# Kushal Kafle

## Personal Info


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## Research Interests

Machine Learning, Deep Learning, Visual Question Answering, Vision and Language

## Education

Aug 2014 -Present
**Ph.D. in IMAGING SCIENCE**,
Chester F. Carlson Center for Imaging Science
Rochester Institute of Technology, Rochester, NY
**Advisor**: Dr. Christopher Kanan | **Research Group**: klab
**Courses**: Image Processing and Computer Vision, Human Visual System, Statistical Machine Learning, Deep Learning for Vision, Advanced Topics in Deep Learning

Oct 2008 - Dec 2012
**Bachelor's Degree in ELECTRONICS AND COMMUNICATION ENGINEERING**,
Institute of Engineering, Tribhuvan University, Kathmandu, Nepal
**Elective Specialization**: Image Processing and Pattern Recognition

## Publications

CVPR
**Kafle, K.**, Cohen, S., Price, B., and Kanan, C. (2018). DVQA: Understanding Data Visualizations via Question Answering. *IEEE Conference on Computer Vision and Pattern Recognition*.

ICCV
**Kafle, K.** and Kanan, C. (2017) An analysis of visual question answering algorithms. *International Conference on Computer Vision*.

INLG
**Kafle, K.**, Yousefhussein, M., and Kanan, C.. (2017) Data augmentation for visual question answering. *International Natural Language Generation Conference*.

CVIU
**Kafle, K.** and Kanan, C. (2017) Visual question answering: Datasets, algorithms, and future challenges. *Computer Vision and Image Understanding*.

CVPR
**Kafle, K.** and Kanan, C. (2016) Answer-type prediction for visual question answering. *IEEE Conference on Computer Vision and Pattern Recognition*.

## Research Experience

May 2017 -Mar 2018
**RESEARCH INTERN**
Adobe Research, San Jose, CA
**Mentors**: Dr. Scott Cohen and Dr. Brian Price | **Group**: Vision
**Topics**: Vision and Language, Deep Learning, Visual Reasoning

July 2015 - Present

**RESEARCH ASSISTANT**
Chester F. Carlson Center for Imaging Science,
Rochester Institute of Technology, Rochester, NY
**Advisor**: Dr. Christopher Kanan | **Group**: klab
**Topics**: Deep Learning, Visual Question Answering

Nov 2012 - Dec 2012

**RESEARCH ASSISTANT**
Radio Frequency (RF) and Microwave Engineering Lab,
Tribhuvan University, Institute of Engineering, Kathmandu, Nepal
**Mentor**: Dr. Nanda Bikram Adhikari
**Topics**: Theoretical study and laboratory demonstration of the security risks and potential attacks on the proposed electronic voting system based on ISO/IEC14443 HF-RFID tags.

## Teaching Experience

Aug 2014 - May 2015

**TEACHING ASSISTANT**
Chester F. Carlson Center for Imaging Science,
Rochester Institute of Technology, Rochester, NY
**Responsibilities**: Designed, conducted, and graded laboratory exercises and homework assignments for *Radiometry* and *Fundamentals of Imaging Science*

May 2013 - Oct 2013

**LECTURER**
College of Information Technology and Engineering,
Purbanchal University, Kathmandu, Nepal
**Responsibilities:** Taught one semester course on *Image Processing and Pattern Recognition*. Tasks included lecturing and creating and grading tutorial modules, homeworks, and programming assignments.

## Other Work Experience

June 2013- Sept 2013

**SOFTWARE DEVELOPER**
Technology Sales Pvt. Ltd. Kathmandu, Nepal
**Responsibilities**: Developed front and back-end software for a tollbooth-style vehicle checkpoint entry system using smartcard. Successfully deployed in a small-scale real-world pilot study.

Apr 2013 - July 2013

**R&D CONSULTANT**
Alternative Energy Promotion Center, Lalitpur, Nepal
Ministry of Environment and Population, Nepal Government
**Responsibilities**: Developed a Prototype remote monitoring system for tracking the operation of Solar Home Systems installed in rural areas of Nepal.

## Scholarships , Awards and Grants

- **Travel Award - 2016 Deep Learning Summer School**
  Registration fee waiver granted to attend deep learning summer school, 2016
- **Amazon AWS Research Grant**
  Together with Dr. Christopher Kanan. Worth $15,000 in AWS credits.
- **R&D Grant from Alternative Energy Promotion Center**
  Team Lead for grant awarded for developing prototype remote monitoring system.
- **Winner of National Design Competition**
  Team lead for the winning design for the nationwide design competition *"Electronically*

*Operated Innovative Monitoring System for Solar Home Systems installed in Rural Areas of Nepal"* organized by Alternative Energy Promotion Center, Under ministry of Environment and Population, Nepal Government.

- **Scholarship from Ministry of General Administration, Nepal Government**
  Awarded to only 200 Engineering, Science, and Medicine students across the country.

## Skills

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|---|---|
| Deep Learning Packages | Tensorflow, PyTorch, Keras, Caffe, MatConvNet |
| Proficient in Programming | Python, MATLAB |
| Also Familiar With | C, C++, Java, C#, IDL, R |
| Basic Web and Databases | HTML, CSS, JavaScript, JQuery, CherryPy, PHP, Nginx, Apache, MySQL |
| Other Skills | Git, LaTeX, Crowd-sourcing using Amazon Mechanical Turk (AMT) |

## Reviewing

- Conferences
  - Neural Information Processing System (NIPS) - 2016
  - International Conference on Image Processing (ICIP) - 2017
  - Computer Vision and Pattern Recognition (CVPR) - 2017, 2018 (Outstanding Reviewer)
  - Association for the Advancement of Artificial Intelligence (AAAI) - 2017
- Journals
  - Computer Vision and Image Understanding (CVIU) - 2017

## Membership

- IEEE, Computer Vision Foundation (CVF)

## Languages

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|---|---|
| Nepali: | Native proficiency |
| English: | Full professional proficiency (TOEFL score: 118/120) |
| Hindi: | Limited working proficiency |

## Other Interests and Activities

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|---|---|
| Photography | Previously, an avid travel and landscape photographer.<br>• Top-25 in 'Hamro Nepal' (Translated 'Our Nepal') Competition/Exhibition; organized by ARTUDIO, 2012<br>• Finalist in 'The Best of Nepal' photo Competition/Exhibition; organized by ROTASIA |