

# Felix Juefei Xu

## Curriculum Vitae

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### Education

- 2011 - 2018 **Ph.D. in Electrical and Computer Engineering**, *Carnegie Mellon University*.  
Department of Electrical and Computer Engineering, College of Engineering
- Advisor: Prof. Marios Savvides
  - Dissertation: *Unconstrained Periocular Face Recognition: From Reconstructive Dictionary Learning to Generative Deep Learning and Beyond*
- 2012 - 2017 **M.S. in Machine Learning**, *Carnegie Mellon University*.  
Machine Learning Department, School of Computer Science
- Advisor: Prof. Abhinav Gupta
  - Additional thesis committee member: Prof. Ruslan Salakhutdinov
- 2009 - 2011 **M.S. in Electrical and Computer Engineering**, *Carnegie Mellon University*.  
Department of Electrical and Computer Engineering, College of Engineering
- Advisor: Prof. Marios Savvides
- 2005 - 2009 **B.S. in Electronic Engineering**, *Shanghai Jiao Tong University*.  
Department of Electronic Engineering, School of Electronic Information and Electrical Engineering
- 2008 **Summer Session**, *University of California at Berkeley*.  
Haas School of Business and College of Engineering

### Research Interests

Deep Learning, Computer Vision, Machine Learning, Adversarial Robustness, AI.

### Research Bio

Felix Juefei Xu (publish under *F. Juefei-Xu*) received the Ph.D. degree in Electrical and Computer Engineering from Carnegie Mellon University. During his Ph.D studies, he was working in a research group specializing in pattern recognition, machine learning, computer vision, and image processing, especially as applied to the field of biometrics, at *Carnegie Mellon CyLab Biometrics Center* under the supervision of Prof. Marios Savvides.

His research in general is focused on a fuller understanding of deep learning where he is actively exploring new methods in deep learning that are **statistically efficient** and **adversarially robust** through the lens of perception. He is now heavily involved in pushing the boundary of robust vision/AI by creating high-realism degradation-mimetic adversarial attacks, *i.e.*, adversarial motion/defocus blur, rain/haze, relighting/exposure/vignetting/shadow, *etc.*, and then devising tools to defend against them through an attempt to situate both *natural corruption robustness* and *adversarial robustness* problems under the same dome; creating cunning DeepFakes that are detection-evasive to foster the development of next-generation robust detectors of real-world video/audio DeepFakes; seeking robust learners by creating novel neural architectures and computational modules that are statistically efficient and adversarially robust.

His Ph.D. work is primarily focused on tackling the Pose, Expression, Resolution, Illumination, and Occlusion (Perio) challenges for unconstrained periocular face recognition using shallow and deep discriminative and generative methods, especially under the dome of self-supervised predictive learning. He also has broader interests in pattern recognition, computer vision, machine learning, optimization, statistics, compressive sensing, and image processing. He is the recipient of multiple best/distinguished paper awards, including the **Best Poster Paper Award** of the *IEEE/IAPR International Joint Conference on Biometrics (IJCB)* in 2011, the **Best Paper Award** of the *IEEE International Conference on Biometrics: Theory, Applications and Systems (BTAS)* in 2015, the **Best Student Paper Award** of the *IEEE BTAS* in 2016, the **ACM SIGSOFT Distinguished Paper Award** of the *IEEE/ACM International Conference on Automated Software Engineering (ASE)* in 2018, and the **Best Student Paper Award** of the *14th Asian Conference on Computer Vision (ACCV)* in 2018.

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## Publications (Google Scholar Profile)

### Dissertation

- [1] **Felix Juefei-Xu**, “Unconstrained Periocular Face Recognition: From Reconstructive Dictionary Learning to Generative Deep Learning and Beyond”, *Ph.D. Dissertation, Carnegie Mellon University, 2018*.

### arXiv Preprint / Under Review

- [2] Jiayi Zhu, Qing Guo, **Felix Juefei-Xu**, Yihao Huang, Yang Liu, and Geguang Pu, “Masked Faces with Faced Masks”, *arXiv preprint arXiv:2201.06427, 2022*.
- [3] Liangru Sun, **Felix Juefei-Xu**, Yihao Huang, Qing Guo, Jiayi Zhu, Jincuo Feng, Yang Liu, and Geguang Pu, “ALA: Adversarial Lightness Attack via Naturalness-aware Regularizations”, *arXiv preprint arXiv:2201.06070, 2022*.
- [4] Qing Guo, Jingyang Sun, **Felix Juefei-Xu**, Lei Ma, Di Lin, Wei Feng, and Song Wang, “Uncertainty-Aware Cascaded Dilation Filtering for High-Efficiency Deraining”, *arXiv preprint arXiv:2201.02366, 2022*.
- [5] Yihao Huang, **Felix Juefei-Xu**, Qing Guo, Weikai Miao, Yang Liu, and Geguang Pu, “AdvBokeh: Learning to Adversarially Defocus Blur”, *arXiv preprint arXiv:2111.12971, 2021*.
- [6] Lan Fu, Qing Guo, **Felix Juefei-Xu**, Hongkai Yu, Wei Feng, Yang Liu, and Song Wang, “Benchmarking Shadow Removal for Facial Landmark Detection and Beyond”, *arXiv preprint arXiv:2111.13790, 2021*.
- [7] Hua Qi\*, Zhijie Wang\*, Qing Guo, Jianlang Chen, **Felix Juefei-Xu**, Lei Ma, and Jianjun Zhao, “ArchRepair: Block-Level Architecture-Oriented Repairing for Deep Neural Networks”, *arXiv preprint arXiv:2111.13330, 2021*.
- [8] Yihao Huang, **Felix Juefei-Xu**, Qing Guo, Lei Ma, Xiaofei Xie, Weikai Miao, Yang Liu, and Geguang Pu, “Dodging DeepFake Detection via Implicit Spatial-Domain Notch Filtering”, *arXiv preprint arXiv:2009.09213, 2021*.

- [9] Ruijun Gao, Qing Guo, **Felix Juefei-Xu**, Hongkai Yu, Huazhu Fu, Wei Feng, Yang Liu, and Song Wang, "Can You Spot the Chameleon? Adversarially Camouflaging Images from Co-Salient Object Detection", *arXiv preprint arXiv:2009.09258*, 2021.
- [10] Ruijun Gao\*, Qing Guo\*, Qian Zhang, **Felix Juefei-Xu**, Hongkai Yu, and Wei Feng, "Adversarial Relighting against Face Recognition", *arXiv preprint arXiv:2108.07920*, 2021.
- [11] Qing Guo\*, Zhijie Wang\*, **Felix Juefei-Xu**, Di Lin, Lei Ma, Wei Feng, and Yang Liu, "CarveNet: Carving Point-Block for Complex 3D Shape Completion", *arXiv preprint arXiv:2107.13452*, 2021.
- [12] Qing Guo, **Felix Juefei-Xu**, Changqing Zhou, Yang Liu, and Song Wang, "Sparta: Spatially Attentive and Adversarially Robust Activation", *arXiv preprint arXiv:2105.08269*, 2021.
- [13] Ruijun Gao, Qing Guo, **Felix Juefei-Xu**, Hongkai Yu, and Wei Feng, "AdvHaze: Adversarial Haze Attack", *arXiv preprint arXiv:2104.13673*, 2021.
- [14] **Felix Juefei-Xu**, Run Wang, Yihao Huang, Lei Ma, and Yang Liu, "Countering Malicious DeepFakes: Survey, Battleground, and Horizon", *arXiv preprint arXiv:2103.00218*, 2021.
- [15] Yupeng Cheng, **Felix Juefei-Xu**, Qing Guo, Huazhu Fu, Xiaofei Xie, Shang-Wei Lin, Weisi Lin, and Yang Liu, "Adversarial Exposure Attack on Diabetic Retinopathy Imagery", *arXiv preprint arXiv:2009.09231*, 2020.
- [16] Liming Zhai, **Felix Juefei-Xu**, Qing Guo, Xiaofei Xie, Lei Ma, Wei Feng, Shengchao Qin, and Yang Liu, "It's Raining Cats or Dogs? Adversarial Rain Attack on DNN Perception", *arXiv preprint arXiv:2009.09205*, 2020.
- [17] Renzhi Wang, Tianwei Zhang, Xiaofei Xie, Lei Ma, Cong Tian, **Felix Juefei-Xu**, and Yang Liu, "Generating Adversarial Examples with Controllable Non-transferability", *arXiv preprint arXiv:2007.01299*, 2020.
- [18] Lei Ma, **Felix Juefei-Xu**, Minhui Xue, Qiang Hu, Sen Chen, Bo Li, Yang Liu, Jianjun Zhao, Jianxiong Yin, and Simon See, "Secure Deep Learning Engineering: A Software Quality Assurance Perspective", *arXiv preprint arXiv:1810.04538*, 2018.

### Refereed and Published

- [19] Yihao Huang, **Felix Juefei-Xu**, Qing Guo, Yang Liu, and Geguang Pu, "FakeLocator: Robust Localization of GAN-Based Face Manipulations", *IEEE Transactions on Information Forensics and Security (TIFS)*, 2021.
- [20] Xiaofei Xie, Tianlin Li, Jian Wang, Lei Ma, Qing Guo, **Felix Juefei-Xu**, and Yang Liu, "Neuron Path Coverage via Characterizing Decision Logic of Deep Neural Networks", *ACM Transactions on Software Engineering and Methodology (TOSEM)*, 2021.
- [21] Yupeng Cheng\*, Qing Guo\*, **Felix Juefei-Xu**, Xiaofei Xie, Shang-Wei Lin, Weisi Lin, Wei Feng, and Yang Liu, "Pasadena: Perceptually Aware and Stealthy Adversarial Denoise Attack", *IEEE Transactions on Multimedia (TMM)*, 2021.
- [22] Yiming Li, Congcong Wen, **Felix Juefei-Xu**, and Chen Feng, "Fooling LiDAR Perception via Adversarial Trajectory Perturbation", *IEEE International Conference on Computer Vision (ICCV)*, 2021. **(Oral Presentation)**

- [23] Qing Guo, Ziyi Cheng, **Felix Juefei-Xu**, Lei Ma, Xiaofei Xie, Yang Liu, and Jianjun Zhao, "Learning to Adversarially Blur Visual Object Tracking", *IEEE International Conference on Computer Vision (ICCV)*, 2021.
- [24] Xiaoguang Li\*, Qing Guo\*, **Felix Juefei-Xu**, Hongkai Yu, Yang Liu, and Song Wang, "JPGNet: Joint Predictive Filtering and Generative Network for Image Inpainting", *ACM International Conference on Multimedia (ACM MM)*, 2021.
- [25] Run Wang, **Felix Juefei-Xu**, Meng Luo, Yang Liu, and Lina Wang, "FakeTagger: Robust Safeguards against DeepFake Dissemination via Provenance Tracking", *ACM International Conference on Multimedia (ACM MM)*, 2021.
- [26] Yihao Huang, Qing Guo, **Felix Juefei-Xu**, Lei Ma, Weikai Miao, Yang Liu, and Geguang Pu, "AdvFilter: Predictive Perturbation-aware Filtering against Adversarial Attack via Multi-domain Learning", *ACM International Conference on Multimedia (ACM MM)*, 2021.
- [27] Bing Yu, Hua Qi, Qing Guo, **Felix Juefei-Xu**, Xiaofei Xie, Lei Ma, and Jianjun Zhao, "DeepRepair: Style-Guided Repairing for Deep Neural Networks in the Real-World Operational Environment", *IEEE Transactions on Reliability (TR)*, 2021.
- [28] Binyu Tian, **Felix Juefei-Xu**, Qing Guo, Xiaofei Xie, Xiaohong Li, and Yang Liu, "AVA: Adversarial Vignetting Attack against Visual Recognition", *International Joint Conference on Artificial Intelligence (IJCAI)*, 2021.
- [29] Lan Fu, Hongkai Yu, **Felix Juefei-Xu**, Jinlong Li, Qing Guo, and Song Wang, "Let There be Light: Improved Traffic Surveillance via Detail Preserving Night-to-Day Transfer", *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, 2021.
- [30] Alvin Chan, Lei Ma, **Felix Juefei-Xu**, Yew Soon Ong, Xiaofei Xie, Minhui Xue, and Yang Liu, "Breaking Neural Reasoning Architectures with Metamorphic Relation-Based Adversarial Examples", *IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*, 2021.
- [31] Lan Fu\*, Changqing Zhou\*, Qing Guo, **Felix Juefei-Xu**, Hongkai Yu, Wei Feng, Yang Liu, and Song Wang, "Auto-Exposure Fusion for Single-Image Shadow Removal", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.
- [32] Binyu Tian, Qing Guo, **Felix Juefei-Xu**, Wen Le Chan, Yupeng Cheng, Xiaohong Li, Xiaofei Xie, and Shengchao Qin, "Bias Field Poses a Threat to DNN-based X-Ray Recognition", *IEEE International Conference on Multimedia and Expo (ICME)*, 2021. **(Oral Presentation)**
- [33] Ziyi Cheng\*, Xuhong Ren\*, **Felix Juefei-Xu**, Wanli Xue, Qing Guo, Lei Ma, and Jianjun Zhao, "DeepMix: Online Auto Data Augmentation for Robust Visual Object Tracking", *IEEE International Conference on Multimedia and Expo (ICME)*, 2021. **(Oral Presentation)**
- [34] Qing Guo\*, Jingyang Sun\*, **Felix Juefei-Xu**, Lei Ma, Xiaofei Xie, Wei Feng, and Yang Liu, "EfficientDeRain: Learning Pixel-wise Dilation Filtering for High-Efficiency Single-Image Deraining", *AAAI Conference on Artificial Intelligence (AAAI)*, 2021.
- [35] Qing Guo, **Felix Juefei-Xu**, Xiaofei Xie, Lei Ma, Jian Wang, Bing Yu, Wei Feng, and Yang Liu, "Watch out! Motion is Blurring the Vision of Your Deep Neural Networks", *Advances in Neural Information Processing Systems (NeurIPS)*, 2020.
- [36] Run Wang, **Felix Juefei-Xu**, Qing Guo, Yihao Huang, Xiaofei Xie, Lei Ma, and Yang Liu, "Amora: Black-box Adversarial Morphing Attack", *ACM International Conference on Multimedia (ACM MM)*, 2020. **(Oral Presentation)**

- [37] Yihao Huang, **Felix Juefei-Xu**, Run Wang, Qing Guo, Lei Ma, Xiaofei Xie, Jianwei Li, Weikai Miao, Yang Liu, and Geguang Pu, “FakePolisher: Making DeepFakes More Detection-Evasive by Shallow Reconstruction”, *ACM International Conference on Multimedia (ACM MM)*, 2020. **(Oral Presentation)**
- [38] Run Wang, **Felix Juefei-Xu**, Yihao Huang, Qing Guo, Xiaofei Xie, Lei Ma, and Yang Liu, “DeepSonar: Towards Effective and Robust Detection of AI-Synthesized Fake Voices”, *ACM International Conference on Multimedia (ACM MM)*, 2020. **(Oral Presentation)**
- [39] Hua Qi\*, Qing Guo\*, **Felix Juefei-Xu**, Xiaofei Xie, Lei Ma, Wei Feng, Yang Liu, and Jianjun Zhao, “DeepRhythm: Exposing DeepFakes with Attentional Visual Heartbeat Rhythm”, *ACM International Conference on Multimedia (ACM MM)*, 2020.
- [40] Qing Guo\*, Xiaofei Xie\*, **Felix Juefei-Xu**, Lei Ma, Zhongguo Li, Wanli Xue, Wei Feng, and Yang Liu, “SPARK: Spatial-Aware Online Incremental Attack Against Visual Tracking”, *European Conference on Computer Vision (ECCV)*, 2020.
- [41] Run Wang, **Felix Juefei-Xu**, Lei Ma, Xiaofei Xie, Yihao Huang, Jian Wang, and Yang Liu, “FakeSpotter: A Simple yet Robust Baseline for Spotting AI-Synthesized Fake Faces”, *International Joint Conference on Artificial Intelligence (IJCAI)*, 2020.
- [42] Xiaofei Xie, Lei Ma, **Felix Juefei-Xu**, Minhui Xue, Hongxu Chen, Yang Liu, Jianjun Zhao, Bo Li, Jianxiong Yin, and Simon See, “DeepHunter: A Coverage-Guided Fuzz Testing Framework for Deep Neural Networks”, *ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA)*, 2019.
- [43] Ramzi Abiantun\*, **Felix Juefei-Xu\***, Utsav Prabhu, and Marios Savvides, “SSR2: Sparse Signal Recovery for Single-Image Super-Resolution on Faces with Extreme Low Resolutions”, *Pattern Recognition*, vol. 90, pp. 308-324, 2019.
- [44] Lei Ma, **Felix Juefei-Xu**, Minhui Xue, Bo Li, Yang Liu, and Jianjun Zhao, “DeepCT: Tomographic Combinatorial Testing for Deep Learning Systems”, *IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER)*, 2019.
- [45] **Felix Juefei-Xu\***, Rahul Dey\*, Vishnu Naresh Bodetti, and Marios Savvides, “RankGAN: A Maximum Margin Ranking GAN for Generating Faces”, *Asian Conference on Computer Vision (ACCV)*, 2018. **(Best Student Paper Award) (Oral Presentation)**
- [46] Lei Ma, Fuyuan Zhang, Jiyuan Sun, Minhui Xue, Bo Li, **Felix Juefei-Xu**, Chao Xie, Li Li, Yang Liu, Jianjun Zhao, and Yadong Wang, “DeepMutation: Mutation Testing of Deep Learning Systems”, *IEEE International Symposium on Software Reliability Engineering (ISSRE)*, 2018.
- [47] Lei Ma, **Felix Juefei-Xu**, Fuyuan Zhang, Jiyuan Sun, Minhui Xue, Bo Li, Chunyang Chen, Ting Su, Li Li, Yang Liu, Jianjun Zhao, and Yadong Wang, “DeepGauge: Multi-Granularity Testing Criteria for Deep Learning Systems”, *ACM/IEEE International Conference on Automated Software Engineering (ASE)*, 2018. **(ACM SIGSOFT Distinguished Paper Award) (Oral Presentation)**
- [48] **Felix Juefei-Xu**, Vishnu Naresh Boddetti, and Marios Savvides, “Perturbative Neural Networks”, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018.
- [49] **Felix Juefei-Xu** and Marios Savvides, “LAW: Locality-Aware Whitening”, *IEEE International Conference on Image Processing (ICIP)*, 2017. **(Oral Presentation)**

- [50] Chandrasekhar Bhagavatula, **Felix Juefei-Xu**, Jason Wang, and Marios Savvides, “Three Birds, One Stone: Simultaneous Object Detection, Recognition, and Profiling Using Phase Encoded MACE Filters”, *IEEE International Conference on Image Processing (ICIP)*, 2017. **(Oral Presentation)**
- [51] **Felix Juefei-Xu**, Vishnu Naresh Boddeti, and Marios Savvides, “Local Binary Convolutional Neural Networks”, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017. **(Spotlight Oral Presentation)**
- [52] **Felix Juefei-Xu**, Eshan Verma, and Marios Savvides, “DeepGender2: A Generative Approach Toward Occlusion and Low Resolution Robust Facial Gender Classification via Progressively Trained Attention Shift Convolutional Neural Networks (PTAS-CNN) and Deep Convolutional Generative Adversarial Networks (DCGAN)”, *Book Chapter, Deep Learning for Biometrics*, (eds. B. Bhanu and A. Kumar), Springer, 2017.
- [53] **Felix Juefei-Xu** and Marios Savvides, “Learning to Invert Local Binary Patterns”, *British Machine Vision Conference (BMVC)*, 2016.
- [54] **Felix Juefei-Xu** and Marios Savvides, “Fastfood Dictionary Learning for Periocular-Based Full Face Hallucination”, *IEEE 8th International Conference on Biometrics: Theory, Applications and Systems (BTAS)*, 2016. **(Best Student Paper Award) (Oral Presentation)**
- [55] Paul Buchana, Irina Cazan, Manuel Diaz-Granados, **Felix Juefei-Xu**, and Marios Savvides, “Simultaneous Forgery Identification and Localization in Paintings Using Advanced Correlation Filters”, *IEEE International Conference on Image Processing (ICIP)*, 2016. **(Oral Presentation)**
- [56] Marios Savvides, **Felix Juefei-Xu**, Utsav Prabhu, and Chandrasekhar Bhagavatula, “Unconstrained Biometric Identification in Real World Environments”, *Advances in Human Factors and System Interactions*, Vol. 497 of the series *Advances in Intelligent Systems and Computing*, pp. 231-244, 2016.
- [57] Dipan K. Pal, **Felix Juefei-Xu**, and Marios Savvides, “Discriminative Invariant Kernel Features: A Bells-and-Whistles-Free Approach to Unsupervised Face Recognition and Pose Estimation”, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016. **(Spotlight Oral Presentation)**
- [58] **Felix Juefei-Xu\***, Eshan Verma\*, Parag Goel, Anisha Cherodian, and Marios Savvides, “DeepGender: Occlusion and Low Resolution Robust Facial Gender Classification via Progressively Trained Convolutional Neural Networks with Attention”, *Biometrics Workshop, IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016. **(Oral Presentation)**
- [59] **Felix Juefei-Xu** and Marios Savvides, “Multi-class Fukunaga Koontz Discriminant Analysis for Enhanced Face Recognition”, *Pattern Recognition*, vol. 52, pp. 186-205, 2016.
- [60] **Felix Juefei-Xu**, Khoa Luu, and Marios Savvides, “Spartans: Single-sample Periocular-based Alignment-robust Recognition Technique Applied to Non-frontal Scenarios”, *IEEE Transactions on Image Processing (TIP)*, vol. 24, no. 12, pp. 4780-4795, Dec. 2015.
- [61] **Felix Juefei-Xu** and Marios Savvides, “Pokerface: Partial Order Keeping and Energy Repressing Method for Extreme Face Illumination Normalization”, *IEEE 7th International Conference on Biometrics: Theory, Applications and Systems (BTAS)*, 2015. **(Best Paper Award) (Oral Presentation)**

- [62] **Felix Juefei-Xu** and Marios Savvides, "Single Face Image Super-Resolution via Solo Dictionary Learning", *IEEE International Conference on Image Processing (ICIP)*, 2015.
- [63] **Felix Juefei-Xu** and Marios Savvides, "Encoding and Decoding Local Binary Patterns for Harsh Face Illumination Normalization", *IEEE International Conference on Image Processing (ICIP)*, 2015. **(Oral Presentation)**
- [64] **Felix Juefei-Xu** and Marios Savvides, "Pareto-optimal Discriminant Analysis", *IEEE International Conference on Image Processing (ICIP)*, 2015.
- [65] Niv Zehngut, **Felix Juefei-Xu**, Rishabh Bardia, Dipan K. Pal, Chandrasekhar Bhagavatula, and Marios Savvides, "Investigating the Feasibility of Image-Based Nose Biometrics", *IEEE International Conference on Image Processing (ICIP)*, 2015. **(Best 10% Paper Award)**
- [66] **Felix Juefei-Xu**, Dipan K. Pal, and Marios Savvides, "NIR-VIS Heterogeneous Face Recognition via Cross-Spectral Joint Dictionary Learning and Reconstruction", *Perception Beyond the Visual Spectrum (PBVS) Workshop, IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2015. **(Oral Presentation)**
- [67] Keshav Seshadri, **Felix Juefei-Xu**, Dipan K. Pal, and Marios Savvides, "Driver Cell Phone Usage Detection on Strategic Highway Research Program (SHRP2) Face View Videos", *Computer Vision in Vehicle Technology (CVVT) Workshop, IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2015.
- [68] Shreyas Venugopalan\*, **Felix Juefei-Xu\***, Benjamin Cowley, and Marios Savvides, "Electromyograph and Keystroke Dynamics for Spoof-Resistant Biometric Authentication", *Biometrics Workshop, IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2015.
- [69] **Felix Juefei-Xu\***, Dipan K. Pal\*, Karanhaar Singh\*, and Marios Savvides, "A Preliminary Investigation on the Sensitivity of COTS Face Recognition Systems to Forensic Analyst-style Face Processing for Occlusions", *Biometrics Workshop, IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2015.
- [70] **Felix Juefei-Xu** and Marios Savvides, "Facial Ethnic Appearance Synthesis", *Soft Biometrics Workshop, European Conference on Computer Vision (ECCV)*, 2014. **(Oral Presentation)**
- [71] **Felix Juefei-Xu** and Marios Savvides, "Weight-optimal Local Binary Patterns", *Computer Vision with Local Binary Patterns Variants Workshop, European Conference on Computer Vision (ECCV)*, 2014. **(Oral Presentation)**
- [72] **Felix Juefei-Xu**, Dipan K. Pal, and Marios Savvides, "Hallucinating the Full Face from the Periocular Region via Dimensionally Weighted K-SVD", *Biometrics Workshop, IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2014. **(Oral Presentation)**
- [73] **Felix Juefei-Xu** and Marios Savvides, "Subspace Based Discrete Transform Encoded Local Binary Patterns Representation for Robust Periocular Matching on NIST's Face Recognition Grand Challenge", *IEEE Transactions on Image Processing (TIP)*, vol. 23, no. 8, pp. 3490-3505, Aug. 2014.
- [74] **Felix Juefei-Xu** and Marios Savvides, "An Image Statistics Approach towards Efficient and Robust Refinement for Landmarks on Facial Boundary", *IEEE 6th International Conference on Biometrics: Theory, Applications and Systems (BTAS)*, 2013.

- [75] **Felix Juefei-Xu** and Marios Savvides, “An Augmented Linear Discriminant Analysis Approach for Identifying Identical Twins with the Aid of Facial Asymmetry Features”, *Biometrics Workshop, IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2013. **(Oral Presentation)**
- [76] **Felix Juefei-Xu**, Chandrasekhar Bhagavatula, Aaron Jaech, Unni Prasad, and Marios Savvides, “Gait-ID on the Move: Pace Independent Human Identification Using Cell Phone Accelerometer Dynamics”, *IEEE 5th International Conference on Biometrics: Theory, Applications and Systems (BTAS)*, 2012. **(Oral Presentation)**
- [77] **Felix Juefei-Xu** and Marios Savvides, “Unconstrained Periocular Biometric Acquisition and Recognition Using COTS PTZ Camera for Uncooperative and Non-Cooperative Subjects”, *IEEE Workshop on the Applications of Computer Vision (WACV)*, 2012.
- [78] **Felix Juefei-Xu\***, Khoa Luu\*, Marios Savvides, Tien Bui, and Ching Y. Suen, “Investigating Age Invariant Face Recognition Based on Periocular Biometrics”, *IEEE/IAPR International Joint Conference on Biometrics (IJCB)*, 2011. **(Best Poster Paper Award)**
- [79] **Felix Juefei-Xu** and Marios Savvides, “Can Your Eyebrows Tell Me Who You Are?”, *IEEE 5th International Conference on Signal Processing and Communication Systems (ICSPCS)*, 2011.
- [80] **Felix Juefei-Xu**, Miriam Cha, Marios Savvides, Saad Bedros, and Jana Trojanova, “Robust Periocular Biometric Recognition Using Multi-level Fusion of Various Local Feature Extraction Techniques”, *IEEE 17th International Conference on Digital Signal Processing (DSP)*, 2011.
- [81] **Felix Juefei-Xu**, Miriam Cha, Joseph Heyman, Shreyas Venogopalan, Ramzi Abiantun, and Marios Savvides, “Robust Local Binary Pattern Feature Sets for Periocular Biometric Identification”, *IEEE 4th International Conference on Biometrics: Theory, Applications and Systems (BTAS)*, 2010.

### Patent

- [82] **Felix Juefei-Xu** and Marios Savvides, “Image Matching Using Subspace-Based Discrete Transform Encoded Local Binary Patterns”, *United States Patent No. 9,171,226*. 27 Oct. 2015.
- [83] **Felix Juefei-Xu**, Dipan K. Pal, and Marios Savvides, “Methods and Software for Hallucinating Facial Features by Prioritizing Reconstruction Errors”, *United States Patent Application No. 15/307,099*, June 17, 2014.
- [84] **Felix Juefei-Xu** and Marios Savvides, “Pokerface: Partial Order Keeping and Energy Reprising Method for Extreme Face Illumination Normalization”, *United States Patent Application No. 62/495,251*, September 8, 2016.
- [85] **Felix Juefei-Xu**, Eshan Verma, and Marios Savvides, “Progressively Training a Deep Learning Algorithm with Enforced Attention Shift for Improved Image Understanding Capability”, *United States Patent Application No. 62/604,016*, June 15, 2016.
- [86] **Felix Juefei-Xu**, Vishnu Boddeti, and Marios Savvides, “A Novel Utility Efficient Design of the Convolutional Module in Deep Convolutional Neural Networks (CNN)”, *United States Patent Application No. 62/604,783*, July 15, 2016.



- [87] **Felix Juefei-Xu** and Marios Savvides, “Perturbative Neural Network”, *International Application No. PCT/US19/29603, April 29, 2019.*
- [88] **Felix Juefei-Xu** and Marios Savvides, “Polynomial Convolutional Neural Network with Early Fan-out”, *International Application No. PCT/US19/29619, April 29, 2019.*
- [89] **Felix Juefei-Xu** and Marios Savvides, “Polynomial Convolutional Neural Network with Late Fan-out”, *International Application No. PCT/US19/29635, April 29, 2019.*
- [90] **Felix Juefei-Xu** and Marios Savvides, “Improved Generative Adversarial Networks Having Ranking Loss”, *International Application No. PCT/US19/29645, April 29, 2019.*

## Professional Services

- Reviewer International Journal of Computer Vision (IJCV), Springer
- Reviewer IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- Reviewer IEEE Transactions on Image Processing (TIP)
- Reviewer IEEE Transactions on Multimedia (TMM)
- Reviewer IEEE Transactions on Information Forensics and Security (TIFS)
- Reviewer IEEE Transactions on Software Engineering (TSE)
- Reviewer IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- Reviewer IEEE Transactions on Artificial Intelligence (TAI)
- Reviewer IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
- Reviewer IEEE Transactions on Industrial Informatics (TII)
- Reviewer IEEE Robotics and Automation Letters (RAL)
- Reviewer IEEE Access
- Reviewer Pattern Recognition (PR), Elsevier
- Reviewer Pattern Recognition Letters (PRL), Elsevier
- Reviewer Computer Vision and Image Understanding (CVIU), Elsevier
- Reviewer Neurocomputing (NEUCOM), Elsevier
- Reviewer Neural Networks (NEUNET), Elsevier
- Reviewer Digital Signal Processing (DSP), Elsevier
- Reviewer Forensic Science International: Digital Investigation (FSIDI), Elsevier
- Reviewer Information Sciences (INS), Elsevier
- Reviewer Journal of Visual Communication and Image Representation (JVCI), Elsevier
- Reviewer Computer Methods and Programs in Biomedicine (CMPB), Elsevier
- Reviewer IET Image Processing (IPR)
- Reviewer SIAM Journal on Imaging Sciences (SIIMS)
- Reviewer IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
- Reviewer IEEE International Conference on Computer Vision (ICCV)
- Reviewer European Conference on Computer Vision (ECCV)
- Reviewer Conference on Neural Information Processing Systems (NeurIPS)
- Reviewer International Conference on Machine Learning (ICML)
- Reviewer AAAI Conference on Artificial Intelligence (AAAI)

- Reviewer Asian Conference on Computer Vision (ACCV)
- Reviewer IEEE International Conference on Robotics and Automation (ICRA)
- Reviewer IEEE International Conference on Biometrics: Theory, Applications, and Systems (BTAS)
- Reviewer IEEE Winter Conference on Applications of Computer Vision (WACV)
- Reviewer IEEE International Conference on Image Processing (ICIP)
- Reviewer IEEE International Conference on Biometrics (ICB)
- Reviewer IEEE/IAPR International Joint Conference on Biometrics (IJCB)
- Reviewer IEEE International Conference on Identity, Security and Behavior Analysis (ISBA)

## Awards

- 2018 Best Student Paper Award, the 14th Asian Conference on Computer Vision (ACCV)
- 2018 ACM SIGSOFT Distinguished Paper Award, IEEE/ACM International Conference on Automated Software Engineering (ASE)
- 2016 Best Student Paper Award, IEEE Eighth International Conference on Biometrics: Theory, Applications and Systems (BTAS)
- 2015 Best Paper Award, IEEE Seventh International Conference on Biometrics: Theory, Applications and Systems (BTAS)
- 2015 Best 10% Paper Award, IEEE International Conference on Image Processing (ICIP)
- 2015 Gold Prize, Edison Awards (group recognition of CMU CyLab Biometrics Center)
- 2011 Best Poster Paper Award, 2011 IEEE/IAPR International Joint Conference on Biometrics (IJCB)

## Teaching Experience

- Fall 2016 18-794 Pattern Recognition Theory (partial), Carnegie Mellon University
- Fall 2015 18-794 Pattern Recognition Theory, Carnegie Mellon University
- Fall 2014 18-794 Pattern Recognition Theory, Carnegie Mellon University
- Fall 2013 18-794 Pattern Recognition Theory, Carnegie Mellon University
- Fall 2012 18-794 Pattern Recognition Theory, Carnegie Mellon University
- 2007 - 2009 Advanced English-Chinese Interpretation, Shanghai New Oriental School, New Oriental Education & Technology Group Inc. (NYSE:EDU)

## Language Familiarity

- English Credential of (English) Advanced Interpretation conferred by Shanghai Municipal Personnel Bureau
- English Quasi-native speaker
- Chinese Native Mandarin/Shanghainese speaker
- French TEF Candidate

## Computer Skills

- Programming Python, C/C++, Matlab

DL platforms Torch, PyTorch, TensorFlow, Caffe, MXNet, Theano  
OS Linux, macOS, Windows  
Advanced office LaTeX, Adobe Dreamweaver, Adobe Illustrator, Adobe Photoshop, Adobe Premiere Pro,  
tools Adobe Audition