

SAQUIB AHMAD SIDDIQUI

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EDUCATION

MS Thesis, Computer Engineering (Electrical Engineering); 2018-20

Advisor: Dr. Daniel Bliss, Arizona State University(ASU), Tempe, AZ

B.TECH, Electronics and Communication Engineering; 2014-18

Jamia Millia Islamia(JMI), New Delhi

TECHNICAL SKILLS

Machine Learning and Data Processing Tools: Tensorflow, Keras, Pytorch, Slurm

Design and Applications: MATLAB, PSpice, VHDL, Xcode, Android Studio, gem5, OpenCL, Xilinx SDx/SDSoC

Programming: C, C++, Python, Java

Relevant Coursework: Digital Image and Video Processing, Random Signal Theory, Digital Signal Processing, Foundations of Algorithms, Advanced Computer Architecture, Statistical Machine Learning, Computer Vision and Neural Computation.

Other: MS Office, Oracle DBMS, LaTeX

PROFESSIONAL EXPERIENCE

ASU BLISS Lab, Graduate Research Assistant 8/2019-Present

- Hardware mapping and acceleration of Electromagnetic Radio Frequency (RF) convergence, OFDM and Synthetic Aperture Radar(SAR) routines to Field-Programmable Gate Arrays(FPGAs) for application in SoC systems.

Information Sciences Institute(ISI)-USC, Visiting Research Assistant 6/2019- 8/2019

- Worked with the Reconfigurable Computing group advised by Dr.Vivek Venugopalan.
- Software development and optimization of sensor fusion and image processing algorithm followed by hardware mapping to FPGA using Xilinx's SDSoC tool. Implemented an optimized streaming implementation that used high caching to give a significant performance improvement against even GPU and real time fps(50).

IIIT Delhi, Research Intern 5/2017 – 6/2017

- Worked on image and video processing for multimedia security and forensics at Cybersecurity Education and Research Centre. Code implementation of papers like
 - "Video Super-resolution with convolutional neural networks" by A. Kappeler, IEEE Transactions [2016]
 - "Large Scale Video Classification with Convolutional Neural Networks(CNNs)" by A. Kaparthy, Fei Fei Li, et al." CVPR[2014]. Used Tensorflow for implementation.

BTC NETWORKS LTD., Engineering Intern 5/2016 – 6/2016

- Worked with satellite communication group under Transmission Networks Division. Familiarization with Very Small Aperture Terminal (VSAT) wireless communication fundamentals, project implementation methodology and overview of operations, software configuration among others.

ACADEMIC PROJECTS

ASU, Text to image synthesis using Generative Adversarial Networks(GANs) Fall 2019

- Using existing Deep Convolution GANs(DCGANs) architecture along with matching aware discriminator and training with manifold interpolation. Implemented both using Tensorflow and Pytorch.

ASU, Object tracking on FPGA Fall 2019

- Design and implementation of energy efficient object tracking algorithm using mean shift tracking with adaptive Kalman filter. Achieved 40 fps with significant hardware acceleration.

ASU, Cache Replacement and Branch Prediction Policy Spring 2019

- Implemented Signature-based Hit Predictor policy(SHiP) using SRRIP and global-history Divide-and-Conquer(gDAC) branch prediction. gem5 was used for simulation purposes.

ASU, Single and Multi-thread performance comparison Spring 2019

- Matrix multiplication(naive and tiled) to compare both single and multi-thread performance using OpenCL

ASU, Relay Node Placement Spring 2019

- Algorithmic Implementation for solving BCRP-MNCC(Budget constrained relay placement minimum number of connected components) and BCRP-MLCC(Maximum size of largest connected components) problems

ASU, Machine learning approach to electricity price forecasting Spring 2019

- Five MLP(Multilayer Perceptron) based models were implemented and tested on the Connecticut load zone of New England ISO and MAPE(mean absolute percentage error) value of as low as 7.58% was achieved.

ASU, Video Processing Project Fall 2018

- Implementation of motion detection and estimation using Adaptive&Generated Segment Test(AGAST)+Locally Uniform Comparison Image Descriptor(LUCID) and FAST + LUCID, the delay achieved was less than a second (about 0.8 sec).

JMI, Senior Year Project Spring 2018

- Real-Time automatic attendance based system using facial recognition
 - The database consisted of 50 students in a class and the system achieved an accuracy of 95.2%.

PUBLICATIONS

'DESIGN AND FPGA IMPLEMENTATION OF AN ADAPTIVE VIDEO SUBSAMPLING ALGORITHM FOR ENERGY-EFFICIENT SINGLE OBJECT TRACKING', Accepted at IEEE ICIP,2020