Mrityunjay Samanta

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Physics major with a background in machine learning and theoretical chemical physics. Currently working on applying AI/ML techniques in the healthcare domain for better classification of health records. Seeking positions to maximize my experience in AI/ML techniques in NLP and computer vision

EDUCATION

Indian Institute of Science Education and Research, Pune
Integrated B.S. – M.S. 2016 – 2021
Focus: Computational physical sciences with modern approaches to machine learning.
Awards: INSPIRE scholarship by DST, Govt. of India
GPA: 7.7/10

RELEVANT SKILLS

Machine Learning Libraries/Frameworks
Pandas | Numpy | PyTorch | NLTK | Spacy | Sklearn
Programming Languages
C | Python | MATLAB | FORTRAN | JAVA
Molecular Dynamics
LAMMPS molecular dynamics package | Xmgrace | VMD

RELEVANT COURSES

MOOC : Machine Learning | Deep Learning
PHYSICS : Classical Mechanics | Computational Physics | Statistical Mechanics | Quantum Mechanics | Condensed Matter Physics
MATH : Data Science | Linear Algebra | Multivariable Calculus | Probability and Statistics

VOLUNEER/ CAMPUS INVOLVEMENT

- Involved in making questions for MIMAMSA – a national level science quiz. (2016-2017)
- Volunteered in the printing, communication and publicity departments of KARAVAAN – the annual fest of IISER. (2016-2017)
- Volunteer tutor for ABHYASHIKA, part of DISHA club aimed at teaching kids from underprivileged communities. (2016-2018)
- IISER cricket league organizing committee member. (2017-2019)

EXPERIENCE with Machine Learning

Research Intern Aug 2020 – *present*
AlgoAnalytics, Pune, Maharashtra

- Developing a **hybrid deep learning** model involving **CNN/RNN** architecture to further improve the assignment process of medical ICD codes.
- Developed a NonAI method that uses semantic relationship between medical keywords to assign **latest ICD10 codes**.
- Gained expertise in **text preprocessing** using various libraries such as **NLTK** and **Spacy** to extract relevant sections of the medical text from its raw form.
- Worked with **MIMIC III dataset** and used descriptive data analysis to devise a machine learning application pipeline .
- Implemented **Logistic Regression/SVM/KNN** to improve upon the baseline Non-AI model with F1 score of 0.58 which is comparable to literature value

SHORT-TERM PROJECTS at IISER Pune

- *Molecular simulations of Polymers Jun 2018 – Nov 2019*
  Modeled electrostatic interactions in single chain polyelectrolytes using LAMMPS package in C language and calculated sensitivity of physical and chemical properties of the polymer backbone to mechanical (led to 1 publication).
- *Design and analysis of Thermoelectric materials* Jun – Nov 2019
  Synthesized six layered thermoelectric material using solid state mechanisms. Characterized materials using analytical techniques like XRD, SEM, TGA, etc.
- *Density Functional Theory: Applications* Jan – May 2020
  Calculated molecular properties like density of states, and band structure of Si, Al, Cu and few chalcogenides using DFT theory with open-source Quantum Espresso software.

PUBLICATIONS/CONFERENCES

- **M. Samanta** and S. Chaudhury, *Coarse-grained molecular dynamics simulations study of the conformational properties of single polyelectrolyte diblock copolymers*, Biophysical Chemistry, 2020, 266, 106437.
- HPC and AI for Science by Intel, IISER, Pune
- SPSI-Macro-2018 by the Society of Polymer Science, IISER, Pune