

PURUSHOTTAM KUMAR DEWANGAN

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Aug 08 – Dec 10	M.Tech, Computer Science and Engineering, Indian Institute of Technology, Kanpur	GPA: 7.0/10.0
Jul 04 – May 08	B.E., Computer Science and Engineering, BIT Durg	GPA: 6.94/10.0

EXPERIENCE

UBS, PUNE

July '18– Present

Associate Director(Data Scientist), Global Equity and Derivatives

- **Aqua-Compare:** Aqua-compare is a big data project implemented on Azure Databricks employing spark cluster and Scala as primary language. It compares risk data measures calculated by Aqua-compute (new compute engine) against legacy system. But before making comparison, some transformations are needed to be done on measures generated by legacy system so that it can be compared with measures generated by aqua-compute. Currently I am working on legacy transformations. Also, writing integration test for the same using robot framework.
- **Applinsight and Log analytics Query python library :** These library is meant to fetch monitoring data based on specific query from Azure Applinsights and fetch logs as per query from Azure Log Analytics. Though Azure provides such API but then the users needs to know the credentials. If user is in Aqua network and has already been authenticated, he can simply use this library to fetch data. Also, there is a response size limit in API provided by Azure. Using this library, we can fetch much larger amount of data as it aggregates data from multiple fetches(parallel processing).
- **Aqua Pricing Model :** Aqua is the strategic risk management cloud platform for UBS Investment Bank. Aqua is on Azure cloud. The general problem faced by UBS is how to distribute the bill incurred among different teams so that profitability of different teams can be calculated. Azure does provide with overall bill and not the cost incurred by a user or a team. We solved this problem by running data mining on the usage telemetry data generated by each resource. Based on the understanding of how each resource is billed, we came up with different parameters to distribute bills among users and therefore teams. We came up with different machine learning algorithm implementation to solve problem for each resource types. Currently it is in development phase. I also coined the concept of aqua coin, a currency representing bill for cost incurred without actually revealing the dollar value to users and also, Aquacoin-Dollar conversion ratio can be adjusted in such a way that every process cost approximates to a constant value in terms of aqua coins and does not get effected by price variation by Microsoft Azure.
- **Quant Batch Automation Testing :** Risk calculations are performed by thousands of servers which are part of Hydra infrastructure based on quant's risk calculation models. These risk calculation models are constantly being upgraded by quants then QA team has to perform testing. Each time the model is upgraded, it is compared against the current stable model. The differences are then categorised into different category such that the issues(differences) are similar in each group and issues are raised as different jira so that it can again be addressed by quants. The whole process takes 3 weeks to complete. We automated the whole testing process and came up with different clustering algorithms to cluster different issues. The whole process reduced to just one day. This project has been highly appreciated by higher leadership and it has now been implemented in other systems like Metrics, which does performance related evaluations of the models.
- **Other Projects:** Creating Prod Parallel for EU region. In the absence of DevOps lead, I was acting lead for DevOps Team. We created a prod parallel environment for Hydra(Risk Evaluation Engine) testing in case of hydra version update. The prod parallel is needed for the fact that the data should be refreshed on demand only when the testing is complete. It was an unique opportunity to understand RISK-GED architecture in UBS. Apart from these project, I was involved in different POCs.

MORGAN STANLEY, MUMBAI

Oct '16 – May '18

Manager(Development), Institutional Sales and Trading

- **EOA Project(C++):** EOA is a critical and complex C++ component used by AU trading desks to match the executions done in vendor system back to MS trading system for booking and reporting, however it's a very legacy system without anyone touched the codebase for a long time. As part of a migration project to move the AU trading flows to a new trading system, EOA needs to be re-designed to support both old and new system's interface for intermediate migration phase. I took the sole ownership of this component, and analysed both the systems from front to back, and worked on design, development and deployment all on my own, and solved many challenges during testing, Finally the EOA changes was delivered to AU trading desk within short timeframe. The migration was a great success with no major issue reported. My effort was highly appreciated by the trading desk and the project managers.
- **Fiber (q/kdb) :** This was a migration project from classical system to new system where we are making arrangements so that both the systems can co-exist. I updated the codebase written in q so that it can accommodate both new systems and classical systems for transition during migration.
- **Sofa Project(Python) :** I frequently resolved the production issues of this component along with having ownership of the component. This component is a gateway of data from classical system to new system and it translate the messages from classical to new system specifications.
- **Classic systems(C++) :** I had analysed and resolved a lot of production issues in Classical systems which involved classic order manager, order routers, which have legacy C++ code. We could not use any debugger, only log files and codes are to be analysed.
- **Testing(Python) :** MS testing framework is written in Python, where we can test a component by simulating it. I wrote tests for EOA, Fiber, Sofa etc.
- **Integration Project(Python):** I worked with integration team and wrote some regression tests. I also wrote scripts for gathering data regarding servers for migration. I have also touched upon various configuration issues.
- **Mock Testing :** I handled monthly mock testing every month for qualifying NSE/BSE compliances for year 2017.

FREELANCE, COMPANY (CONFIDENTIAL)

Nov 15 – May 16

Programmer, C++/Python

- Framework and Tools for High Frequency Trading.

PAYUMONEY PAYMENTS PVT. LTD., GURGAON

May 15 – Oct 15

Associate Product Manager

- Ticketing System of monuments by Archaeological Survey of India. Right now the system has been deployed and running all over India including Taj, Humayun Tomb and Qutb Minar.
- Bill Presentment implementation for Reliance Energy and Third Party Integration of Torrent Power etc.
- In case of any payment issues in compulsive payment vertical, tracing out the bugs by analysing all database tables (involved usage of SQL) and resolving such issues in payment flow with the team.

OPENLEARNING TECHNOLOGIES PVT. LTD., KANPUR

Jan 13 – Apr 15

Founding Director & Chief Executive Officer

- STACKGATE (www.stackgate.com) An academic network with continuous support for Gate Aspirants). It has been shut down.
- IIT-K Circle (www.iitkcircle.com) a social network exclusively for IITK students easing their campus life and making it more exciting). It could not be launched because of compliance issues.
- FestApparel: an e-com website selling t-shirt for technical and cultural festival. We sponsored many colleges including IIIT-Allahabad, TedX IITKanpur, MPEC Kanpur, Rama Engineering College Kanpur, SSCET Bhilai, BIT Durg etc. We shut down the initiative because of non-scalable nature of the business and problems in supply chain.

MAHARANA PRATAP ENGINEERING COLLEGE, KANPUR

Oct 11 - Dec 12

Assistant Professor, CSE

- Courses Taught: Discrete Mathematics, Theory of Computation, Graph Theory, Parallel Algorithms.
- B.Tech Project Overall Coordinator along with being project guide for two BTech major projects.
- Counselling students regarding placements and helping them with their preparations.

IMAGINATION TECHNOLOGIES, PUNE

Aug10 - Aug 11

Graduate Design Engineer

- Part of Meta Tools Team.
- Modelling cycle accurate simulator outputting idle cycle, active cycles etc. as simulator was only instruction accurate but not time accurate.
- Written integration tests for Meta2 processor.

GATECOUNSELLOR, IIT KANPUR

Mar 09 - Aug 12

Founder

- Founded this initiative with batchmates from different branches for social cause trying to resolve problems which we faced during GATE prep.
- Released solution/keys of GATE for 4 consecutive years involving effort of 70+ IIT Kanpur students each year on the same exam date: <http://www.gatecounselor.com/gate-paper-solutions/>
- Interviewed GATE toppers so that students can learn about their preparation and perspective.

COMPETITIVE PROGRAMMING

- Had achieved Rank 20 with 62,900+ points in InterviewBit. The current rank is 552 and score is 63628.

RESEARCH ACTIVITIES

Jan 09 – Dec 10

- M.Tech Thesis: Simulated Annealing on Vertex Cover Problem: An empirical Study. Adviser: Prof. Somenath Biswas, CSE IIT Kanpur

OTHER PROJECTS

- Compiler Optimisation of a Spec 2000 Benchmark, Mentor: Late Prof Sanjeev K Aggarwal

SEMINARS

- Basics of #P Complexity Class.
- Verifying ω -regular properties of Markov Chain.

COURSES

- Credit Courses: [Quantum Computing](#), Computation Complexity, Advanced Algorithm and Data Structure, Finite Automata with infinite inputs, Parallel Execution of Programs, Advanced Compiler Design
- Audit Courses: Programming Tools and Techniques, Topics in Internet Technologies, Mathematical Logic, Probability and Statistics.
- Teaching Assistant : Finite automata on infinite inputs by Prof Anil Seth, Mathematics for Computer Science by Prof Manindra Agrawal and Dr. Surendra Baswana and Fundamental of Computing LabTA.
- Recent Online Audited Course: Learning from Data (Prof. Yaser Abu-Mostafa) and Machine Learning (Dr. Sudeshna Sarkar)

TECHNICAL SKILLS

- Programming Languages and Tools : Python, C, C++ (expert level), q/kdb, SQL, Core Java; Haskell, Node.js (familiarity), Shell Script
- Cloud : Microsoft Azure
- Documentation: LaTeX, Beamer
- Continuous Integration Tools: Teamcity, Sonar, Puppet, GitHub, Nexus
- Containerisation and Orchestration: Docker, Kubernetes and Helm
- Others: Codescape(Imagination Technologies IDE), Intel VTune Analyzer, OpenMP

OTHER ACCOLADES

- Had cleared TIFR written test for Ph.D
- Faculty for Computer Science and Engineering in GateForum.
- Worked for Community Activities like Prayas and took responsibility of an underprivileged family around IIT Kanpur Campus for guiding them regarding education and teaching them.
- UBS algocup 2018, winner. 5th Position Global and India Rank 2 and one of the speakers in TechConf, UBS 2018.

- Qualified National Eligibility Test - 2018 for Computer Science and Engineering.
- UBS Hackathon 2019 where we created an ML implementation which detects employees facial emotion throughout the day so that the data can be used for estimating employee satisfaction, happiest team, attrition rate etc.
- ToastMaster winner for table topics(impromptu speech) to represent UBS at Pune level.
- Python trainer for women programming group, India.
- Part of UBS India interview panel.