

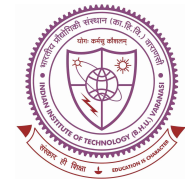
## Adit Agarwal

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### ACADEMIC DETAILS

- Indian Institute of Technology (BHU) Varanasi, India  
Integrated Dual Degree (B.Tech. + M.Tech.) in Computer Science and Engineering (Current GPA: **9.91/10**)

Semester	I	II	III	IV	V	VI
SPI (each out of 10)	9.79	9.65	10.00	10.00	10.00	10.00
YGPA (each out of 10)	9.72		10.00		10.00	

- St.Sophia Sr.Sec. School, Paschim Vihar, New Delhi, India  
All India Senior School Certificate Examination | Score: 96.8%
- KCM School, Moradabad, U.P., India  
Central Board of Secondary Education (CBSE) Examination (CGPA: 10 )

### FIELDS OF INTEREST

- Machine Learning, Computer Vision, Deep Learning, Cryptographic Applications of Neural Networks, Data Structures, Algorithms

### TECHNICAL SKILLS

- Languages:** C/C++, Python,  $\text{\LaTeX}$ , BASH, Java (Basics), HTML, CSS, SQL, JavaScript, GNU-Octave(Basic), Git (basic)
- Frameworks/Technologies:** Django, MySQL, Eclipse, IntelliJ, Android Studio, Robot Operating System (ROS), Gazebo, Simulink (MATLAB)

### INTERNSHIPS AND PROJECTS

- Autonomous Underwater Vehicle (AUV) (Ongoing)** (Project)  
Indian Institute of Technology (BHU) Varanasi  
*Guide: Prof. H.P.Gupta, November 2016 - Present*
  - Currently developing an underwater vehicle that is capable of moving autonomously underwater detecting objects of interest using Computer Vision.
  - Built a model for autonomous gate detection with visual assistance from Raspberry Pi and navigate through it using integration of motors. (basically an autonomous tracker and seeker bot).
  - Working on building the software stack of the AUV using ROS and Gazebo, working on developing the control systems of the bot using PID control, and also a member of the CV Team.
  - Also presented a poster on the prototype built so far on the Institute Day of our college along with a live demonstration of the same.
  - Successfully participated in the 1st round of NIOT SAVe, 2018 competition, getting selected in the top 18 institutes in the country.
- Secure Machine Learning using MPC** (B.Tech Project)  
Indian Institute of Technology (BHU) Varanasi  
*Guide: Prof. K. K. Shukla, Jan-Present 2018*
  - Development and implementation of protocols to realize secure computation of machine learning algorithms using Secure Multi-party computation, along with the implementation of the cryptographic primitives required.
- Summer Internship @Amazon Development Centre, Hyderabad** (Internship)  
Amazon Development Centre, Hyderabad, India  
*Guide: Mr. Ritesh Gupta, May 2018 - July 2018*

- Worked with the Amazon Business Team towards developing a full-fledged solution for PunchOut customers to enable easier customization of PunchOut Setup Request (POSR) and PunchOut Order Message (POOM) document fields.
- Worked on Elasticsearch and Snuggy Code Coverage tools as well.
- **Emotion Recognition on Static Facial Images** (Project)  
Indian Institute of Technology (BHU) Varanasi  
*Project Mentor: Prof. K.K.Shukla, Jan 2017 - May 2017*
  - Used various machine Learning techniques as well as semi-supervised learning to improve the accuracy of various classifiers on the CK+ database. Using FACS coding, features were detected from the faces.
  - Presented a survey focusing on different classifiers, along with their obtained evaluation metrics as well as future work and challenges in the field.
  - Exposure: Scikit-learn, Numpy, Pandas, Keras
- **Cryptographic Applications of Machine Learning** (Internship)  
Defense Research and Development Organization, New Delhi (SAG)  
*Guide: Dr. Saibal Pal, May-July 2017*
  - Implemented different deep learning architectures to improve the efficiency of cryptographic mechanisms as well as develop cryptographic schemes based on deep neural networks.
  - Also implemented papers to allow for deep learning architectures to run on resource-constrained embedded devices as well developed recurrent neural networks for binary data.
  - Implemented different deep learning architectures such as Hopfield Networks, Autoencoders, Boltzmann Machines, Restricted Boltzmann Machines (RBMs), Convolutional Neural Networks, Echo State Networks, LSTMs.
  - Also implemented recurrent neural networks for intrusion detection.
  - Worked towards building a neural network to perform distinguishing attack on cryptographic schemes.
  - Exposure: Tensorflow, Keras

## COURSE PROJECTS

- Designed and implemented a database management system in MySQL with a web interface for managing the day-to-day operations of Chirag Nursing Home, a clinic in Moradabad, Uttar Pradesh, India.
- Implemented a Unix shell environment in C++ with many built-in commands, signal handling, I/O redirection, and piping.
- Implemented a server and client chat application with multiple clients and groups functionality using sockets, threading, and Tkinter in Python.
- Developed a full-stack Gymkhana website using Bootstrap for FrontEnd, Django framework for BackEnd, and MySQL for querying the database. Additional features included a mail box, and integration of chat application with the website.
- Wrote a term paper on Booth's Algorithm, Array Multipliers and other multiplication algorithms for the multiplication of numbers in computer architecture.
- Implemented a POS tagger based on Hidden Markov Models.
- Worked towards developing a software for Hospital Management, using the principals of software engineering, starting with the Requirement Specification, along with the Class, Sequence and Use case diagrams, using the Evolutionary Software Development Model.

## ACHIEVEMENTS/CO-CURRICULAR ACTIVITIES

- All India Rank 905 in IIT-JEE Advanced 2015.
- **Computer Science Department Rank-1** in 1st, 2nd and 3rd year and currently **Institute Rank 1**.
- Secured Rank 259 in JEE-Mains 2015.
- Received the "IIT Color" Award from the IIT (BHU) Gymkhana during the session 2017-18 (for contribution to Media and Journalism).
- Machine Learning co-coordinator for MLWare in Technex (Techno-management fest of IIT-BHU, Varanasi), 2017.
- Secretary of The Media Club, IIT (BHU), Varanasi for the session 2017-18.

- Co-Head of the Publicity Team, FMC Weekend 2017 (Film and Media Festival, IIT(BHU), Varanasi).
- Coordinator for the event “Opinionated-You”, the creative writing event in FMC Weekend 2016.
- Member of Publicity Team of CodeFest, 2016 (departmental fest of Computer Science Department at IIT BHU).
- Content-Writer for the Quest, IIT-BHU’s monthly newspaper as well as “IIT-BHU Connect”, the institute’s newsletter.
- Also participated in Microsoft’s code.fun.do in January 2016 as well as other robotics’ events in Technex’16.