


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

Machine Learning | Deep Learning |
Classical Mechanics | Computational Physics |
Statistical Mechanics | Quantum Mechanics |
Condensed Matter Physics

VOLUNTEER/ CAMPUS INVOLVEMENT

- Involved in making questions for MIMAMSA – a national level science quiz. (2016-2017)
- Coordinated 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-current)

EXPERIENCE with ML/DL

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

- 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.
- 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.
- 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).

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