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XIAODAN HU

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EDUCATION

- **University of Waterloo| System Design Engineering (UW)** **Waterloo, Canada**
  Master of Applied Science, Vision and Image Processing Lab, GPA: 4/4 (A+) *May 2017-Dec. 2018*
  Courses: SYDE780 Graphical Deep Learning, CS685 Machine Learning: Statistical and Computational Foundations, SYDE522 Machine Intelligence, SYDE675 Pattern Recognition, ECE613 Image Proc. and Visual Comm., SYDE672 Statistical Image Proc.
- **New York University | Tandon School of Engineering (NYU)** **New York, USA**
  Master of Science, Computer Engineering, GPA: 3.53/4 *Sep.2015-Jan. 2017*
  Courses: CS-GY6313 Information Visualization, CS-GY6643 Computer Vision and Scene Analysis, CS-GY6233 Introduction to Operating Systems, CS-GY6133 Computer Architecture I
- **Beijing University of Posts and Telecommunications (BUPT)** **Beijing, China**
  Bachelor's degree in engineering, Telecommunication Engineering, Major GPA: 87/100 (A) *Sep. 2011-July 2015*
  Courses: C++ Programming Fundamentals, Data Structures, Multimedia Communications, Java Programming

PUBLICATIONS

- **Xiaodan Hu**, Paul Fieguth, and Alexander Wong, "ClearGAN: Fine-Grained Text to High-Resolution Image Generation", CVPR 2019, manuscript in prep.
- **Xiaodan Hu**, Audrey Chung, Paul Fieguth, and Alexander Wong, "Mitigating Data Bias via Generative AdversarialNetworks (GANs) for Prostate Cancer Classification," manuscript submitted to NIPS ML4H 2018 under review
- **Xiaodan Hu**, Mohamed A. Naiel, Zohreh Azimifar, Ibrahim Ben Daya, Mark Lamm, and Paul Fieguth, "Non-stationary Content-adaptive Projector Resolution Enhancement", U. S. Patent in process
- **Xiaodan Hu**, Mohamed A. Naiel, Zohreh Azimifar, Ibrahim Ben Daya, Mark Lamm, and Paul Fieguth, "Projector Resolution Enhancement Using a Non-stationary Content-adaptive Scheme", Journal of the Society for Information Display, manuscript in prep.
- **Xiaodan Hu**, Mohamed A. Naiel, Zohreh Azimifar, Ibrahim Ben Daya, Mark Lamm, and Paul Fieguth, "Text Enhancement in Projected Imagery", accepted as a poster presentation in the Conference on Vision and Imaging Systems (CVIS 2018), published in a special issue of Journal of Computational Vision and Imaging Systems
- **Xiaodan Hu**, Avery Ma, Ahmed Gawish, Mark Lamm, and Paul Fieguth, "Motion Detection in High-Resolution Enhancement", accepted as a poster presentation in the Conference on Vision and Imaging Systems (CVIS 2017), published in a special issue of Journal of Computational Vision and Imaging Systems
- Shixiong Hu, He Jin, **Xiaodan Hu**, and Yuannan Long, "Application of modular approach in GIS-based hydrological modeling", 2014 22nd International Conference on Geoinformatics

RESEARCH EXPERIENCE

- **ProstateGAN: Mitigating Data Bias via GANs for Prostate Cancer Classification** *Sep. 2018 – present* **UW, Canada**
  - Estimate the potential distribution of prostate imaging samples, and use conditional GAN techniques to augment the prostate imaging datasets based on the corresponding labels to increase the accuracy of prostate cancer classification
- **ClearGAN: Fine-Grained Text to High Resolution Image Generation** *May 2018 – present* **UW, Canada**
  - Improve perceptual quality of generated image by considering both contextual loss and perceptual loss, and increase the resolution of synthesis by applying deconvolution network and sub-pixel convolution layer
- **Text Enhancement in Projected Imagery** *May 2018 – Aug. 2018* **UW, Canada**
  - Improve the visual quality of projected imagery by enhance text and non-text regions differently
  - Propose a text enhancement scheme based on a novel local dynamic range statistical thresholding
- **Motion Estimation for High Resolution Enhancement** *May 2017 – May 2018* **UW, Canada**
  - Deep learning: Improve spatial pyramid network (SPyNet) based on the idea of temporal convolutional network (TCN) for motion estimation of high resolution videos; Train TCN on image datasets to generate motion flow for videos
  - Classical: Propose Kalman-filter based optical flow motion estimation methods to gain accurate flow fields for videos; Design directional blurring filters for anti-artifacts; Video scene cut detection
- **Weight Quantization on Accuracy in Pre-Trained Mobilenets of Various Depth** *Jan.– Apr. 2018* **UW, Canada**
  - Evaluate the trade-off between accuracy and model size using pre-trained Mobilenet networks of different hyperparameters for classifying traffic signs. Use quantized pre-trained Mobilenets (the last fully connected layer removed) to extract features and trained our own 32-bit and quantized classifiers. Cross compared the the changes in accuracy relative to the model size
- **Digital Pathology Image Classification** *Jan.– Apr. 2018* **UW, Canada**
- **Feature Fusion for Different Face Recognition** *Sep. – Dec. 2017* **UW, Canada**
- **Real-Time Twitter Map of New York City** *Jan.– Apr. 2016* **NYU, USA**

- Abstract tweets from Twitter API using Python and obtain user information. Show the origin and development of some hot topic using visual encoding and human perception techniques. Use JavaScript and D3.js. to show the analysis on a webpage

◆ **Visual Table Tennis Game Based on Computer Vision** *Jan.– Apr. 2016* **NYU, USA**

- Use laptop camera to estimate the real-time hand's movement based on Optical Flow to control game paddler

INTERNSHIP

◆ **Christie Digital Systems Inc. (Cooperation with VIP Lab)** **Kitchener, Canada**

Content Adaptive High Resolution Enhancement for Videos *Mar. 2017 – Aug. 2018*

- Accomplish the content-adaptive high-resolution enhancement using a low resolution projector; Text detection; Motion detection; Non-stationary filtering

◆ **SnagTag Inc.** **New York, USA**

Front-end Software Engineer *May - Aug. 2016*

- Use sensor attached in the product to trigger sensor sticker detection program running in a raspberry pie; update web pages
- Download all product information through Rest API and display them in web page shown with different screen size

EXTRACURRICULAR ACTIVITIES

◆ **Student Volunteers Association of BUPT** **BUPT, China**

President *Oct. 2011-Oct. 2013*

- Assisted the Director of Student Activities in the developing and implementing of annual plan and agendas. Responsible for the overall management and supervising the day to day activity of the Union.
- Organized community service projects for local primary schools and nursing homes on weekly basis.
- Cooperated with local NPOs and other volunteer groups to provide assistance for deaf children in the local rehabilitation center. Raised over 8,000 RMB for the center.

SKILLS

- Tools: Pytorch, Torch, TensorFlow, Keras, Sklearn, OpenCV, Amazon EC2, Google Cloud, MangoDB
- Languages: PYTHON, MATLAB, JAVA, Mysql, JavaScript, C++

STANDARDIZED TESTS

- IELTS: Average (Listening 7.5, Reading 8.5, Speaking 6.5, Writing 6.5) = 7.5
- GRE: Sum (Verbal 152, Quantitative 169, Analytical Writing 3.0) = 321+3.0