

# SALIK NADEEM

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## EDUCATION

Oshawa, Ontario	Ontario Tech University	Jan 2019 – Oct 2020 (expected)
<ul style="list-style-type: none"> <li>• MSc in Computer Science (specializing in computer vision and deep learning). CGPA: 4.18/4.3</li> <li>• Thesis: Creating a CNN+RNN architecture which learns view-invariant action representations using a dynamic loss function based on homoscedastic uncertainty of different tasks for classifying human actions in videos.</li> </ul>		
Lahore, Pakistan	LUMS University	Sep 2008 – Jun 2012
<ul style="list-style-type: none"> <li>• BSc in Computer Science</li> </ul>		
		In-major GPA: 3.15/4.00

## TECHNICAL SKILLS

- Proficient with Python, C++, C, MATLAB and JavaScript
- Deep learning frameworks: PyTorch, Tensorflow and Keras
- Proficient with coding CNNs, RNNs (LSTM, BiLSTM), Transformers, Encoder-Decoder models, VAEs, custom layers and models
- Data and image processing and visualization frameworks/technologies: Numpy, Pandas, SciPy, Sklearn, OpenCV, Matplotlib, scikit-image, Plotly and MySQL
- Web development frameworks/technologies: Bootstrap, Flask, WordPress, Joomla, AngularJS, Node.js
- Version control and other tools: GitHub, Bitbucket, Linux, Docker, Jira, CentOS
- Graphics and Animations: GPU programming using CUDA, OpenGL, VFX animations and motion graphics in After Effects and Cinema 4D

## TECHNICAL EXPERIENCE

### Projects

- **View-invariant learning of action representations (Jul 2020)** – Developed a convolutional-biLSTM encoder-decoder model with dynamic multitask loss based on homoscedastic uncertainty. The model produces comparable results to the state-of-the-art models which use dense 3D scene flow for action recognition on the NTU-RGBD dataset.
- **Social distancing tool with depth (May 2020)** – Built a simple social distance violation detection tool using Fast-RCNN, OpenCV and a monocular depth estimation algorithm developed using Pytorch. The tool can take a video as input and highlight people who are close together and are not maintaining social distance.
- **Using Deep Neuro-evolution to train Deep Reinforcement Learning Agents (Dec 2019)** - Trained three environments (Cart pole, Mountain car and Pendulum) from OpenAI Gym solving all environments in 3-5 generations trained in a few minutes on a GPU using a variant of Genetic Algorithms.
- **Concolic Testing for Deep Neural Networks (Nov 2019)**- Made neural networks more robust to adversarial attacks and increased their neuron activation coverage resulting in more comprehensive testing on popular toy datasets MNIST, Fashion-MNIST and Cifar10. Used Python, Tensorflow and Keras.
- **Twitter Network Analysis (Feb 2019)** - Algorithm creates a network graph of all users involved in the dissemination of a query (keyword, hashtag, meme, etc.) and analyzes trends/connections between the users. Built with Python, Tweepy Twitter API, Plotly, Geopy and NetworkX.
- **Real-time gesture tracking with online learning (Dec 2012)** – Implemented the TDL algorithm based on a LK tracker, a sliding window detector and random forests for feature representation. Developed in C++ using OpenCV and also ported to iOS platform achieving ~6-5 fps on iPhone 2/3.

## EMPLOYMENT

<b>Graduate Teaching Assistant</b>	<b>Ontario Tech University, Oshawa, Ontario</b>	<b>Jan 2019 – May 2020</b>
<ul style="list-style-type: none"> <li>• Courses taught: Operating Systems (C/C++), Scientific Data Analysis (Python, Pandas, NumPy, Matplotlib), Systems Programming (C language, operating systems, Linux, network programming, sockets).</li> <li>• Conducted laboratories and tutorial sessions.</li> <li>• Average Ratings of 4.3 out of 5.0 from anonymous student feedback surveys.</li> </ul>		
<b>Cofounder &amp; Lead AI Engineer</b>	<b>Homestove, Lahore, Pakistan</b>	<b>Oct 2016 – May 2018</b>
<ul style="list-style-type: none"> <li>• Homestove was Pakistan's first online platform available on web, Android and iOS that enabled the sale and purchase of affordable home-cooked meals.</li> <li>• Worked with usage data (timestamps, locations, active time, etc.) from the web, Android and iOS applications and thousands of users (chefs and buyers) to help with key business decisions, improved order fulfillment from 70% to 95% and optimized "vehicle route algorithm" for supply-side operations.</li> <li>• Developed a central dashboard using Javascript stack, AngularJS, D3JS, MySQL and Node.JS for running daily operations which resulted in a lean and optimized workflow for all teams.</li> <li>• Developed and executed a prototype machine learning system including system architecture, data collection, visualization and iterative testing in Python to enable workload prediction every day for the logistics team.</li> </ul>		
<b>Mobile App Development Lead</b>	<b>Brainlogix, Lahore, Pakistan</b>	<b>Aug 2013 – Mar 2017</b>
<ul style="list-style-type: none"> <li>• Led games development in Cocos2D and Unity3D with successful titles being downloaded over 100,000 times on Android and iOS, generating ads and in-app purchasing revenues.</li> <li>• Developed, tested and deployed 20+ applications to Google Play and App store with thousands of downloads for multiple clients (in field of E-Commerce, medical, social media, Customer relationship management, etc.)</li> </ul>		
<b>Software Engineer</b>	<b>Tintash, Lahore, Pakistan</b>	<b>Sep 2012 – Aug 2013</b>
<ul style="list-style-type: none"> <li>• Worked with a diverse group of engineers as a team player to develop native applications for iOS (utility apps, attendance management apps)</li> <li>• Developed, debugged and tested mobile games using Unity 3D &amp; Cocos2D-x (chooku, panda book reader for kids, rocket racoon, itsy bitsy city)</li> </ul>		

## CERTIFICATIONS AND AWARDS

- **Winner of Intel & OpenCV's Spatial AI Competition (Phase 1) – (Jul 2020):** Selected as a winner from over 230 competitors for developing a social distancing model using OAK-D.
- **Deep Learning specialization – (Mar 2020):** by deeplearning.ai on Coursera.  
Courses Completed: Neural Networks and Deep Learning, Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization, Structuring Machine Learning Projects, Convolutional Neural Networks, Sequence Models.
- **IEEE Xtreme Endurance Programming Competition – (Oct 2011):** Ranked 30th among 1500+ teams from 65 countries in a 24-hour coding challenge. Solved all problems using C++.