NA ZHANG

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https://nz0001na.github.io/nazhang/index.html

TECHNICAL SKILLS

Machine Learning	Classification, Regression, Clustering, Unsupervised Learning
Deep Learning	CNN, Generative AI(GANs), AutoEncoder(AE), Transformer
Computer Vision	Face Morphing/De-Morphing, Morphing Detection, Face Micro-Expression Analysis Face Recognition/Detection, Facial Landmark Detection
Frameworks	PyTorch, TensorFlow
Languages	SQL; Python, Java, Matlab, C#, C
Python Packages	OpenCV, NumPy, Scikit-Learn, Scikit-Image, Pandas, Matplotlib, SciPy, DLIB
Database	Oracle DB, MySQL, PostgreSQL
Tools	Jupyter Lab, Jupyter Notebooks; GitHub

WORK EXPERIENCE

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

- Involved in implementing two large-scale systems (State Grid Infrastructure Control System, State Grid Information Resources System) based on Business Process Management (BPM) Platform using Java, JSP, Oracle and TortoiseSVN, which are successfully deployed with State Grid Corporation of China.
- Provided Business Process Management technical support to related teams.
- Worked closely with related teams to ensure successful deployment of production solutions.
- 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.

EDUCATION

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

PROJECTS

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

- Developed a transformer-based GAN scheme for face morphing generation and de-morphing.
- Constructed special losses (face-related/image-related) to learn an optimized latent code of a given face.
- Extended the study to face de-morphing based on a reference image.
- 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(CNN+AE) to learn fusion features of different sensor pattern noise by factorized bilinear coding strategy.
· Collected a high-resolution Doppelgänger dataset (look-alike face pairs without biological connections).
· Extensive experiments showed the outstanding performance.

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 in unsupervised way.
· 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 control groups on making social trait judgment. via Layer-wise Relevance Propagation (LRP).
· Demonstrated different facial areas are involved for different social traits judgment between autism and control.

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.
· Showed that deep models can allow quality changes to some degrees, but not too large, for the test faces.
· Proposed one promising direction for deep learning to further improve its capability in building the relations between face images with large quality gaps.
· Gathered a dataset with 356.4K face images of Asian celebrities crawled online after cleaning.

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*