Mohit Saini

stillhungry.in

mohitsaini1196@gmail.com

+91 7503-759-053

Achievements

- **Yellow Labeled (5*)** Programmer at **Codechef** ; **1st ranker** in ISCC2017 contest
- Secured top 10 rank in coding competition among programmers of IIT-Delhi, conducted by Facebook
- Attained **619**th Rank in IIT JEE 2012 among 5 lakh participants

Professional Experiences

Lead Data Scientist, UpGrad.com

(Jun '17 - Present)

- Designed and deployed end-to-end system for **detecting duplicate/similar questions** in discussion forum
  - Used deep learning on open source datasets of Quora and applied the learnt model on a smaller dataset
  - Used "sentence2vec" and Google's "word2vec" techniques to convert a sentence(question) into semantic vector
  - The system was able to reduce the effort of human teaching assistants by 15% by answering duplicate questions automatically.

- Designed and deployed end-to-end system for **Lead Score and Revenue Prediction**
  - Used linear regression to predict the lead score by learning lead's touch points on website, UTM information and all other available features. The model helped the sales team to prioritise important customers.
  - Achieved 94.5% accuracy when bottom (least lead score) 30% leads were ignored, compared to the hypothetical baseline of 75% (ignoring all leads) on first stage of funnel. This was of crucial importance as the entire sales team of size 100 is dependent on lead-score.

- Developed and deployed end to end **r2py** library to convert R language code into python code.
  - Parsed the R code using lex and yacc. Designed all conversion rules from R to Python.
  - Devised various techniques to simulate and support some additional functionalities of R which do not exist in Python- Eg: Python lambda function doesn't support assignment type instruction but since R supports it, devised ways to do so.
  - Highly useful for plagiarism detection on student assignments in R, since the most widely-used plagiarism detection library, MOSS doesn't support R language.

- Designed and Developed end to end **web-input** library for inline inputs/output from web-interface
  - Offers 2 python methods, "web-input" and "web-output", which behave like python's inbuilt method "input" and "print" but take input from a web interface
  - Web-input supports textarea, dropdown, checkbox and file-upload type input
  - Enables developers to quickly write a python script for any ad-hoc task and others can use the corresponding web-interface

- Designed and deployed various tools for internal purpose
  - Auto-uploading system - Developed an interface (frontend & backend) to expose a local file system over web. Local file system is used by video-editors. Designed and deployed mathematically proven (correctness) synchronization system so that whenever new-video is added/edited/deleted in local-file-system, it is auto uploaded/edited/deleted to Youtube, which can be further accessed by video-reviewing team over web.

  - Secret Messenger - Developed a system using Slack's app integration, to allow people to chat with anyone anonymously. It was used by everyone at UpGrad during a "secret santa" game.

- Supervised and taught a mathematics and data science based course called "*Building Blocks of Data Science*" to UpGrad's employees from various teams - click here for web-page

Software Developer, wiseHQ.com (Freelancing, 6 month contract) *(Nov '16 - Jun '17)*

- Led a small team (of size 3) to develop a system to learn customer behaviour like arrival frequency, expected profit etc. Used Linear Regression in Python.
- Developed a front-end interface in JavaScript to create an answer-driven questionnaire where answer of a particular question would decide next question. Used Drag and Drop, Edge's arrow, edge labeling features from external library vij.js to visually design Directed Acyclic Graph representing questionnaire.
- Developed backend of various services using Python Flask, MySQL

Co-Founder, mesSmart.com *(Jan '16 - Oct '16)*

Market Place for Mess & Tiffin Services

- Developed a heuristic algorithm in C++ for *Travelling Salesman Problem* to find an optimal delivery path spanning all tiffin pickups and drops. Reduced delivery cost up to 30%
- Developed Android and Web Application using Python Flask and AngularJS.

Projects

B.Tech Research Project - Submodular Function Optimization *(Jul '15 - Nov '15)*

- **About:** *Submodular Function Optimization* is a subset of ILP , proven to be polynomially solvable. *MLGC algorithm* was published by Dr. S. N. Maheshwari (Project Guide), having best time complexity for this problem.
- Reimplemented MLGC in C++ using different approach and efficient data structures.
- Optimized average running time up to 93% (16 times faster), tested on problem's standard inputs-set.

Low Latency Website Generator *(Dec '14 - May '15)*

- Designed a language MSL, allowing to develop a website in MSL's syntax, having features of modern framework like file import, reusable components(ReactJS), interleaved for-loop, if-else and HTML-tags.
- Implemented a tool to compile large number of files and generate an optimized c++ code written inside a single **server.cpp** file. This single server.cpp file acts as a very low latency web server, representing and serving a website featuring **multi-threading** functionality.
- server.cpp has 'Database' class to store backend data. Allows to Dump/Load JSON formatted object from file.
- Used OcamlLex and OcamlYacc for parsing, Python for processing the Parsed Tree and implementing compiler optimization techniques and lots of manual heuristics, exporting the processed tree as C++ code.
- **Impact**: "*Low Latency website*" and "*web developer's freedom*" doesn't co-exists without such tool.

Frontend to Backend Synchronized ORM (Python and JavaScript) *(Jan '15 - Mar '15)*

- Implemented an *Object Relational Mapping* tool in Python for MySQL database and JavaScript for frontend.
- Frontend ORM is linked to backend via API calls, secured by rules, defined in Rule-Engine.
- Developed a *state-updating-code* module at frontend which would update the state at backend as well, saving half of the developer's effort.

Extension of C++ macros [Under Process] *(Jun '17 - Present)*

- Designed the prototype of, and partially developed a tool to parse "*modified C++ syntax*", consisting of rich macros and *exec-on-compile-time* code blocks; and convert into normal C++ code.
- Aimed to enhance developer's efficiency, without compromising run time efficiency.

Implemented handwritten digit identifier in C++ using deep learning *(Jan '15 - Apr '15)*

Created 3D bike racing game using OpenGL, C++, Qt Designer in a team of 3 *(Jul '13 - Nov '13)*

Technical Skills

- **Expert**: C++, Python
- **Proficient**: C, Java, Linux, JavaScript, AngularJS, ReactJS, PHP, MySQL, PSQL, Ocaml, Matlab etc.

Social Initiatives

- Actively volunteered at a social organisation called Yes+ for stress management programs. Organized various workshops at IIT Delhi, helping more than 500 students.
- Initiated the concept of model school for rural kids providing them with excellent academic, moral and computer education.

Academic Information

Year	Degree/Exam	Institute	Grade
2012 - 2016	B. Tech in Computer Science	Indian Institute of Technology, Delhi	6.4 / 10
2012	12th Board RBSE	Genius Sr. Secondary School, Kota	71.2%
2010	10th Board RBSE	Vidhya Bharti School, Baragaon	89.8%

Interests

Solving codechef problems, Studying mathematical theories, Designing algorithms, Studying books on self-development, growth theories and psychology