Aayush Kumar Chaudhary

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Research Interests: Image Processing, Computer Vision, Eye Tracking, Machine Learning, Human Computer Interaction

**EDUCATION**

**Ph.D. student, Chester F. Carlson Center for Imaging Science,** *Rochester Institute of Technology Aug ‘16-Dec ‘21 (Expected)*

* Area of focus: Eye tracking methodology (image processing, computer vision, machine learning, deep learning)
* Relevant courses: AI explorations, deep learning for vision, Multiview imaging, Bayesian methods for machine learning

**Bachelor of Engineering (B.E.), Electronics and Communication Engineering I.O.E. University Rank: 1**

*Central Campus Pulchowk, Institute of Engineering (I.O.E.), Tribhuvan University, Kathmandu, Nepal 2010-2014*

**RESEARCH EXPERIENCE**

**Multidisciplinary Vision Research Laboratory, RIT,** *Research Assistant* **Advisor: Dr. Jeff Pelz.**  *June 2017 – Present*

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| Gaze Estimation   * Study of feasibility **of iris features based gaze estimation**. * Developed a new approach of incorporating regression-based models with machine learning based approaches. * Improved the precision and accuracy of eye trackers. * Designed and tested eye tracking hardware setup for study of various eye movements for **human subjects.** | Segmentation of eye-regions   * Improved the robustness of eye-parts segmentation with memory efficient models. * Designed novel framework for ellipse segmentation on eye-parts * Currently exploring temporal segmentation |
| Privacy in eye videos   * Designed concept for a novel approach to preserve privacy in the eye videos without degrading the accuracy of eye trackers. | Synthetic dataset for eye-tracking applications   * Collaborated with multiple research labs in RIT to introduce a synthetic eye image generation platform for eye-tracking applications. (https://cs.rit.edu/~cgaplab/RIT-Eyes/) |

**SKILLS**

* **Programming languages: Python,** Matlab, Arduino, C/C++
* **Packages**: **PyTorch, OpenCV,** VisualSFM
* **Eye tracker hardware**: Pupil Labs eye trackers, custom-made remote eye trackers with mirrorless cameras
* **Miscellaneous:** Human subjects research, **Robotics,** Circuit design tools (Kicad, Proteus), photography (iris)

**WORK EXPERIENCE**

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| **Chester F. Carlson Center for Imaging Science, RIT.,** *Teaching Assistant (Aug 2016 – May 2017)* |  | **Samsung India Electronics Pvt. Ltd (SIEL, Nepal Branch).,** *Senior Engineer (Nov 2014 – July 2016)* |
| * Undergraduate courses assisted: vision and psychophysics, linear methods of imaging |  | * Worked towards improving smart phones performance with validation and testing (METI team) |

**PUBLICATIONS**

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| *ETRA’20* | Chaudhary, A. K. & Pelz, J. Privacy-Preserving Eye Videos using Rubber Sheet Model (Short Paper: To appear) |
| *ETRA’20* | Nair, N., **Chaudhary A.K.**, Kothari, R., Diaz, G., Pelz, J. , Bailey, R. RIT-Eyes, realistically rendered eye images for eyetracking applications |
| *JEMR’19* | Chaudhary, A. K. & Pelz, J. (2019, April). Motion tracking of iris features to detect small eye movements. |
| *ICCVW’19* | **A. K. Chaudhary** et al., "**RITnet:** Real-time Semantic Segmentation of the Eye for Gaze Tracking," *[Talk][ Semantic Segmentation Challenge :Winning model]* |
| *ETRA’19* | **Chaudhary, A.K.** (2019'). Motion tracking of iris features for eye tracking |

**AWARDS**

* Prof. F.N. Trofimenkoff academic achievement award, Dept. of Electronics and Computer Engg, Pulchowk Campus 2019
* **Winner of Facebook OpenEDS competition,** State-of-the-art results on Semantic Segmentation Challenge 2019
* **Performance Award in recognition of High Performance for Q1’2016**, Samsung India Electronics Pvt. Ltd., Nepal 2016
* **University Rank 1st (Engineering Stream),** I.O.E. examination division, T.U. 2010-2014

**ACTIVITIES AND LEADERSHIP**

* **Coordinator,** LOCUS 2014, Biggest Technological Festival for DoECE, Pulchowk Campus 2014
* Team Member, **ABU Robocon 2013, Vietnam,** Hardware design team for manual and automatic robot 2013
* Professional Service: **Reviewer: (**JEMR, ETRA),
* Mentored high school students (2019, 2020)

**COMPLETE CV CAN BE DOWNLOADED FROM** [**http://www.aayushchaudhary.com/pdf/CV.pdf**](http://www.aayushchaudhary.com/pdf/CV.pdf)