AAYUSH GROVER

Phone: +91 9167036072 ◇ **E-mail:** Aayush.Grover@iiitb.org / aayush.grover@yahoo.co.in

OBJECTIVE

I am a 4th year engineering student who is currently pursuing an Integrated Masters Degree in Computer Science Engineering/Data Science. My interest lies in use of Artificial Intelligence and Machine Learning in Molecular Biology.

EDUCATION

Integrated Masters in Computer Science Engineering/Data Science   August 2016 - June 2021
International Institute of Information Technology, Bangalore, India
CGPA: 3.77/4.00 = 9.425/10.00 (At the end of 7 semesters)

WORK EXPERIENCE

Teaching Assistant
Design and Analysis of Algorithm   January 2020 - May 2020
Instructors: Prof. Meenakshi D'Souza & Dr. Pradeesha Ashok

RESEARCH EXPERIENCE

Protein Subcellular Localization Prediction
Computational Biology and Bioinformatics Group, UCLouvain   May 2020 - Present
Supervisor: Dr. Laurent Gatto

- Working towards building a deep learning model for predicting protein subcellular localization using protein-protein interaction networks. Experimentally determining the localization of a protein can be a very cumbersome task. Therefore, a predictive model that can not only predict with high accuracy but also explain the results to some extent is needed.

Drug Discovery – Identifying Drugs that can have Therapeutic Effects against SARS-CoV-2
IIIT-Bangalore & NCBS, Bangalore   May 2020 - Present
Supervisors: Prof. G. Srinivasaraghavan, Prof. R. Sowdhamini & Prof. Neelam Sinha

- Building an attention-based graph neural model for ranking the molecules from Broad's Drug Repurposing Hub on the basis of their therapeutic behavior with SARS-CoV-2. The experimental dataset consists of molecular fingerprints of FDA approved drug molecules. The top ranked molecules from the Drug Repurposing Hub will be tested experimentally to validate our results.

MHCAttnNet: Predicting MHC-Peptide Bindings for MHC Alleles Classes I & II Using An Attention-Based Deep Neural Model
International Institute of Information Technology Bangalore   August 2019 - July 2020
Supervisors: Prof. Shrisha Rao & Prof. G. Srinivasaraghavan

- Built an end-to-end system to compute the binding affinity between a given peptide and a particular MHC allele. We not only predict more accurately but also use an attention based scheme to analyze the subsequences of amino acids that are more important to make a particular prediction. This work is accepted in the proceedings of ISMB-2020 and will be published in OUP Bioinformatics.

Modifying and Integrating SMAC Hyper-parameter Optimizer Algorithm for PHOTON AI
Artificial Intelligence in Psychiatry Group, University of Münster   May 2019 - July 2019
Supervisor: Prof. Dr. Tim Hahn

- Worked towards integrating **SMAC** hyper-parameter optimizer to the PHOTON AI library. PHOTON is a platform-independent, rapid prototyping framework. SMAC was the first hyper-parameter optimizer that used Bayesian optimization and handled conditioning of hyper-parameters.

NOTABLE PROJECTS

Text Style Transfer
Course: Natural Language Processing   January 2020 - Present
Instructor: Prof. G. Srinivasaraghavan

· Building an end-to-end model that can change the sentiment of a given sentence while retaining the context of the sentence. We tried two approaches – first comprises of BERT as encoder and GPT-2 as decoder whereas the other uses a sequence-to-sequence model.

Face Generation and Style Transfer
Course: Visual Recognition   January 2019 - May 2019
Instructor: Prof. Dinesh Babu Jayagopi

· Built a Deep Convolutional GAN model to generate new faces using the Autocrop tool for pre-processing. We built an auto-encoder model for training encoders and decoders to detect a particular person's facial features. Using encoder of one person's image and decoder of another person's image, we were able to reasonably produce style transfers between people.

COURSES COVERED

Data Science: Machine Learning, Artificial Intelligence, Bayesian Methods and Probabilistic Graphical Models, Natural Language Processing, Visual Recognition I & II, Reinforcement Learning, Multi-Agent Systems, Privacy-Preserving Machine Learning, Math for Machine Learning

Computer Science: Theory of Computation, Database Management Systems, Operating Systems, Software Engineering, Programming Languages, Graph Theory, Data Structures, Analysis of Algorithms, Discrete Math

Math and Basic Sciences: Calculus, Linear Algebra, Probability, Statistics, Complex Analysis, Physics, Chemistry, Biochemistry

Social Sciences: Privacy in Digital Age, Economics, English, Ethics

SKILLS

Programming Languages	Python, C++, Java, MySQL, C, Ocaml, Prolog
Tools	Jupyter, LaTeX, NetLogo, HTML, CSS, Raspberry Pi
Python Libraries	Pytorch, Pandas, Numpy, Scipy, Scikit-learn, OpenCV, Matplotlib, Goatools, Seaborn, Torchtext, Torchvision, Biopython

SERVICE TO FIELD

· Reviewer of International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)   2019-Present
· Reviewer of Springer's Sadhana Journal   2019-Present

AWARDS

· Awarded DAAD WISE Scholarship for summer internship in Germany   2019
· Dean's Merit List, International Institute of Information Technology, Bangalore   2016-Present
· Awarded All Rounder and Mathematics Topper, Rajhans Vidyalaya, Mumbai   2016

EXTRA-CURRICULAR ACTIVITIES

· Member of AI Club   2018-Present
· Head of College Sports Committee   2018/19
· Captain of College Football Team   2018/19 & 2019/20
· Head Organizer of the RMIT Conference   2017-2019