Aditya Sawant

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EDUCATION

Indian Institute of Technology, Kharagpur	West Bengal, India
BTech in Computer Science & Engineering: CGPA: **9.65/10**	*Expected June 2021*
Dempo Higher Secondary School of Science Trust	Miramar, Goa, India
Goa Board Higher Secondary School Certificate Examination(GBHSE) - **95.1%**	*April 2015 - March 2017*
Sharada Mandir School	Miramar, Goa, India
Indian Certificate of Secondary Education(ICSE) - **97.1%**	*March 2015*

EXPERIENCE

TU Braunschweig, Germany

Research Intern | Guide: Prof. Sándor Fekete   *May 2020 - July 2020*

- **Geometric Packing - Squares into Disks:** Worked on proving NP-hardness of packing given squares into a disc by a reduction from 3-PARTITION. Determined the dimensions of Framing squares.
- Created illustrations using the Ipe extensible drawing editor. Introduced the concept of free move to facilitate the proof. Showed the uniqueness of packing the Framing Squares into a unit disc central to the required proof.

Tangentia   Goa, India

Intern - RPA Development & explored IBM Cloud Services   *May 2019 - June 2019*

- **Machine Learning**: Used IBM Watson Studio(IBM Cloud Service) to build a Logistic Regression model to predict the survivors of Titanic. Achieved a 72.72% accuracy on the test data available on Kaggle.
- **Twitter Tweets Sentiment Analysis**: Used Zapier to create a workflow(zap) to extract tweets from twitter with a filter and used natural language understanding(IBM Cloud service) to analyze their sentiment.
- **Indian Outfit Recognizer**: Used the IBM Cloud Watson Studio along with its Visual Recognition Service to build an Outfit Recognizer Model which was able to classify Indian clothes into classes such as Kurtas, Sherwanis, Sarees, Lehangas etc.
- **Flower Retailer Chatbot**: Used the Watson Assistant service to build a Chatbot for a flower retailer which is capable of answering questions related to locations and timings of stores and can also recommend flowers for an occasion.

Rosenberger Electronic Co. (India) Pvt. Ltd   Goa, India

Intern   *4th June 2018 - 16th June 2018*

- **Role & Responsibilities:**: Explored the state-of-the-art manufacturing processes for optic fibres, microwave antennas, and base station antennas for 4G cellular communication. Worked on reducing dipole wastage in base station antennas.

PROJECTS

Generative Models for Dialogue Systems | Bachelor's Project   Sept '20 - Present

Guide: Prof. Pawan Goyal

- Implemented a seq2seq model with a Bidirectional GRU Encoder and a GRU Decoder with global attention.
- Implemented MultiHeadAttention with Model subclassing and a Transformer with Functional API.
- Used the BookCorpus dataset for pretraining the models and Daily Dialog dataset for training and testing.

Movie Review Sentiment Analysis | Natural Language Processing Term Project   Oct'20

Guide: Prof. Sudeshna Sarkar

- Preprocessed the IMDB Movie Review Dataset. Considered a 80/20 Train/Test split on the Dataset.
- Created a Naive Bayes Classifier to classify reviews as positive or negative with an accuracy of 84.28%.
- Created a LSTM based Classifier to classify reviews as positive or negative with an accuracy of 87.85%.

Reliable Protocol & HTTP Proxy Server | Computer Networks Term Project   Jan'20-April'20

Guide: Prof. Sandip Chakraborty

- Implemented TCP like reliable communication protocol over unreliable UDP as the base protocol.
- Implemented a simple HTTP proxy server where incoming connection requests from the browser are first parsed to read the the HTTP headers and then redirected to the destination server.

Online Food Ordering App | Database Management Systems Term Project   Jan'20-April'20

Guide: Prof. Shamik Sural

- Developed an Online Food Ordering App using Android Studio ,MySQL database system and hosted the database on a WAMP server.
- Users can login, sign up, view their order history and status, order items and view selected items in the cart.

Operating Systems Term Project Jan'20-April'20

Guide: Prof. Mainack Mondal

- Implemented various modules of PintOS to run user programs with arguments and system calls like open, read, write,create, close, etc.

KGP RISC | Computer Organization and Architecture Term Project July'19-Oct'19

Guide: Prof. Rajat Subhra Chakraborthy

- Designed a mini size 32-bit processor Instruction Set Architecture (ISA) on Reduced Instruction Set Computer principle using Verilog.
- Involved building an Instruction Fetch, a Decode unit, an Arithmetic Logic Unit, a Branching Unit, a Load or Store Unit and a Control Unit.

Tiny C Compiler Design | Compilers Laboratory Term Project July'19-Oct'19

Guide: Prof Partha Pratim Das

- Designed the lexical analyser, parser and implemented the machine-dependent code generator (three address code) of reduced C language using yacc and flex.

University Department Information System | Software Engineering Term Project Jan'19-April'19

Guide: Prof Sudip Misra

- Created a desktop based application that helps the Department Secretary manage the department information. An SRS for the same was also created. Appropriate Use Case and Sequence diagrams were created.
- Various use cases like Student Semester Registration, Account Management , GPA Calculation ,Course Information , Inventory Management ,Instructor Information etc were implemented.
- MySQL Database was used which was hosted on a LAMP server and the application was coded in Java.

ACADEMIC ACHIEVEMENTS

- Awarded the Future Research Talent travel Award to pursue a research internship at The Australian National University in the year 2020. Amongst the only 2 students from the CSE Department to receive this award.
- Awarded the DAAD-WISE scholarship to pursue a research internship at TU Braunschweig in the year 2020.
- Currently holding a Department Rank of **4** out of 60 students.
- Scored a perfect 10(SGPA) in Autumn semester of freshman year.
- Secured State Rank **3** in HSSC Board Examinations 2017 with 100/100 in Computer Science.
- Secured State Rank **2** in ICSE Board Examinations 2015 with 100/100 in Mathematics.

TECHNICAL SKILLS

- **Languages**: C, C++, Java, Python, MySQL, CSS, JavaScript, SQL Plus, LaTeX, PHP, SQL, MIPS Instruction set, Verilog
- **Technologies**: GitHub, UiPath, IBM Cloud ,Android Studio ,Netbeans , SolidWorks, Ipe
- **Libraries and Frameworks**: Open CV, NumPy, Pandas, Scikit-learn, Matplotlib, TensorFlow, Keras, PyTorch

RELEVANT COURSEWORK

COMPLETED: Programming and Data Structures*, Algorithms-1*, Discrete Structures, Symbolic Logic, Software Engineering*, Formal Language and Automata Theory, Probability and Statistics, Switching Circuits and Logic Design*, Introduction to Electronics*, Signals and Networks*, Linear Algebra, Cryptography and Network Security, Computer Organization and Architecture*, Compilers*, Algorithms-II, Operating Systems*, Computer Networks*, Machine Learning, Database Management Systems

ONGOING: Artificial Intelligence, Natural Language Processing, Image Processing, Linear Algebra for AI/ML, Theory of Computation

* indicates Laboratory component present

CERTIFICATIONS

- **Robotic Process Automation**: UiPath Advanced Training, Orchestrator 2018.2 Training, RPA Starter Training
- **Deep Learning Specialization ,Coursera**: Neural Networks and Deep Learning, Improving Deep Neural Networks, Structuring Machine Learning Projects, Convolutional Neural Networks, Sequence Models
- **Natural Language Processing ,Coursera**: Natural Language Processing with Classification and Vector Spaces, Natural Language Processing with Probabilistic Models

EXTRACURRICULAR ACTIVITIES

- "Best Fresher" in Poles Apart, Kshitij 2018 (Annual Techno Management Fest of IIT Kharagpur)
- Editor at Scholars' Avenue (Student media body of IIT Kharagpur)
- Certificate of Appreciation in Tennis by TJ Hyman (Internationally renowned US coach) at IIT Kharagpur
- Member of the National Sports Organization (NSO) Tennis under the Government of India (August 2017)