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RESEARCH INTEREST

3D Face Reconstruction, Learning from Synthetic Visual Data, Adversarial Domain Adaptation, Monocular Depth Estimation

EDUCATION

- 2019 – 2023 **Ph.D., Computer Science**, National University of Ireland, Galway
Advisor: Michael Schukat (NUIG), Rachel McDonnell (TCD), Peter Corcoran (NUIG)
Thesis: "Contributions Towards Synthetic Data Generation And Facial Analysis Task With Weak Supervision" (to be submitted)
- 2018-2019 **MSc, Computer Science (Data Analytics)**, National University of Ireland, Galway
Advisor: Matthias Nickles (NUIG)
Thesis: "Combining External Domain Knowledge with Deep Neural Network in Text Classification"
- 2007-2011 **BTech, Electronics and Communication Engineering**
West Bengal University of Technology, India
Advisor: Biswa Nath Chatterji
Thesis: "Hand Recognition as a Biometric with Stereo Image Matching"

SELECTED PUBLICATIONS

- 2023 **C3I-SynFace: A synthetic head pose and facial depth dataset using seed virtual human models.**
S Basak, F Khan, H Javidnia, P Corcoran, R McDonnell, M Schukat. Elsevier Data in Brief. (IF 1.38) (Submitted - under review)
- 2023 **Speech Driven Video Editing via an Audio-Conditioned Diffusion Model.**
D Bigioi, S Basak, H Jordan, R McDonnell, P Corcoran, arXiv preprint
- 2022 **3D face-model reconstruction from a single image: A feature aggregation approach using hierarchical transformer with weak supervision.**
S Basak, P Corcoran, R McDonnell, M Schukat. Elsevier Neural Networks (IF 9.6)
- 2021 **Learning 3D Head Pose From Synthetic Data: A Semi-Supervised Approach.**
S Basak, P Corcoran, F Khan, R McDonnell, M Schukat. IEEE Access (IF 3.367)
- 2021 **An efficient encoder-decoder model for portrait depth estimation from single images trained on pixel-accurate synthetic data.**
F Khan, S Hussain, S Basak, J Lemley, P Corcoran. Elsevier Neural Networks (IF 9.6)
- 2021 **Learning Accurate Head Pose for Consumer Technology from 3D Synthetic Data.**
S Basak, F Khan, R McDonnell, M Schukat. ICCE'2021
- 2020 **Methodology for Building Synthetic Datasets with Virtual Humans.**
S Basak, H Javidnia, F Khan, R McDonnell, M Schukat. ISSC'2020

WORK EXPERIENCE

- 8/2022 – 1/2023 **Research Intern, Xperi Corporation**
- Building lightweight real-time dense facial landmark estimation (5k key points) model from monocular face images that can run successfully in edge devices with minimum computational footprint.
- 10/2019 – 2/2023 **PhD Researcher**
- 3D Monocular Face Reconstruction from a single image using Vision Transformers in a weakly supervised approach.
 - Applying generative diffusion model in talking head generation and video dubbing.
 - Generating accurate facial depth and head pose synthetic data from 3D Models through the CGI tool Blender.
 - Validating the synthetic face data using monocular depth estimation and head pose estimation.

- Applying Unsupervised Adversarial Domain Adaptation to learn domain invariant features from synthetic and real images in regression tasks like head pose estimation.

10/2019 - 2/2023

Teaching Assistant, NUIG

- CT255: Next Generation Technologies II – Cybersecurity & 2D Game Development in Java
- CT861: Computer Architecture and Operating System
- CT3535: Object-Oriented Programming with Java
- CT417 Software Engineering III

7/2019 – 9/2019

Research Assistant, NUIG

- Building pipeline to generate synthetic 2D data from 3D Virtual Human Models with the help of CGI tools like Blender

9/2014 – 6/2018

Software Developer, Cognizant

- Full Stack Web Application Development, Technology Stack – C#, ASP.Net MVC, Web API, SQL, Angular JS
- Data Warehouse development and maintenance, Technology – MS Azure, NETEZZA

7/2011 – 8/2014

Programmer Analyst, Cognizant

- Application maintenance and Support through proper Incident and Problem Management procedure (ITIL), Technology Stack – C#, ASP.Net, WCF
- Database Development, maintenance & migration, Technology Stack – MS SQL Server, SSIS, SSRS.

VOLUNTEERING EXPERIENCE

11/2018 – 9/2019

Mathematics & Science Tutor, Youth Work Ireland

- Helped students in Science and Maths with a one-to-one grind.

1/2013 – 1/2018

Science Teacher, Cognizant Outreach

- Taught maths and Computers to regular secondary school students from standard V to X.

AWARDS & SCHOLARSHIPS

2019

Research Scholarship in SFI Center for Research Training in Digitally Enhanced Reality (D-REAL) under Grant No. 18/CRT/6224.

2019

Postgraduate Research Scholarship NUIG 2019-20.

SKILL PROFILE

Languages

Python, R, C# with ASP.Net MVC, Java 8, LATEX

ML Frameworks

PyTorch, TensorFlow, Keras, Apache Spark

Cloud Platform

Microsoft Azure

Database

Microsoft SQL Server, Oracle 11g, Netezza, Azure SQL Datawarehouse

Dev Tools

PyCharm, Microsoft Visual Studio, Jupyter Notebook, R Studio

Reporting

Power BI, Tableau, Crystal Reports

JS

JavaScript, Angular JS

PERSONAL

Languages

Bengali – Native
 English – Advanced Proficiency
 Hindi – Elementary Proficiency

Reference

Available on request.