Shahzaib Waseem

Vancouver, BC | +1 (604) 655-3506
msw10@sfu.ca | github.com/ShahzaibWaseem | shahzaibwaseem.github.io | linkedin.com/in/shahzaibwaseem

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*

- 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) **Sep 2021 – Aug 2024**
MSc in Computer Science ***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) **Sep 2016 – Jun 2020**
BSc in Computer Science ***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 **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 CTO, Furnwish – a.amin@furnwish.net