NA ZHANG

Redmond, WA 98052 | zhangnawvu@gmail.com
https://nz0001na.github.io/nazhang/index.html

WORK EXPERIENCE

Software Engineer 07/2012 - 03/2015
Beijing Zhongdian Puhua Information Technology Co., Ltd, Beijing, China

· Involved in implementing two large-scale systems (State Grid Infrastructure Control System, State Grid Information Resources System) using Java, JSP, Oracle and TortoiseSVN, which are successfully deployed and used by State Grid Corporation of China.

Software Engineer Intern 03/2010 - 09/2010
Software Engineering Institute, Beihang University, Beijing, China

· Implemented Wireless Network Management System to monitor wireless access points and controllers of Beijing subway transportation wireless network using C# on .Net framework with MySQL.

EDUCATION

West Virginia University, WV, US *08/2016 - 05/2023*
Ph.D. in Computer Science: Computer Vision, Deep Learning
Beihang University, Beijing, China *09/2009 - 01/2012*
Master's Degree in Computer Science
Beijing Information Science and Technology University, Beijing, China *09/2005 - 07/2009*
Bachelor's Degree in Computer Science, GPA: 3.8

TECHNICAL SKILLS

Computer Vision	Face Morphing Generation/Detection, Emotion Analysis, Face Recognition
Machine Learning	Image Generation, Video Analysis, Few-shot Learning, Pattern Recognition
Languages	Python, Matlab, SQL, Java, C#
Frameworks	PyTorch, TensorFlow
Models	CNN, GANs, AutoEncoder, Transformer
Python Packages	OpenCV/NumPy/Scikit-Learn/Scikit-Image/Pandas/Matplotlib/SciPy/DLIB
Data Management	Data Gathering/Cleaning/Processing/Augmentation, Statistical Analysis

RESEARCH PROJECTS

Video-based Facial Micro-Expression Analysis for Autism Diagnosis 10/2022 - 04/2023
Research Assistant *West Virginia University*

· Focused on hour-long interview video analysis by capturing micro-expression of the subjects.
· Designed a pipeline to classify autism/control groups by preprocessing, spotting and extracting discriminative feature of subtle facial movement via optical flow/attention mechanism/local patch of interest.
· Obtained 97.32% accuracy showing the efficiency of acquiring micro-expression for autism diagnosis.

Face Dynamics Analysis for Autism Diagnosis on Interview Videos 07/2019 - 08/2020
Research Assistant *West Virginia University*

· Constructed a classification system to diagnose autism with different severity levels in hour-long videos.
· Designed a pipeline to leverage various strategies of 3D spatio-temporal face feature extraction, sparse coding, marginal fisher analysis, few-shot learning and scene-level fusion.
· Achieved 91.72% accuracy that is comparable to the standardized diagnostic scales.

Facial Traits Rating Prediction and Analysis on Autism Participants 12/2020 - 06/2021
Research Assistant *West Virginia University*

· Designed a deep regression model for facial traits rating prediction by transfer learning.
· Investigated the difference between autism and normal groups on making facial trait judgement.
· Demonstrated different facial areas are involved for traits judgement between autism and normal.

Transformer-based Face Morphing and De-Morphing 12/2021 - 09/2022
Research Assistant *West Virginia University*

· Developed a transformer-based scheme for face morphing and de-morphing.
· Constructed special losses (face-related/image-related) to learn an optimized latent code of a given face.
· Demonstrated its superiority to CNN-based morphing methods.

Fusion-based Few-Shot Face Morphing Attack Fingerprinting 09/2020 - 11/2021
Research Assistant *West Virginia University*

· Extended morphing attack detection from binary to multiclass morphing attack fingerprinting.
· Proposed a few-shot learning framework to learn fusion features of different sensor pattern noise.
· Collected a high-resolution Doppelgänger dataset (look-alike face pairs without biological connections).
· Extensive experiments showed the outstanding performance.

Face Recognition (FR) and Face Quality Analysis 08/2016 - 06/2019
Research Assistant *West Virginia University*

· Explored the impact of different face qualities on FR performance by investigating their relationship.
· Gathered a dataset with 356.4K face images of Chinese celebrities crawled online after cleaning.

AWARDS

Second Class Scholarship, Beihang University *2010*
National Aspiration Scholarship, Beijing, China *2007*
Excellent Student Award; First Class Scholarship, 5 times, BISTU *2005-2009*
Third Class Award of National Physics Contest for College Student, Beijing, China *2007*

PUBLICATIONS

1. Discriminative few shot learning of facial dynamics in interview videos for autism trait classification. **Na Zhang**, Mindi Ruan, Shuo Wang, Lynn Paul, and Xin Li. IEEE Transactions on Affective Computing (2022)
2. Comprehensive social trait judgments from faces in autism spectrum disorder. Runnan Cao, **Na Zhang**, Hongbo Yu, Paula J. Webster, Lynn K. Paul, Xin Li, Chujun Lin, and Shuo Wang. (2022).
3. Fusion-based Few-Shot Morphing Attack Detection and Fingerprinting. **Na Zhang**, Shan Jia, Siwei Lyu, and Xin Li. IEEE Transactions on Biometrics, Behavior, and Identity Science.(Revision)
4. MorphGANFormer: Transformer-based Face Morphing and De-Morphing. **Zhang, Na**, Xudong Liu, Xin Li, and Guo-Jun Qi. arXiv preprint arXiv:2302.09404 (2023).
5. What is the challenge for deep learning in unconstrained face recognition?. Guodong Guo, **Na Zhang**. 13th IEEE International Conference on Automatic Face and Gesture Recognition. (2018).
6. A survey on deep learning based face recognition. Guodong Guo and **Na Zhang**. Computer Vision and Image Understanding(CVIU). 2019
7. Face Image and Video Analysis in Biometrics and Health Applications. **Na Zhang**. Graduate Theses, Dissertations, and Problem Reports. 11861. (2023)