SUSHANT KAFLE

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RESEARCH INTERESTS

Natural Language Processing; Human-Computer Interaction, Speech Processing; Machine Learning

CURRENT POSITION

2018 **Rochester Institute of Technology**, Rochester, NY
Research Assistant, Golisano College of Computing and Information Science.
Affiliation: Linguistic and Assistive Technology Lab (LATLAB)
Advisor: Prof. Matt Huenerfauth

EDUCATION

Rochester Institute of Technology, Rochester, NY

2015 – **Doctor of Philosophy**, Computing and Information Science

Tribhuwan University, Pulchowk Engineering Campus, Lalitpur, Nepal

2011 – 2014 **Bachelor of Engineering (B.E.)**, Computer Engineering (GPA: 4.0)
Institute of Engineering: Pulchowk Campus, Tribhuwan University
Thesis: Interest Rate Prediction of Banks – Analyzing social-economic trend to predict the interest rate of banks.

PROFESSIONAL EXPERIENCE

2015 – **Rochester Institute of Technology**, Research Assistant,
Center for Accessibility and Inclusion Research (CAIR) Lab. Creating the Next Generation of Live-Captioning Technologies.
Advisor: Prof. Matt Huenerfauth

2014 – 2015 **Viveka Health**, Full Stack Software Developer
Created web services for eliminating fraud, waste, and abuse in the medical claims payment process.

2013 – 2014 **Yomari Pvt. Ltd.**, Research Intern
Socio-economic trend analysis from news to predict interest rate of banks in Nepal.

2013 **E&T Nepal Pvt. Ltd.**, Intern
Developed a GUI for realistic rendering of containers (like glass, plastic, metal etc.) and particles (like smoke, water, molten metal) using custom shaders for realistic display, and particle physics for simulating particle interaction inside a container.

2012 – 2013 **Verisk Information Technology**, Intern
Optimized and automated Quality Control pipeline used by the company.

RESEARCH & ACADEMIC AWARDS

Best Paper Honorable Mention. (2018). For "Methods for Evaluation of Imperfect Captioning Tools by Deaf or Hard-of-Hearing Users at Different Reading Literacy Levels." at the 2018 ACM Conference on Human Factors in Computing Systems (CHI'18).

Best Paper Award. (2017). For "Evaluating the Usability of Automatically Generated Captions for People who are Deaf or Hard of Hearing" at the 19th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS'17).

ACM ASSETS Doctoral Consortium. (2016). For "Effect of Speech Recognition Errors on Text Understandability for People who are Deaf or Hard of Hearing." at the 18th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS'16).

RIT Ph.D. Merit Scholarship. (2015 –). Financial support for Ph.D. studies at the Rochester Institute of Technology since August 2015.

The College Fellowship Scholarship. (2011 – 2015). For academic merit and performance in each semester during the undergraduate studies. Awarded by the Institute of Engineering, Central Campus Pulchowk.

Winner of Integrity Hackathon. (2013). For "FindOut", a web application that uses interactive games to educate people about the value of integrity in work, at the Integrity Hackathon organized by Integrity Action together with Young Innovations Pvt. Ltd. Nepal.

Winner of Startup Weekend Kathmandu. (2012). For "Parikshya", an online exam preparation portal where students take mock exams and get feedback, at the first Startup Weekend in Kathmandu.

Academic Excellence Award. (2011). For excellent academic performance in the semester exam of Bachelors in Engineering part of Computer Engineering. Awarded by the Free Student's Union at the Institute of Engineering, Central Campus Pulchowk.

Full Academic Scholarship. (2011 - 2015). Academic scholarship during the undergraduate studies at the Institute of Engineering, Central Campus Pulchowk. Awarded by Tribhuwan University, selected through a nation wide competitive exam.

PEER-REVIEWED PAPERS PUBLISHED

P.5 Sedeeq Al-khazraji, **Sushant Kafle**, Matt Huenerfauth. 2018. "Modeling and Predicting the Location of Pauses for the Generation of Animations of American Sign Language." Proceedings of the 8th Workshop on the Representation & Processing of Sign Languages: Involving the Language Community (SignLang2018). (to appear)

P.4 **Sushant Kafle**, Matt Huenerfauth. 2018. "A Corpus for Modeling Word Importance in Spoken Dialogue Transcripts." Proceedings of the 11th International Conference on Language Resources and Evaluation (LREC'18). (to appear)

P.3 Larwan Berke, **Sushant Kafle**, Matt Huenerfauth. 2018. "Methods for Evaluation of Imperfect Captioning Tools by Deaf or Hard-of-Hearing Users at Different Reading Literacy Levels." Proceedings of the 2018 ACM Conference on Human Factors in Computing Systems (CHI'18). (**Best Paper Honorable Mention**)

P.2 **Sushant Kafle**, Matt Huenerfauth. 2017. "Evaluating the Usability of Automatically Generated Captions for People who are Deaf or Hard of Hearing." Proceedings of the 19th Annual SIGACCESS Conference on Computers and Accessibility (ASSETS'17), Baltimore, Maryland. ACM, New York, NY, USA. (**Best Paper Award**)

P.1 **Sushant Kafle**, Matt Huenerfauth. 2016. "Effect of Speech Recognition Errors on Text Understandability for People who are Deaf or Hard of Hearing." Proceedings of the 7th Workshop on Speech and Language Processing for Assistive Technologies (SLPAT), INTERSPEECH 2016, San Francisco, CA, USA.

RECENT ACADEMIC PROJECTS

2017 **Word Importance Modeling using Speech Based Features.**
Investigated acoustic features in human speech to see if they provide clues about the importance of word being spoken. Modeled the task a sequence tagging problem and utilized Conditional Random Fields (and Recurrent Neural Network units) to model the context dependencies in words to make the prediction.
Spoken Language Technology, Spring 2017

2017 **Predicting the Usability of Captions Generated by ASR for People who are Deaf or Hard-of-Hearing.**
Investigated linguistic features in text to design metrics for evaluating the usability of automatically generated captions for people who are Deaf or Hard of Hearing. Developed several n-gram models to compute the entropy of a word at a context, and utilized distributed representation of words to compute the impact due to errors.
Introduction to Natural Language Processing, Spring 2017

2016 **Empirical Analysis of Error Produced by Automatic Speech Recognition Systems.**
Categorized and evaluated different types of errors commonly produced by Sphinx-4 Speech Recognition System on recordings from the LibriSpeech Corpus. Implemented error alignment modules to account for fuzzy time-stamp matching and, one to many and many to one substitution errors. Created a local compute cluster to make the speech recognition computation faster.
Foundations of CyberInfrastructure, Spring 2016

TALKS AND POSTERS

2017 Predicting the Usability of Automatically Generated Caption for People who are Deaf or Hard of Hearing.
[*Talk*] *Graduate Research Showcase, Rochester Institute of Technology*

2017 Word Importance Modeling to Improve Automated Caption Display for People who are Deaf or Hard of Hearing.
[*Poster*] *Graduate Symposium, Rochester Institute of Technology*

2017 – 2016 Modeling the Effect of Speech Recognition Errors on Text Understandability for People who are Deaf or Hard of Hearing.
[*Poster*] *Move78 Retreat '17, Rochester Institute of Technology*
[*Talk*] *ASSETS Doctorial Consortium '16*
[*Poster*] *The 18th Int'l ACM SIGACCESS Conference on Computers and Accessibility*

PROFESSIONAL MEMBERSHIP

- Association for Computing Machinery (ACM)
    - Special Interest Groups: Accessible Computing (SIGACCESS), Computer-Human Interaction (SIGCHI).

TECHNICAL SKILLS

- Deep Learning Libraries: TensorFlow, Theano
- Programming Languages: Python, Java, MATLAB, C/C++, R.
- Markup Languages & Web: JavaScript, CSS, HTML/5; Django, Spring Framework, PHP.