Abdullah Ashfaq

Personal Information

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Education

University of California San Diego , La Jolla, CA — *expected graduation : 2025*
Masters of Science in Data Science

National University of Sciences and Technology (NUST) , Islamabad, Pakistan — *2015 - 2020*
Knowledge Area - Computer Engineering
Bachelor of Electrical Engineering

- CGPA - 3.99/4.0
- 2nd Rank in a Batch of over 150
- NUST ranked 1st in Pakistan by QS in Electrical Engineering and Computer Sciences

Utah State University , Logan, UT — *2018*
US Dept. of State Global UGRAD Semester Exchange Scholarship

Research Experience and Projects

Research Intern for Machine Learning and AI — *2017 - 2019*
TUKL-NUST Research and Development Center ❑

- **ML on Chip (Capstone Project)** **Tools :** Vivado HLS (C++), Python, Pytorch
  - Simulated bit-accurate hardware design in Python and then wrote it in C++ to be translated to HDL using Vivado HLS
  - Identified bottlenecks in performance and tried different micro-architectures to avoid them
  - Achieved timing, power, area and latency requirements
  - Interfaced IP with bare metal application and debugged hardware using logic analyzer
  - Achieved 3.36x times speedup on PYNQ-Z1 board over Intel-i7 CPU with negligible accuracy loss

- **Computer Vision Algorithms on FPGAs (Personal Project)** **Tools :** Vivado-HLS
  - Implemented the algorithm for image binarization using integral image on FPGA

Summer Research Intern — *June 2019 - Sept 2019*
Processor Architecture Lab (LAP) , EPFL ❑

- Alpha-tester for Dynamatic, an open-source dynamically scheduled high-level synthesis tool
- Investigated shortcomings of the tool and proposed workarounds after in-depth analyses and experimentation
- Worked under the supervision of Dr. Paolo Ienne with Lana Josipovic (Google Fellow, Assistant Professor ETH Zurich) and Andrea Guerrieri on benchmarking and debugging the tool

Work Experience

Data Scientist/Technical Delivery Consultant - Professional Services — *Jan 2022 - Sept 2023*
Totogi, US ❑ (Remote) **Tools :** Python, Flask, GraphQL, AWS, Docker, Kubernetes

- Designed a Python ETL tool which accelerated data migration by 30x and migrated over 50 clients using it
- Deployed Metaâs open-source Magma Core on AWS using Kubernetes, Terraform and Docker and integrated with Totogi OCS
- Upgraded a legacy software (C/C++), used by +40 enterprises globally, in 66% less time than expected
- Designed and developed tools and solutions using Python, Flask, AWS to facilitate customers and internal teams
- Automated monitoring and testing of Totogi open-source API by creating custom Python tools
- Delivered challenging projects out of my comfort zone which required learning new technologies (AWS, shell, Flask, Docker)

Data Scientist - Production — *July 2020 - Jan 2022*
Afiniti ❑ (Remote) **Tools :** Stan, R, Python, MySQL
DS Applications : Customer Segmentation, Churn Prediction, LTV Prediction

- Increased revenue up to 4% for 5 clients (Sky BR, Santander MX, ATT MX) through customer retention, segmentation, churn and LTV prediction ensuring a personalized experience for customers in contact-centers
- Automated data integrity and fault detection using Python and SQL improving downtime by 80% and teamâs time by 30%
- Quantified impact of models with confidence intervals by utilizing statistical analysis and testing (A/B, power, hypothesis)
- Designed metrics custom to clientâs business to use in revenue optimization and data-driven decision making
- Analyzed Terabytes of complex data to identify optimization opportunities using R and Statistical analysis
- Assumed ownership of clients and projects by reviewing and approving data pipelines and models end-to-end prior to deployment
- Collaborated with cross-functional teams to identify business issues and communicated complex analyses to stakeholders
- Supervised 8 data professionals (data engineers, scientist, analysts) and fostered continuous growth and innovation in the team

Skills

Programming Languages : Python, R, C, C++, JavaScript
Certifications : AWS Cloud Practitioner, AWS Solutions Architect
Databases : MySQL, Greenplum, Athena, GraphQL
DL/ML Frameworks : Pytorch, Tensorflow, Caffe, Keras, Scikit-Learn
DevOps Tools : Docker, Git, Kubernetes, Shell Scripting
Worked on DS Problems : Customer Segmentation, Churn Prediction, Revenue Optimization

Academic & Personal Projects

Anomaly Detection : ❑
Used R and Statistics to design dashboard that visualizes anomalous behavior vs expectation

Serverless Batch ETL Pipeline : ❑
Used AWS Cloudwatch, S3, Lambda to create serverless pipeline for monitoring

Deep Neural Network on FPGA : ❑
Used C++ (HLS) to create flexible library for pipelined dataflow arch. for DNN inference

Self-Balancing Robot : ❑
Used Arduino, C and Control Systems theory to create a 2-wheeled self-balancing robot

5 stage Pipelined RISC-V Processor : ❑
Used Verilog to write processor which supported S,R and I format instructions

Leadership Experience

Afiniti *2021-2022*

— Successfully led AI team of 6 people comprising of data scientists, data analysts and data engineers
— Created a healthy environment conducive to innovation in my team and personally coached struggling members

Achievements and Awards

Summer@EPFL Internship Program *2019*
Acquired summer internship at EPFL, Switzerland. Worked at Processor Architecture Lab (LAP) ❑ under the supervision of Professor Paolo Ienne.
Value : 5,000 USD. Acceptance Rate ≈ 1%

CERN Openlab Internship Program - 2X *2019 & 2020*
Selected for this program among 4000 applicants. Assigned to work on the project "Fast Inference on FPGAs for HEP trigger systems". PASSED
Value : 7,800 USD. Acceptance Rate ≈ 7.5%

KAIST EE Camp *2018*
Among the 12 Pakistani students selected for the camp at KAIST, South Korea. Over there, I attended seminars and meetings on the latest research trends in EE at KAIST
Value : 3,000 USD. Acceptance Rate ≈ 2%

US Dept. of State Global UGRAD Exchange Scholarship *January 2018 - May 2018*
Cultural Ambassador of Pakistan in USA. Under this program, I spent one semester at Utah State University, USA. I delivered presentations on Pakistan and completed 20 hours of community service.
Value : 33,000 USD. Acceptance Rate ≈ 2%

Merit Scholarship for all semesters *September 2015 - present*
Value : 900 USD

Fellowship Award - Passed *February 2017*
Offered a fellowship in an engineering organization after graduation and complete financial support for the duration of my degree.
Value : 9,000 USD initial, 10,000 USD Annual. Acceptance Rate ≈ 1.5%

Gold Medal *June 2015*
Secured first position from among 12,000 students in HSSC (central high school exam). Final Percentage - 93%. Scored almost 100 % in Mathematics, Physics and Chemistry. Received medal from the then **President of Pakistan, Mamnoon Hussain**.
Additional Cash Prize : 750 USD

Extra-curricular Activities

Community Service

Volunteered with following organizations :

- Chaadar : *2015 - 2019*
  Teaching street children and gathering clothes and food for the underprivileged
- Best Buddies : *January 2018 - May 2018*
  Spending time with people who have intellectual and developmental disabilities
- Grand Friends *January 2018 - May 2018*
  Doing activities with elderly people at an old home

Student Organizations

Served as a member at following organizations :

- Student Government Association (SGA) : *September 2015 - September 2016*
  Facilitated collaboration between student organizations and school administration.
- Youth Entrepreneurial Society (YES) : *September 2015 - September 2016*
  Organized workshops on freelancing.