

Shahzaib Waseem

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Skills ([GitHub](#))

Programming: Python, C, C++, Java, Kotlin, MATLAB, SQL, MongoDB, JavaScript.

Tools: Android Studio, Git, GitHub, Travis CI, Linux/Unix, Jupyter, Tableau, Power BI, Azure.

DS / ML / AI: OpenCV, Pillow, Sklearn, Pandas, NumPy, NLTK, CUDA, Keras, TensorFlow, PyTorch.

Experience

Graduate Research Assistant

Simon Fraser University (SFU)

Sep 2021 – Aug 2024

- **Skills:** *Hyperspectral Reconstruction, Transformers, Near Infrared, Mobile Devices, PyTorch.*

RipeTrack

[Code](#), [Android](#), [Demo](#)

- Designed a Hyperspectral (HS) reconstruction model, with spectral losses and model trimming to outperform state of the art (3.5% better RMSE) with a 67-97% faster runtime on smartphones (*RipeTrack – Under Review*).
- Based on estimated chemical composition, RipeTrack identifies fruit ripeness level with an accuracy of over 93%.
- Captured datasets on a \$30,000 HS camera for tracking the ripening process of fruits based on chemical changes.
- Used **object detection models** to upscale only the region of interest, a 472 times reduction in processing time.

MobiSpectral

[Code](#), [Android](#), [Demo](#)

- Designed a reconstruction model to upscale images to HS bands to estimate chemical composition (*MobiCom'23*).
- The downstream application for MobiSpectral was a HS classification model which achieved 92% mean accuracy.
- Integrated white balancing model to map diversely illuminated images to standard illumination for in the wild usage.
- Implemented Android apps for MobiSpectral and RipeTrack to run on phones with a 6% accuracy drop in the wild.

Software Engineer

Cognitive Healthcare International (CHI)

Jun 2020 – Jul 2021

- **Skills:** *Unsupervised Clustering, Computer Vision, Android.*

- Deployed a face auth model in the production app which made the system secure and reduced login time by 60%.
- Integrated a model for diabetic retinopathy on a custom patients' dataset, early diagnosing 100+ diabetic patients.
- Collaborated with business analysts and project managers, to translate business requirements into ML solutions.
- Developed and maintained APIs in tele-health android application, by coordinating with the UI and backend teams.
- Managed code with **Git** and **Travis CI** for timely feature delivery, improving deployment efficiency by 20%.
- **Conducted workshops** to explain the face authentication process to the marketing team.

Machine Learning Research Intern

Furnwish

Jun 2019 – Sep 2019

- **Skills:** *3D Upscaling, Augmented Reality, Apple, PyTorch.*

- Enhanced user engagement by designing an immersive furniture shopping experience on Apple AR-Kit.
- Deployed a CNN to upscale furniture images to 3D models, increasing page session time by 23% on the portal.
- Led a team of three engineers to ensure timely project completion within a 3-month deadline by streamlining workflows and enhancing collaboration by introducing Slack and Atlassian Jira.

Research Assistant

Cognet Lab

Jun 2018 – Jun 2020

- **Skills:** *GANs (W-GAN, DC-GAN, Fast-SRGAN), Optimization, TensorFlow.*

- Created a set of generative adversarial networks to generate photo-realistic images of architecture and painting.
- Used image synthesis techniques – glitching, watermarking – for a 40% reduced complexity with similar fidelity.

Publications

- **Waseem M. S.**, et. al, "RipeTrack: Assessing Fruit Ripeness and Remaining Lifetime using Smartphones" *Under Review*.
- Sharma N., **Waseem M. S.**, et. al., "MobiSpectral: Hyperspectral Imaging on Mobile Devices". *MobiCom*, October 2023.

Projects

- [Badger](#): Developed sentiment analysis model to predict market index with time-series tweets, news, and stock prices.
- [Ship Detector](#): Optimized UNET model, with transfer learning and digital signal processing to improve accuracy by 1%.
- [COVID Literature Analysis](#): Clustered keywords and topics from COVID-19 literature based on similarity and relevance for making broader analysis about the content and make searching efficient.
- [Edumeet](#): Campus-wide portal for students to search for jobs, seminars, news, and connect with alumni, etc.

Education

Simon Fraser University (SFU)

MSc in Computer Science

Sep 2021 – Aug 2024

Supervisor: [Prof. Mohamed Hefeeda](#)

Thesis: “RipeTrack: Assessing Fruit Ripeness and Remaining Lifetime using Smartphones”.

Teaching: Intro to Computer Science and Programming 2, Software Engineering, Mobile Applications, Data Science.

National University of Sciences and Technology (NUST)

BSc in Computer Science

Sep 2016 – Jun 2020

Supervisor: [Prof. Syed Taha Ali](#)

Thesis: “ArtGAN: Generation and Analysis of Art using Machine Learning”. See Cognet Lab Experience for more.

Honors and Awards

2021 – 23 **SFU – School of Computing Science**, Received full funding for the duration of my Master’s degree at SFU.

2019 **AIESEC Fellow**, Selected for AIESEC summer research fellowship in Egypt.

2016 – 20 **NUST – Dean’s List**, Received NUST-SEECs Dean’s Scholarship multiple times.

References

Prof. Mohamed Hefeeda – Professor and Director CS, Simon Fraser University – mhefeeda@sfu.ca

Prof. Syed Taha Ali – Assistant Professor, National University of Sciences and Technology – taha.ali@seecs.edu.pk

Ahmad Amin – Co-Founder and Chief Technology Officer (CTO), Furnwish – a.amin@furnwish.net