Balamurugan Thambiraja

Curriculum Vitae

Hirschauer strasse 46
72076 Tuebingen, Germany
+49-176 4333 6814
balamuruganthambiraja@gmail.com
balamuruganthambiraja.github.io
linkedin.com/in/balamurugan-thambiraja
bala1144

Research Interests

I am interested in leveraging sequence-to-sequence methods for synthesizing human motion and its underlying dynamics, conditioned on multi-modal inputs such as audio and text. Recently, I have been exploring the potential of diffusion models and large language models for motion synthesis and editing, aiming to enhance the realism and controllability of generated motions.

Education

2021-Present **Ph.D. Student**, *Max-Planck Institute for Intelligent Systems*, Tuebingen, Germany.
Presently pursuing a Ph.D. with Prof. Dr. Justus Thies at Neural Capture and Synthesis group, MPI-IS focusing on 3D facial animation synthesis and editing.

October 2017-March 2021 **Master of Science, Informatics**, *Technical University of Munich*, Germany.
Worked with Prof. Dr. Matthias Nießner at Visual Computing Group at TUM focusing on human modelling and motion synthesis.

2011-2015 **Bachelor of Engineering, Electrical and Electronics**, *Kumaraguru College of Technology*, Coimbatore, India.

Experience

Sept,2024 – May, 2025 **Applied Scientist Intern**, *Amazon*, Sunnyvale, USA.
Working on Generative AI model focusing on motion.

May-August, 2021 **Deep Learning Intern**, *Presize GmbH(now Meta)*, Munich, Germany.
Worked on developing a online real-time virtual try-on system. Designed and developed a novel FLOW-based virtual try-on method.

Sept, 2020 – March,2021 **Student Research Assistant - CUDA Developer**, *Research Neutron Source Heinz Maier-Leibnitz*, Germany.
Developed image processing and computer vision algorithms in CUDA for neutron imaging.

Oct, 2019 – June,2020 **AI/CV Student Researcher**, *Osram Automotive*, Munich, Germany.
Worked on real-time head pose and eye gaze estimation for driver awareness monitoring system. Contributed to development of the eye gaze tracking solution that can run real-time on edge-computing devices.

Publications

3DV2024 **Thambiraja, B.**, Prinzler, M., Aliakbarian, S., Cosker, D. and Thies, J., 3DiFACE: Synthesizing and Editing Holistic 3D Facial Animation. [webpage]

ICCV23 **Thambiraja, B.**, Habibie, I., Aliakbarian, S., Cosker, D., Theobalt, C. and Thies, J., 2023. Imitator: Personalized Speech-driven 3D Facial Animation. [webpage]

Academic Projects

2021 **Neural Sign Language Synthesis** - Master Thesis [pdf]

Developed a method to synthesize sign pose sequences(facial and hand-gestures) from input text using a novel transformer-based method. Achieved state-of-the-results in RWTH-PHOENIX 2014T benchmark by utilizing relative positional embedding and relative discriminator.

2020 **Human Model Learning from RGB with Depth Assistance** [pdf]

Developed a self-supervised learning approach to learn clothed human model from RGB-D sequence. Proposed a novel method to generate robust 3D supervision data in the form of depth silhouettes.

Achievements

2023 **Best Lighting Talk award** in the International Max Planck Research School (IMPRS) for Intelligent Systems (IS), Boot-Camp 2023.

2023 Carl-Zeiss Stifung award in the inaugural Cyber-Valley Incubator program, 2023.

Skills

Technical Python, C++, CUDA, MATLAB, Blender, Pytorch, Numpy, Machine Learning, Deep learning for Character animation

Languages Tamil(Native), English(C2), German(A2).

References

- Prof. Justus Thies, 3D Graphics & Vision Lab, Technical University of Darmstadt.
- Dr. Darren Cosker, Principal scientist, Mesh Labs, Microsoft, Cambridge, UK.
- Prof. Mathias Niessner, Visual Computing Artificial Intelligence Lab, Technical University of Munich.
- Dr. Sadegh Aliakbarian, Senior Research scientist, Mesh Labs, Microsoft, Cambridge, UK.