Rohit Das

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Highly skilled computer science graduate with expertise in 3D vision, demonstrated through multiple projects and consistently strong academic performance in lab work. Highly motivated to pursue research in 3D face modeling, 3D reconstruction, backed by two years of master's thesis work with teaching experience as well as organizing seminars

Education

Master's in Science (Computer Science)   *2021-2023*
National Taiwan Normal University
Specialization: Computer Vision, 3D Vision, Neural Rendering
CGPA: 3.8/4.3
Master's Thesis: 3DGANTex: 3D Face Reconstruction with StyleGAN3-based Texture Synthesis from Multi-View Images

Bachelor of Technology in Computer Science   *2014-2018*
Camellia Institute of Technology
DGPA: 6.62/10
Relevant Courses: Computer Programming, Discrete Mathematics, Computer Graphics, Artificial Intelligence

Research Experience

Master's Research
3D Face Reconstruction with texture from single 2D image   *2021-2023*
- Developed a novel method for 3D face texture estimation using StyleGAN3 and 3D Dense Face Alignment (3DDFA).
- The system generates multi-view faces from a single image and produces high-resolution texture maps consistent with 3D face shapes.
- This work provided significant advancements in face reconstruction and was the primary focus of the master's thesis.

Junior Researcher | CI3D Lab   *Taipei City, Taiwan | 2022 - 2023*
- Worked closely with Professor Tzung-Han Lin to research and develop innovative 3D face modelling techniques, focusing on texture reconstruction and neural rendering using state-of-the-art AI tools.
- Developed a novel approach to 3D face reconstruction pipeline using StyleGAN3 and 3D Dense Face Alignment (3DDFA), resulting in high-resolution texture mapping that was consistent with facial geometry.
- Published a research poster on normal map estimation on 2D images at 3DSA 2022, contributing to the advancement of 3D vision technology.
- Assisted in organizing weekly lab meetings and presentations, fostering collaboration and knowledge sharing among research team members.

Junior Researcher | DCCV Lab   *Taipei City, Taiwan | 2021 - 2021*
- Conducted research under Professor Chiou-Shann Fuh, focusing on 2D/3D reconstruction of solder balls for industrial applications, specifically using Sinogram images to improve defect inspection.
- Implemented and optimized the Simultaneous Algebraic Reconstruction Technique (SART) over the traditional Filtered Back Projection (FBP) method, achieving more accurate 2D reconstructions with higher resolution and fewer artifacts.
- Contributed to the development of proprietary algorithms for use in industrial imaging systems, which improved the inspection accuracy and efficiency of production line processes.
- Documented research findings in detailed reports and contributed to a collaborative research paper, enhancing the lab's contributions to the field of computer vision and image reconstruction.

Projects

FasTEX - Fast Text to Texture Generation
- Developed an advanced pipeline for generating textures for 3D models using Stable Diffusion and ControlNet.
- The system process multi-view captures and produces refined textures through interpolation and post-processing.
- The pipeline deemed to be the fastest in the market creating texture under 90 seconds

3DGANTex - 3D Face Reconstruction
- Designed a novel method for 3D face texture estimation using StyleGAN3 and 3D Dense Face Alignment.
- The system generates multi-view faces from a single image and uses 3DDFA to create high-resolution texture maps consistent with the estimated 3D face shape.

ChildGAN – Find missing children
- Built a GAN model for age progression/regression, cross-age face recognition, and kinship recognition.
- The self-attention GAN structure retains essential facial details, improving the accuracy of identifying missing children across age differences.

ChatPDF - Interactive PDF system
- Created an innovative PDF interaction tool using the Mistral 7B model, enabling features like summarization and question answering.
- Optimized for cold start issues by storing data in a Vector Database for efficient retrieval.

Publications

A Survey of the Normal Map Generator of GIMP from Single Shot Human Face Image   *3DSA, 2022*
- The study explores the generation of near-accurate normal maps from a single image of a human face using the Flickr-Faces-High-Quality dataset and GIMP.
- The research demonstrated effective methods for producing normal maps, contributing to advancements in texture mapping technologies.

3D-GANTex: 3D Face Reconstruction with StyleGAN3-based Multi-View Images and 3DDFA based Mesh Generation   *On Review*
- A novel method utilizing StyleGAN and 3DMM to generate front face mesh from single 2D pose image.
- The pipeline achieved near to accurate texture from a single 2D mesh and helps in predicting unseen regions of the face.

Technical Skills

- **Languages:** Python, C++
- **Libraries & Frameworks:** Pytorch, Pytorch3D, OpenCV, Open3D
- **Version Control:** Git, GitHub
- **3D Vision & AI Concepts:** 3D Reconstruction, StyleGAN, ControlNet, Neural Rendering, RAG

Professional Experience

AI Engineer (Freelance) | Global Digital MOJO Group   *Remote | Jan 2024 - July 2024*
- Created a survey on explainable AI usage and its future implications.
- Collaborated with senior management, including managers and the president, to align AI strategies with company goals.

AI Engineer (Freelance) | EstiloAI   *Remote | Aug 2024 - Oct 2024*
- Created a novel pipeline to segment various parts of the human body for virtual try-ons with computation time less than 8 seconds.
- Led AI development on various automation projects, including implementing AI-driven solutions for business operations.

AI Engineer (Intern) | Bifrost AI   *Remote | Sept 2023 - Feb 2024*
- Deployed advanced solutions for texture generation from textual descriptions, significantly reducing computation times from hours to minutes.
- Collaborated with cross-functional teams, including software engineers and product managers, to integrate State-of-the-Art features into products for real-time use.
- Provided comprehensive documentation on model architecture, improvements, and the deployment process for future development teams.

Teaching Assistant | National Taiwan Normal University   *Taipei City, Taiwan | Jan 2022 - Dec 2022*
- Supported Professor Mei Chen-Yeh in teaching "Artificial Neural Networks" course, guiding over 100 undergraduate students in understanding complex neural network architectures and their applications in various AI domains.
- Managed the grading of homework assignments, ensuring timely feedback and providing detailed explanations to help students improve their understanding of course material.
- Organized student presentations, providing feedback on research topics related to neural networks, deep learning, and computer vision, which enhanced their academic performance and project development skills.
- Aided in creating teaching materials and assessments, ensuring alignment with course objectives and industry standards.

Automation Engineer | BAAR Technologies   *Kolkata , India | Aug 2019 - Dec 2019*
- Implemented cutting-edge automation technologies focusing on web and process automation.
- Utilized tools such as Robot Framework, Python, OpenCV, Pandas, and Selenium to develop automation solutions.
- Collaborated with the CEO on virtual try-on systems for 2D human images, and created a novel pipeline to segment various parts of the human body with computation time under 8 seconds.
- Led the computer vision team, overseeing interns to align project goals with company objectives.

Awards and Accomplishment

NTNU Scholarship: Awarded a scholarship for pursuing master's in Computer Science at National Taiwan Normal University (NTNU), demonstrating a commitment to advancing research in AI.

Seminar at Techno College India: Organized a seminar for the young undergrad students and explained about harnessing Generative AI in Computer Graphics field.