Ramesh K. **Sah**

Ph.D. Student in Computer Science | Machine Learning | Data Science | Statistical Learning

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"We are what we repeatedly do. Excellence, therefore, is not an act but a habit."

Summary

Currently studying Computer Science at Washington State University trying to solve problems in health care by developing novel machine learning algorithms and optimization processes. Interested in practical applications of machine learning to real-world problems.

Relevant and Transferable Skills

- Efficient at analyzing problems and think through for possible solutions
- Quick learner with focus on both research methodology and product innovations
- Excellent work ethics and time management skills

Skills

Programming Languages	Python, C, C++, Bash, R
Framework & Libraries	PyTorch, TensorFlow, Keras, Scikit-Learn
Software Engineering Tools	Git, vim, LaTeX
Databases	MySQL

Experience

Washington State University

Pullman, WA.

Graduate Research Assistant

May. 2019 - Current

- Investigated the effects of adversarial examples in wearable sensor systems used in health care applications. We showed how an adversary can craft adversarial examples and fool the underlying machine learning models. We published a conference paper with our approach, analysis, and results.
- Investigated the transferability of adversarial examples in wearable sensor systems from four novel different perspectives: 1) transferability between models, 2) transferability between subjects, 3) transferability across sensor body locations, and 4) transferability between datasets.
- Working to quantify, measure, and detect stress in real-time in alcohol-addicted individuals. We aim to build a mobile health system that can detect stress and provide interventions such as music therapy, games, and inspirational texts to prevent alcohol dependent people from relapsing.
- Developing an Android app to collect inertial and image data for a human in loop activity monitoring system for health care.

Washington State University

Pullman, WA.

Graduate Teaching Assistant

Aug. 2018 - May. 2019

- Helped students by answering their questions in several Computer Science courses.
- Graded home works and exams and gave lectures in class with 150 students.
- Courses: Introduction to Machine Learning, Data Structures and Algorithms, Software Development, and Computer Architecture.

Real Time Solutions Pvt. Ltd.

Patan, Nepal

Firmware Software Engineer

Dec. 2016 - May. 2019

- Wrote efficient and resilient C code for products ranging from smart home, IoT, queue management systems, weather monitoring systems, and flood/landslide warning systems.
- Used machine learning algorithms in IoT applications such as smoke detector, vehicle accident monitoring system, and anti-theft system to prevent theft of solar panels installed in remote weather monitoring stations.

Real Time Solutions Pvt. Ltd. *Patan, Nepal*

Firmware Software Intern *Aug. 2016 - Dec. 2016*

- Developed a prototype system to detect earthquake using off-the-shelf accelerometer. The system was designed to detect P and S waves and act as an earthquake monitoring and early-warning system.

Education

Washington State University (WSU) *Pullman, WA*

Doctor of Philosophy, Computer Science *August 2018 - May 2023 (expected)*

- Research and development of machine learning algorithms and cyber physical system for mobile health.
- Cumulative GPA: 3.81 on a 4.00 scale
- Relevant Coursework: Machine Learning, Data Science, Graph Theory, Embedded Systems, Optimization in Networks, Algorithmics, Statistical Theory

Kathmandu University (KU) *Dhulikhel, Nepal*

Bachelor of Engineering in Electronics and Communication Engineering *March 2012 - September 2016*

- Final Year Project: Comparative Analysis of Routing Protocols for Wireless Body Area Networks.
- Cumulative GPA: 3.89 on a 4.00 scale
- Relevant Coursework: C, C++, Electronics, Numerical Analysis, Calculus

Publications

Adar: Adversarial Activity Recognition in Wearables *Westminister, CO, USA*

The 38^{th} IEEE/ACM International Conference on Computer Aided Design (ICCAD) *Nov 4-7, 2019*

Adversarial Transferability in Wearable Sensor Systems

ArXiv PrePrint - Under Review

Mobile Health for Alcohol Recovery and Relapse Prevention *Washington D.C., USA*

The 5^{th} IEEE/ACM International Conference on Connected Health: Applications, Systems and Engineering Technologies *Dec 2020*

Honors & Awards

2019 **Recipient of Graduate and Professional Student Association (GPSA) student travel grant,** Washington State University

2018 **Awarded full-time RA/TA scholarship,** Washington State University

2015 **Recipient of ERASMUS Mundus INTACT student exchange scholarship,** Kathmandu University

2016 **Merit Scholarship for Academic Excellence,** Kathmandu University

2012 **First Prize in Society of Electrical and Electronics Engineers (SEEE) Circuit Competition,** Kathmandu University

Open Source Projects

Adar

TensorFlow implementation of the paper, "Adar: Adversarial Activity Recognition in Wearables"