

# NA ZHANG

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

## EDUCATION

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**West Virginia University, Morgantown, WV, US** 08/2016 - 05/2023  
Ph.D. in Computer Science  
**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

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**Computer Vision** Face Recognition, Face Morphing Attack/Defense, Facial Micro-Expression  
**Machine Learning** Deep Learning (DL), Classification/Regression/Clustering Algorithms  
**Data Management** Data Gathering/Cleaning/Processing/Visualization, Statistical Analysis  
**DL Frameworks** PyTorch, Tensorflow  
**Python Packages** NumPy/Pandas/Scikit-Learn/Scikit-Image/Matplotlib/SciPy/OpenCV/DLIB  
**Languages** Python, Matlab, SQL, Java, C#

## RESEARCH PROJECTS

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**Face Dynamics Analysis for Autism Diagnosis on Interview Videos** 07/2019 - 04/2023  
*Research Assistant* West Virginia University

- Constructed a classification system to diagnose autism with different severity levels in hour-long videos.
- Achieved 91.72% accuracy that is comparable to the standardized diagnostic scales.
- Designed a system to classify autism/control groups by extracting micro-expression changes feature.
- Obtained 97.32% accuracy showing the efficiency of capturing subtle facial movements.

**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

Research Assistant

08/2016 - 06/2019

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.

## Software Development Process Management

Research Assistant

12/2009 - 12/2011

Beihang University

- Developed Software Project Management System/Defect Measurement Tool using C# on .Net framework with MySQL database.

## WORK EXPERIENCE

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### Software Engineer

07/2012 - 03/2015

Beijing Zhongdian Puhua Information Technology Co., Ltd, Beijing, China

- Implemented State Grid Infrastructure Control System/State Grid Information Resources System using Java, JSP, Oracle and TortoiseSVN.
- Successfully applied for two national patents about techniques used in these systems.

### 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.

## AWARDS

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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

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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. 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)
3. MorphGANFormer: Transformer-based Face Morphing and De-Morphing. **Zhang, Na**, Xudong Liu, Xin Li, and Guo-Jun Qi. arXiv preprint arXiv:2302.09404 (2023).
4. 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).
5. A survey on deep learning based face recognition. Guodong Guo and **Na Zhang**. Computer Vision and Image Understanding(CVIU). 2019
6. Video-based Contrastive Learning on Decision Trees: from Action Recognition to Autism Diagnosis. Mindi Ruan, Xiangxu Yu, **Na Zhang**, Chuanbo Hu, Shuo Wang, and Xin Li. The ACM Multimedia Systems Conference 2023 (MMSys'23)
7. 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).