UJJWAL KUMAR SINGH

Ujjwalks01@gmail.com +918826235246

EDUCATIONAL QUALIFICATIONS

Year	Degree/Certificate	Institute/School	CGPA/%
2014	B.Tech.(Computer Science)	Indian Institute of Technology Kanpur	8.2 /10.0
2010	AISSCE(CBSE Board)	Milton Public School, Agra	86%
2008	AISSE(ICSE Board)	Rani Laxmibai Public School, Jhansi	92.7%

ACHIEVEMENTS

- **ACM ICPC International Collegiate Programming Contest 2012,** Kanpur Site Regional finalist
- Received the **certificate of appreciation** for design and fabrication of "Dragon" in Technical Arts course

SUMMER INTERNSHIP

Audio Codec, Circuitsutra Noida *(May'12-Jul'12)*

TASK	Development of **SystemC(c++ library) model of Audio Codec**.
APPROACH	• **Pulse Code Modulation** method to convert analog wav signal into digital signal. • Mixing wav files to generate stereo output. • Noise Reduction using Nyquist Sampling Theorem, Smoothing Algorithm and Savitzky & Golay formula.
ACHIEVEMENTS	• Modelled Audio signals at transaction level for use in Virtual platforms of a System on Chip (SoC) which can be used for the purpose of embedded software development

Android Screen Locks, SEL Noida *(May'13-Jul'13)*

TASK	Designing **android-based screen locks immune to socially engineered attacks**
APPROACH	• **Randomization of key position** for generating pseudo new password for lock. • Use of two keys, **primary and secondary key**. • Different type of **gestures to create password**.
ACHIEVEMENTS	• Designed and implemented five locking application immune to socially engineered attacks

RESEARCH EXPERIENCE

K-DOMINANCE IN SKYLINE JOIN QUERIES (KSJQ) *(Aug'13-Dec'13)*

B.Tech Project under the guidance of Dr. Arnab Bhattacharya

- **Initiated research** on finding Skyline data points according to k-Dominance in **relational database Join Queries**
- **Designed efficient algorithms** for computing K-Dominant skyline sets in joined relations
- **Verifying the efficiency** of the designed algorithms on carefully designed **synthetic data**

ACADEMIC PROJECTS

ARTIFICIAL GAMING AGENT *(Feb'13-Apr'13)*

Artificial Intelligence Course Project under the guidance of Dr. Amitabha Mukherjee

- **Developed artificial Gaming agent**, capable of intelligently playing any **GDL describable game** without having any prior knowledge of it and without any human intervention.
- Explored Bandit and **Monte Carlo Tree Search** (MCTS) methods.
- **Implemented and Investigated Recent work published by CadiaPlayer** (3 times winner in General Game Playing competition in AAAI conference) which involves putting Upper Confidence Bound (UCB) in MCTS approach.
- Selected in **the top 5 projects in the course** : Artificial Intelligence.

COMPILER FOR C++ PROGRAMMING LANGUAGE *(Jan'13-Apr'13)*

Compiler Design Course Project under the guidance of Dr.Sanjeev K Agarwal

- Implemented a compiler for a subset of C++ programming language in C using **lex** and **yacc**
- Provided basic programming language features like **scope, recursion, type checking and implicit type conversion**
- Incorporated **Object Oriented Features** like class declaration, access specifiers, method invocation and function overloading
- Carried out phase based development including **lexical, syntax and semantic analysis,3-address and final code generation**

MOVIE RATING PREDICTION SYSTEM *(Aug'13-Dec'13)*

Machine Learning Course Project under the guidance of Dr. Harish Karnick

- **Collaborative filtering** setting where one user's preferences are used to find users with similar preferences
- Similarity between the users or movies can be calculated by using the Jaccard Distance* and Cosine Distance
- Improving the accuracy by trying different methods like **k-nearest neighbor** approach and **SVM classifier**

LIBRARY MANAGEMENT SYSTEM *(Feb'13-Apr'13)*

Database Systems Course Project under the guidance of Dr. Harish Karnick

- Designed an application to manage major library activities using **PHP** and **MYSQL**
- Implemented features like personal user **profile, issue/reissue/reservation/return/search** of library items
- Effectively applied the concepts of **ER Diagrams**, **Normalization** and **Query Formulation**

HALL MANAGEMENT SYSTEM *(Aug'12-Nov'12)*

Software Engineering Course Project under the guidance of Dr. Harish Karnick

- Software to manage various activities and management done at Hall level in IIT Kanpur.
- Explored and used **Django: web framework tool**
- Effectively used concepts of class diagrams , interaction diagrams and use cases using **UML tool umbrello**.
- Implemented features like personal user **profile/Meeting Schedular/Activity Manager/Inventory System**.
- Development and designing of software is done using **Iterative prototype model**

PINTOS *(Aug'12-Nov'12)*

Operating Systems Course Project under the guidance of Dr. Subhajit Roy

- Implemented a subset of **Posix** interface of message queues and **Pthreads** to solve the **Producer-Consumer problem**
- Implemented the **First Come First Serve (FCFS), Round Robin (RR) and Priority Scheduling** scheduling policies
- Implemented **virtual memory management** via **pure demand paging** with backing store using big blocks of memory Implemented **fork(), exec(), mkdir(), chdir(), readdir()** system calls

IMPLEMENTATION OF 32-BIT PROCESSOR ON FPGA *(Aug'11-Nov'11)*

Computer Organization Course Project under the guidance of Dr. Amey Karkare

- Implemented a 32 bit processor on Xilinx FPGA using **Verilog HDL**
- Provided the functionality to perform **arithmetic operations** and **store** the results in memory for **future calculations**

JAVA COMMUNITY CONTRIBUTION

Addressing issues in Garbage Collector in Java *(Jan'14-Apr'14)*

Objected Oriented Programming Course Project

- Carried out exhaustive experiments to see the performance of **G1 garbage collector** for a given scenario.
- Configured G1 to achieve high responsiveness and skip **STOP THE WORLD** event

RELEVANT COURSES

Data Structures and Algorithms	Operating Systems	Database Systems	Computer Networks
Algorithms-II	Compiler Design	Machine Learning	Probability and Statistics
Randomized Algorithms	Computer Organization	Artificial Intelligence	Discrete Mathematics
Game Theory	Advanced Network Security	OOPs	

TECHNICAL SKILLS

- **Programming Languages:** C, C++, Java
- **Tools :** Weka Machine learning suite, GDB Debugger, Latex, Matlab
- **OS Platforms: W**indows and Linux.
- A**pplication Development Platforms :** Android, Ruby On Rails
- **Web Development:** HTML, CSS ,PHP, MySQL

EXTRA CURRICULAR ACHIEVEMENTS

- Among the top 15 teams in **All-India Android Development Contest** organized by Internshala.com
- Participated in several **Programming Contests**. **SPOJ** handle: ujjkumsi