NA ZHANG

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Portfolio | LinkedIn | GitHub | Google Scholar

TECHNICAL SKILLS

Programming	Python, SQL, MatLab, Java, C#
Frameworks	PyTorch, TensorFlow, ML.NET
Libraries	Scikit-Learn, NumPy, Pandas, Matplotlib, Scikit-Image, SciPy, OpenCV
Machine Learning	Deep Learning (CNNs, GANs, Transformers, Autoencoders), Supervised Learning (Classification, Regression), Unsupervised Learning (Clustering)
Computer Vision	Face Recognition, Face Morphing Attack/Defense, Facial landmark Detection Facial Micro-Expression Analysis, Eye Tracking, Image/Video Processing
Database	Oracle DB, MySQL, PostgreSQL

WORK EXPERIENCE

Data Scientist 07/2024 - 02/2025
Seattle Children's, Seattle, WA

- Architected and executed a cross-framework project, facilitating mobile deployment of eye-tracking deep model from PyTorch to ML.NET, enabling functional use on a tablet environment.
- Analyzed 8,000+ biomedical/clinical records using R to investigate the correlation between eye-tracking characteristics and Oculomotor Index of gaze to human faces (OMI) for diagnosing autism in children.

Research & Development Software Engineer 08/2012 - 01/2015
Beijing China-Power Information Technology Co., LTD, Beijing, China

- Developed and implemented two large-scale enterprise systems (Infrastructure Control, Information Resources) for the State Grid Corporation of China using Java, JSP, Oracle DB and TortoiseSVN.
- Ensured successful deployment of production solutions by providing specialized Business Process Management (BPM) technical support and collaborating closely with cross-functional deployment teams.
- Innovated system techniques and applied for two national patents related to core functionalities and methodologies.

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

- Engineered a Wireless Network Management System to monitor wireless access points and controllers across the Beijing Subway transit system using C# on .Net framework with MySQL.

EDUCATION

West Virginia University, WV, US *08/2016 - 05/2023*
Doctor of Philosophy (Ph.D.) in Computer Science
Beihang University, Beijing, China *09/2009 - 01/2012*
Master of Engineering (ME) in Computer Science and Technology
Beijing Information Science and Technology University, Beijing, China *09/2005 - 07/2009*
Bachelor of Engineering (BE) in Computer Science and Technology, GPA: 3.8

PROJECTS

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

- Developed a transformer-GAN scheme for high-fidelity face morphing and de-morphing.

- Engineered custom loss functions (perceptual, image, face-related) to optimize latent space encoding, enhancing image realism and feature preservation.
- Extended research to implement reference image-based face de-morphing.
- Validated the methodology, demonstrating its superiority to CNN-based methods by 6.97% increase.

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

- Pioneered the extension of morphing attack detection (MAD) from binary to multiclass fingerprinting.
- Proposed and implemented a few-shot learning framework(CNN+Autoencoder) that utilizes factorized bilinear coding to learn robust fusion features from various sensor pattern noise.
- Collected a high-resolution Doppelgänger dataset (306 subjects) for model training and validation.
- Demonstrated outstanding performance (98+%) through extensive experimentation.

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

- Developed a transformer-based model to analyze hour-long videos to capture micro-expression features.
- Designed an end-to-end pipeline (preprocessing, spotting, feature extraction) using optical flow, attention mechanisms, and local patches of interest to differentiate autism/control groups.
- Achieved 97.32% accuracy, showcasing the potential of acquiring subtle facial movements for diagnosis.

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

- Developed a classification system to diagnose autism with different severity levels from hour-long videos.
- Implemented 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, a result comparable to standardized clinical diagnostic scales.

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

- Developed a deep regression model (VGG-based) using transfer learning for facial traits rating prediction.
- Investigated the difference between autism and control groups on making social trait judgment, and demonstrated different facial areas were involved for each group.

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

- Analyzed the relationship between different face qualities and FR accuracy to identify impacting factors.
- Benchmarked 10+ facial landmark detection models, identifying limitations to guide future development.
- Gathered a face dataset with 356.4K images of Asian celebrities, as a new resource for FR research.
- Surveyed 330+ contributions to summarize deep learning methods for face recognition.

AWARDS

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