Indrajit Nandi
MTech Computer Science
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Course	College/University	Year	CGPA/%
MTech Computer Science	Indian Statistical Institute	2023-25	60%
M.Sc. in Mathematics	Sidho-Kanho-Birsha University	2019-21	84.33%
B.Sc. in Mathematics	J. K. College,Purulia	2016-19	48.4%
Intermediate/+2	Chittaranjan High School, Purulia	2014-16	74.40%
High School	Chittaranjan High School, Purulia	2013-14	77.85%

WORK EXPERIENCE

- **Secondary School Teacher | Sri Ramkrishna Tarak Math High School(GOVT)**   [Jun'21-Jan'23]
  - Taught Mathematics for class 9 and 10.

SKILLS & INTERESTS

- **Programming Languages**: C
- **Interests**: Mathematics, Data Science, Data Analysis, Machine Learning,Computational Finance, Quantitative Finance

PROJECTS

- **Algorithmic Portfolio Management Project using Black-Litterman and Risk Parity | PyPortfolioOpt, yfinance statsmodels | Numpy | Pandas | Matplotlib | Seaborn | Pyriskmgmt | Statsmodels | Scipy | Joblib | Prettytable.**
  - Developed and backtested a quantitative investment strategy using Black-Litterman and risk parity for a hypothetical CHF 100M fund, benchmarked against the Russell 50.
  - Combined market views with risk parity allocation through pairwise stock analysis, factor modeling, and portfolio optimization in Python using PyPortfolioOpt and other libraries.
  - Achieved [Key performance metric, e.g., a Sharpe ratio of X or a maximum drawdown of %Y] demonstrating the effectiveness of the implemented algorithmic investment strategy.
- **Movie Recommendation System | Python, pandas, NumPy, NLTK**   [May 24 - June 24]
  - Built a recommendation engine that can recommend movies for different customers.
  - Performed Data Collection, Data preprocessing.
  - Used Content-based Filtering, Collaborative Filtering and Hybrid Filtering.
  - Used Cosine-similarity to recommend top movies.
- **Model Inversion Attacks Implementation | Python, TensorFlow,PyTorch,Keras, NumPy, Matplotlib**   [May 24 - June 24]
  - Recreated the paper "Model Inversion Attacks that Exploit Confidence Information and Basic Countermeasures" (Matt Fredrikson, Somesh Jha, Thomas Ristenpart) from scratch.
  - Demonstrated the vulnerability of machine learning models to privacy attacks and analyzed basic countermeasures to mitigate risks.
- **Multi-Strategy Stock Screener with Technical Indicator Engine:** Engineered a data-driven financial application using Python, Streamlit Pandas which is Direct Web Quarry Based to perform comprehensive technical analysis on large stock datasets. Integrated multiple trading indicators (RSI, Stochastic, MACD) with real-time data processing and interactive dashboard visualization for portfolio management.
- **Membership Inference Attacks Against Machine Learning Models(By Dr. Reza Shokri)(From-Scratch Implementations)** Implemented techniques to analyze and mitigate Membership Inference Attacks on machine learning models, focusing on enhancing model privacy. Membership Inference Attacks occur when an adversary attempts to determine if a specific data point was part of a model's training set, potentially exposing sensitive information. I created a demo on CIFAR-10 dataset that showcases how these attacks exploit model vulnerabilities and demonstrated potential countermeasures to reduce privacy risks.
- **Autonomous Lunar Lander Control using Reinforcement Learning and Deep Learning Using Gymnasium** Developed a reinforcement learning model using deep learning techniques to solve the Lunar Lander environment from Gymnasium. The project involved training an agent to autonomously control a lunar lander by optimizing its decision-making process through trial-and-error learning. The model successfully demonstrated effective control strategies in a complex, continuous action space.

- **Dynamic Memory Allocation Using Buddy System: Scratch Implementation of calloc(), realloc(), and malloc()** Implemented calloc, realloc, and malloc from scratch using the buddy memory allocation technique. The project involved developing a memory management system that efficiently handles dynamic memory allocation and reallocation, optimizing memory usage by splitting and merging memory blocks. This approach ensures efficient memory utilization and minimizes fragmentation.(Group Project)
- **Some EDA Project:**
  Coustumer Churn prediction: Developed a machine learning model using logistic regression and random forest algorithms to predict customer churn by analyzing customer behavior and transaction data. Designed and implemented the entire pipeline, including data preprocessing, feature engineering, and model evaluation. The model identified key patterns leading to churn, providing valuable insights for customer retention strategies.

  Market Bucket analysis: Developed and implemented a Market Basket Analysis model using Apriori and FP-Growth algorithms to identify purchasing patterns in transactional data. Analyzed product combinations frequently bought together, enabling strategic product placement and targeted marketing decisions. The project provided actionable insights for optimizing cross-selling and upselling strategies.
- **Implementing Indexer for the TREC Robust document collection using StandardAnalyzer.**
- **Working on some CV and Deep RL Project,Stock-Price Prediction by using LSTM,RNN,TRANSFORMER .(Not completed)**

RELEVANT COURSES

- **Linear Algebra | Statistics | Probability | Numerical Methods and Computer Programming | Game Theory | Partial Differential Equation, Laplace Transform ,Tensor Analysis** [B.Sc.]
- **Differential Equations | Fortran | C | Metric Spaces| Calculus | Mathematical Analysis** [M.Sc.]

- **Computer Networks | Computer Organization |Computing Laboratory (C,Pyton)| Data and File Structures|Discrete Mathematics | Operating Systems |Statistical Methods |Information Retrieval|Machine Learning I|Machine Learning II(Deep Learning)| Database Management Systems | Design and Analysis of Algorithms| Reinforcement Learning(Classical and Deep)|Advanced NLP | Computer Vision** [M.Tech.]

Technical Skills

Programming Languages:
- Python, C, Java((Currently Learning))

Frameworks & Libraries:
- TensorFlow, PyTorch, Scikit-learn, Karas, Numpy, Seaborn, PySpark, Pandas, Matplotlib

Tools & Technologies:
- Git, SQL, Streamlit,Docker

Tools & Platforms:
- Google Colab, Jupyter Notebook,Lightning AI, Amazon Sagemaker