ZIYUE "ALAN" XIANG

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EECS, Syracuse University
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EDUCATION

Sun Yat-sen University, Guangdong, China *Sept. 2014–June 2018*
B.sc. in Information and Computing Science

University of California, Berkeley *Aug. 2016–Dec. 2016*
BISP exchange program

Syracuse University *Aug. 2018–May 2020*
M.sc. in Computer Science

RESEARCH PROJECTS

Scientific Image Tampering Detection Based on Noise Inconsistencies *(submitted, under review)*
- ► A supervised-learning-based method with multiple noise filters to enhance the robustness
- ► Designing a novel feature extraction scheme for image forensics to reduce the need of data, allowing scientists to customize the classifier
- ► Building a scientific image tampering detection database with the help of image experts from Elsevier and EMBO

Estimating Probability of Image Features to Support Figure Element Reuse Investigations *(ongoing)*
- ► Extracting ORB features of all images in the PMC Open Access Subset
- ► Applying dimensionality reduction and k-means clustering on the image features, and then employing probabilistic interpretation on the clustering to acquire the distribution of image features

Better Performance Evaluation for Image Tampering Localization *(ongoing)*
- ► Generating hypothetical output maps of image tampering localization methods that has a given metric value to illustrate the discrepancy between performance evaluation score and perceptual effectiveness
- ► Devising perceptually consistent metric for this scenario
- ► The idea and output maps were included in the application of US ORI grant: "Human-centered automatic tracing, detection, and evaluation of image and data tampering"

Properties of Robust and Non-robust Features *(independent, ongoing)*
- ► Implementing the robust training algorithm proposed by Ilyas, *et al.*
- ► Using statistical analysis to tell the discriminative difference between robust and non-robust features

More details: https://github.com/xziyue/robust_mnist_feature_py

Chinese Lip-reading Based on RNN *(undergraduate thesis)*
- ► Building Chinese lip-reading corpus
- ► Achieving lip feature segmentation with the help of PCA
- ► Classifying lip features with LSTM network

More details: https://www.alanshawn.com/tech/2018/06/29/chinese-lipreading.html

RESEARCH EXPERIENCE/TRAINING

Research Assistant, SOS+CD Lab, iSchool, Syracuse University *Sep. 2018–now (part-time)*
Research Assistant, ~ *June 2019–Aug. 2019 (full-time)*
- ► Developing automated tools for image manipulation detection in science

- ▶ Investigation of US ORI grant: "Methods and tools for scalable figure reuse detection with statistical certainty reporting"
- ▶ Assisting the application of US ORI grant: "Human-centered automatic tracing, detection, and evaluation of image and data tampering"

Lab website: `https://scienceofscience.org/`

Responsible Conduct of Research Training Oct. 2019

- ▶ A training that provides oversight in research ethics and integrity, which is required for researchers supported by National Science Foundation

CONFERENCE ATTENDENCE

- International Conference on Science of Science *June 2019*
- 6th World Conference on Research Integrity *June 2019*

OTHER PROJECTS/ACTIVITIES

Blog Series on Personal Website `https://www.alanshawn.com/post_directory/`

- ▶ PyCG series: fast-prototyping graphics software with Python toolchain. Examples include inverse kinematics, cloth simulation, spherical projection correction, etc.
- ▶ Scientific Python series: demonstrating how to use Python efficiently for scientific research and typesetting academic articles. Topics include elegant usage of `numpy`, implementing interactive programs with `matplotlib`, cooperation between LaTeXand Python, etc.

Global Graduate Ambassadors–Orientation Leader *Aug. 2019*

- ▶ Introducing new graduate students to Syracuse University and American campus life
- ▶ Leading a scavenger hunt with new students to help them get familiar with university facilities

Gallery: `https://www.alanshawn.com/pavilion/2019/08/22/ggaol.html`

TECHNICAL SKILL SETS

- Programming languages: C++, Python, Haskell, Scala
- Graphics frameworks (OpenGL, PyOpenGL)
- Data mining/machine learning frameworks: Spark, tensorflow
- Editing toolchains: LaTeX, HTML/CSS

AWARDS

- Best undergraduate thesis award, Sun Yat-sen University *May 2018*

Certificate: `https://www.alanshawn.com/pavilion/2018/07/01/undergrad-best-paper.html`

MISCELLANEOUS

- A three-minute self-introduction video: `https://youtu.be/2f-o9wi334Y`