Bengal

**Date:** February 16, 2025