Akshit Arora

📞 +1 (720) 618 7199
✉ akshit.arora@colorado.edu
🖥 http://aroraakshit.github.io
Updated December 2018

Education

2017 – 2019   **M.S. in Computer Science**, *University of Colorado Boulder*, CO, USA.
Graduate Coursework: Machine Learning, Neural Networks and Deep Learning, Natural Language Processing, Big Data Architecture, Recommender Systems, Introduction to Virtual Reality

2013 – 2017   **B.E. in Computer Engineering**, *Thapar University (TU), Patiala*, PB, India.
Major Project: Augmented Reality for Training Military Personnel.

Publications

EDM 2018   **Does Deep Knowledge Tracing Model Interactions Among Skills?**, *S Montero*, **A Arora***, S Kelly, B Milne, MC Mozer*, Educational Data Mining 2018, Buffalo, NY ☒.

NHESS 2018   **Learning in an interactive simulation tool against landslide risks: the role of strength and availability of experiential feedback**, *P Chaturvedi, **A Arora**, V Dutt*, Natural Hazards and Earth System Sciences Journal ☒.

AHFE 2016   **Interactive Landslide Simulator: A tool for Landslide Risk Assessment and Communication**, *P Chaturvedi, **A Arora**, V Dutt*, Springer Applied Human Factors & Ergonomics 2016, Orlando, FL ☒.

* = Equal Contribution

Experience

2019 – Present   **Software Engineer (Co-op)**, Woot Math, Mentor: Dr. Sean Kelly.
Recommender systems.

2018   **Independent Study**, CUBoulder, Mentors: Prof. Claire Monteleoni, Dr. Moumita Saha.
Developed a CNN-based prediction model in an attempt to produce temperature and precipitation short & long range forecasts using global time-series climate data from NOAA. Compared the performance with traditional approaches used in the climate domain. Implemented using PyTorch.

2018   **Machine Learning Intern**, Woot Math, Mentors: Dr. Sean Kelly, Dr. Brent Milne.
Trained a recurrent neural network (RNN) based stroke data classifier to detect whether students are drawing doodles or actually working on math problems their devices. Achieved 70% accuracy and fine-tuned the model for mathematical categories using synthetic data.

2018   **Independent Study**, CUBoulder, Mentors: Prof. Michael C. Mozer, Dr. Shirly Montero.
Researched on tracing student's knowledge state on online tutoring platforms: Trained and evaluated RNN based deep learning models using TF for deep knowledge tracing and compared them with the traditional Bayesian knowledge tracing approach.

2017   **Research Intern**, IIT Mandi, HP, India, Mentors: Dr. Varun Dutt, Akash Rao.
Evaluated augmented reality (AR) libraries: Designed scenarios for military training using AR and evaluated libraries including Vuforia, Kudan AR, AR Toolkit, Microsoft HoloLens, Google Tango. Performed experiments to be used for cognitive profiling of military personnel.

2015 – 2016   **Research Intern**, IIT Mandi, Mentors: Dr. Varun Dutt, Pratik Chaturvedi.
Created a serious game for education about landslides: Built a web-based interactive landslide simulator and studied the effect of affective feedback on awareness about landslide mitigation techniques in the Himalayan region.

Achievements and Professional Activities

2018	**Outstanding Poster Award (M.S.)** at the Graduate Student Research Expo organized by Department of Computer Science, CU Boulder.
2018	**Travel Fellowship Award** for presenting research paper at EDM 2018 by Institute of Cognitive Science, CU Boulder.
2017 - 2018	**Teaching Assistant** for 'Introduction to Computer Science' (CSCI 1200) in Fall 2017 & Fall 2018 and 'Data Structures' (CSCI 2270) in Spring 2018.
2016	**Travel Fellowship Award** for presenting research paper at AHFE 2016 by IIT Mandi and TU Patiala.
2014	**Attended International Workshop on Machine Learning Algorithms and Data Analytics** organized by IEEE Computer Society, TU Patiala.

Projects

2018	**Presence Brush - Extending SketchRNN to 3D:** Created an extension to Mozilla's A-painter project where the user can draw a sequence of strokes and a neural network model (Google's SketchRNN) completes it to make a doodle using *NodeJS / TensorFlowJS / HTC Vive / A-Frame / ExpressJS*.
2018	**Detecting online abuse:** Built a real-time and scalable machine learning (ML) based toxicity monitoring tool. Evaluated and deployed ML models on Wikipedia's detox dataset to analyze tweets in real-time using *Apache Storm / Apache Kafka / AWS Lambda / Keras*.
2017	**Tracking student's knowledge state on online tutoring platforms:** Built and trained LSTM based deep learning models to estimate student knowledge based on history of correct/incorrect responses on tutoring platform using *TensorFlow / Pandas / NumPy / Scikit-Learn / Matplotlib* with 88% quality over Bayesian approaches for the same.
2017	**Training military personnel using AR:** Designed search-and-rescue and first-person-shooter scenarios for military training. Deployed a marker-less location based augmented reality experiment on android platform and collected physiological sensor data through a REST endpoint using *Vuforia / Unity 3D / C# / Kudan AR*.
2015 – 2016	**Creating awareness about landslide mitigation in the Himalayan region:** Designed and analyzed a novel cognitive model for simulating landslides and its economic effects using Monte-Carlo simulations. Built an interactive simulation tool to be used for doing what-if analysis for policy decisions and creating awareness using *PHP / MySQL / Bootstrap*.

Technical skills

Languages	Python, C++, JavaScript, C#, PHP
Deep Learning	PyTorch, TensorFlow, Pandas, Keras, Scikit-Learn, NumPy, MatplotLib
AR/VR	Unity 3D, Vuforia, Kudan AR, HoloLens SDK, A-Frame, ThreeJS
Big Data	Kafka, Storm, AWS Lambda, Docker
Others	NodeJS, MySQL, VBScript
OS	Linux, MacOS