Akshit Arora

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Education

2017 – Present **M.S. in Computer Science**, *University of Colorado (CU) Boulder, Department of Computer Science*, CO, USA.
Independent Study: Deep Knowledge Tracing using LSTM
Graduate Coursework: Machine Learning, Neural Networks and Deep Learning, Natural Language Processing, Big Data Architecture, Algorithms

2013 – 2017 **B.E. in Computer Engineering**, *Thapar University (TU), Patiala, Department of Computer Science and Engineering*, PB, India.
Major Project: Augmented Reality for Training Military Personnel.
Undergraduate Coursework: Software Engineering, Object Oriented Programming, Discrete Structures

Experience

2018 – Present **Machine Learning Intern**, Woot Math, Mentors: Dr. Sean Kelly, Dr. Brent Milne.
Built intelligent scratch pads for students using deep learning: Trained a recurrent neural network (RNN) based stroke data classifier with 70% accuracy using TensorFlow (TF) Estimator API and fine-tuned the model for mathematical categories using synthetic data. Evaluated methods to deploy RNN model in production including TF Serving, Docker & TF JavaScript.

2018 **Research Assistant**, CU Boulder, 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 Bayesian knowledge tracing. Presented at **Educational Data Mining (EDM) 2018 conference**.

2017 **Research Intern**, Indian Institute of Technology (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. Built a web-based interactive landslide simulator and studied the effect of affective feedback on awareness about landslide mitigation techniques in the Himalayan regionBuilt 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 **Teaching Assistant** for Introduction to Computer Science (CSCI 1200) under Felix Muzny.

2018 **Travel Fellowship Award** for presenting research paper at EDM 2018 by Institute of Cognitive Science, CU Boulder.

2018 **Outstanding Poster Award (M.S.)** at the Graduate Student Research Expo organized by Department of Computer Science, CU Boulder.

2018 **Teaching Assistant** for Data Structures (CSCI 2270) under Prof. Rhonda Hoenigman.

2017 **Teaching Assistant** for Introduction to Computer Science (CSCI 1200) under Prof. Ioana Fleming.

2016 **Travel Fellowship Award** for presenting research paper at AHFE 2016 by IIT Mandi and TU Patiala.

2014 **International Workshop on Machine Learning Algorithms and Data Analytics** organized by IEEE Computer Society, TU Patiala.

Projects

2018 **Towards safer internet discourse:** Worked towards building real-time and scalable machine learning (ML) based toxicity monitoring tool. Built, 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 / IPython / 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 and interactive simulation tool to be used for doing what-if analysis for policy decisions and educating people living in vulnerable zones using *PHP / MySQL / VB Script*.

Publications

EDM 2018 **Does Deep Knowledge Tracing Model Interactions Among Skills?**, ***A Arora****, *S Montero*, 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

Technical skills

Languages	Python, C++
Libraries	TensorFlow, Pandas, Keras, Scikit-Learn, Vuforia
Frameworks	Kafka, Storm, AWS Lambda, Docker