

# Balamurugan Thambiraja

## Curriculum Vitae

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🌐 [bala1144](https://github.com/bala1144)

## Research Interests

I am interested in leveraging sequence-to-sequence methods for synthesizing human motion and its associated dynamics conditioned on multimodal inputs such as audio, text, etc. Recently, I have been exploring the potential use of diffusion-models and large-language-models for motion synthesis and editing.

## 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- **Master of Science, Informatics**, *Technical University of Munich*, Germany.  
March 2021 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

- 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 – **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 – **AI/CV Student Researcher**, *Osram Automotive*, Munich, Germany.  
June,2020 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

- arxiv23 **Thambiraja, B.**, Aliakbarian, S., Cosker, D. and Thies, J., 2023. 3DiFACE: Diffusion-based Speech-driven 3D Facial Animation and Editing. [webpage]
- ICCV23 **Thambiraja, B.**, 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.

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## 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

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## Skills

Technical Python, C++, CUDA, MATLAB

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