Utkarsh

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EDUCATION BACKGROUND

Indian Institute of Technology Kanpur **Kanpur, India**
*Bachelor of Technology, **Majors**: Chemical Engineering and Electrical Engineering* *July 2017-April 2022**
3^{rd} year Undergraduate, **Current GPA**: 8.8/10.0

Cambridge School, Indirapuram **Ghaziabad, India**
*Class 12, All India Senior School Certificate Examination, CBSE **GPA**: 96.6%* *March 2017*

Cambridge School, Indirapuram **Ghaziabad, India**
*Class 10, All India Secondary School Examination, CBSE **GPA**: 10.0/10.0* *March 2015*

AWARDS & ACHIEVEMENTS

- Certified as a KVPY scholar by securing an **All India Rank of 488** in the **Kishore Vaigyanik Protsahan Yojana** (Young Scientist Incentive Plan) 2016 organised by the Indian Institute of Sciences, Bangalore
- Secured an All India Rank of **665** amongst 1,200,000 candidates in JEE Main 2017
- Top **2% percentile** among 175,000 candidates in JEE Advanced 2017
- Received **Principal's Award** amongst graduating batch 300 students for outstanding contribution to the school community in Mathematics & Computer Science.
- Received a letter of appreciation from **Government of India** for performing exceptionally well in class X CBSE board exams

INTERNSHIP EXPERIENCES

Research Trainee, Bharat Electronics Ltd. **Ghaziabad, India**
***Development and Engineering-Research Division** (**D&E-R**)* *Dec 2019 - Jan 2020*

- Investigated problems in waveform generation for state-of-the-art **S-BAND ATC RADAR** using **Digital Signal Processing** Toolbox in MATLAB
- Researched on the current topics for designing an iterative algorithm for estimating of input signal from corresponding desired **auto-correlator** output of a signal by minimising an **objective function**
- Designed an adaptive algorithm using **Recursive Least Squares(RLS)** to co-currently predict corrected position & velocity using NumPy in Python.Worked on **Kalman Filter** and its applications
- Programmed Matched filter to generate **Ambiguity Function** which helps to visualise **Doppler shift** and **echo-response delay** for transmitting-pulse waveform design using MATLAB

Software Developer, Cold Brew Tech Pvt Ltd **Bangalore, India**
Summer Intern *May 2019- July 2019*

- Crafted a user-interactive product targeted for next **half billion users**. Actively contributed to both **Front-end and Back-end** divisions of the application
- Upgraded pre-existing **socket networking protocols** for effective **real-time messaging** with **media support between users**, written with **REpresentational State Transfer(REST) OkHttp Library**.
- Improved and deployed crucial features on the back-end, using **Python Django framework** based on MVP architecture, from a scale of **2000 users to 25,000 users**
- Investigated the **bottle-neck queries** in the real-time database written in **PostgreSQL**. Reduced query-time by identifying suitable **indexing on tuples and database properties.**; **reduced server CPU load by 9x times**
- Troubleshooted and evaluated a list of redundant jobs and developed **automation procedures** called **Cron-Jobs** on the back-end server. Deployed **continuous integration docker modules** like **TravisCI**
- Solidified the pre-existing differentiation amidst **good/bad quality of audio calls** based upon acoustic properties like **duration and mode frequency**. Unification of various speech properties was done via **XGBoost algorithm**, written in **Python**. The whole procedure was converted to an **executable script** which prepared and cleaned the data-set by training the **robust machine learning model**

Android Developer, New York Office, IIT Kanpur **IIT Kanpur, India**
Prof. Manindra Agrawal, Computer Science and Engineering, IIT Kanpur *May 2018 - Jul 2018*

- Brainstormed the development of a scalable app implementing an MVP structure, in a team of 4 interns. Programmed in **Kotlin** and **RxJava**, on **Android Studio** using the **Android Support Design Library**
- Formulated **instrumentation tests** for both UI and database using **Mockito** and **Espresso** frameworks
- Restructured the **whole codebase** and designed app-wide **Theming Architecture** (**Day/Night mode**) adhering to **Google's Material Design guidelines**

KEY PROJECTS

Simulation of multi-component distillation using Naphtali and Sandholm algorithm **IIT Kanpur**
Course Project(*CHE352A*), *Prof. Vishal Agarwal, Dept. of Chemical Engineering* *Sept'19- Nov'19*

- Simulation and Analysis of **Naphtali and Sandholm Newton-Raphson algorithm**, while incorporating liq. and vap. phase non-idealities through the **Wilson and Redlich-Kwong EOS** respectively in MATLAB.
- The techniques involved were **Rachford-Rice algorithm, Enthalpy departure functions and Murphee tray efficiencies**. The column simulation was performed using **ASPEN PLUS**
- The technique could be used to solve the separation problems involving highly non-ideal mixtures including **extractive, azeotropic and reactive distillation**

Electrochemical Instrumentation using Signals and Systems **IIT Kanpur**
Prof. Raj Ganesh S Pala, Dept. of Chemical Engineering *Jan 2020-present*

- Currently working on the field of Electrochemical Instrumentation by fabrication and control of Electrolytic cells using devices like **Potentiostat and Galvanostat**
- Studying the effects and Applications of **Operational amplifiers** in devising current and voltage-controlled **electrochemical-cell**

Techkriti'19 Mobile Application **IIT Kanpur**
Senior Executive Web, Techkriti'19 (*IIT Kanpur's Technical Festival*) *Aug 2018 - Mar 2019*

- Developed the first-ever official **Android-iOS compatible** mobile app for Techkriti'19 Silver Jubilee Edition. Executed a **Reactive Framework** (**Flutter**) using **Dart 2.0 API**, using **Django** as back-end.
- The application received 47 reviews with an **average rating of 4.4/5** with **1800+ downloads** also featuring in the **Top 10 trending list of Google's Play store**

TECHNICAL SKILLS

- **Programming Languages:** C, C++, MATLAB, Java, Python, Kotlin, Dart
- **Modelling and Simulation:** SolidWorks, AutoCAD, Aspen Plus
- **Software Utilities:** LATEX, Git, Android, Scikit-Learn, Pandas, Numpy, PostgreSQL, Django, Web Sockets, Clean Architecture, Dagger, MVVM, Flutter, JavaScript, Bash, RxJava/Kotlin, Linux shell utilities

RELEVANT COURSEWORK

Ongoing(i) Excellent(A) Outstanding performance(A*)

Microelectronics(i)	Machine Learning with Python(Coursera)
Introduction to Electronics(A)	Data Structures and Algorithm
Probability and Statistics	Computational Methods in Engineering(A)
Signals, Systems and Networks	Fluid Mechanics
Heat and Mass Transfer and its Applications	Introduction to Mechanics(A*)
Chemical Process Industries(A)	Chemical Process Simulation(A)

MISCELLANEOUS

- Active contributor to Open-Source and working closely under **Julia organisation**. Contributed to **DiffEq.jl** libraries in **Julia** by writing fast and adaptive algorithms used in numerical computing and simulation
- Secured **Podium Finish** in more than **10+ Technological Quizzes and Symposiums** held School/State level
- Received a certificate of merit in **Green Olympiad** (**2014**), organized by **TERI** in association with **Ministry of Environment, India**