Bharat Vyas

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Profile

As a PhD candidate in Computer Science & Statistics, my research focuses on the intersection of character animation, virtual reality, and perception. With a robust background in research and collaborative projects, I am eager to bring my expertise to dynamic and innovative team environments.

Research Experience

October 2023 – March 2024
Tübingen, Germany

Amazon Development Center Germany GmbH, Applied Science Intern
- Generated image data using SageMaker Ground Truth.
- Collaborated on a VR-based Human-Computer Interaction project, leading experiment design, data collection, and analysis for future VR applications.
- Managed data collection and analyzed both time-series motion data and qualitative data.

March 2022 – May 2022
Rennes, France

INRIA, Rennes, Research Intern
Supervisor: Ludovic Hoyet, Julien Pettre
- Collaborated with the VirtUs team to explore GPU-accelerated Isaac Gym for rapid policy training and crowd generation of physics-based characters.
- Conducted research on the relationship between motion and body shape in virtual humans.
- Investigated factors influencing user perception of virtual human motion, with a focus on walking animations.

June 2021 – August 2021
Tübingen, Germany

Max Planck Institute of Intelligent Systems, Research Intern
Supervisor: Michael Black
- Investigated the application of Deep Reinforcement Learning (DRL) techniques for animating physics-based virtual characters.
- Utilized the SMPL body model alongside regression-based capsulization methods to create diverse character models.
- Implemented mass effect simulation to introduce significant variations in character motion, enhancing realism and diversity.

Professional Experience

May 2019 – July 2019

Entercres Labs Pvt. Ltd, Robotics Trainer & Developer
- Developed an Arduino-based Block Programming application, contributing to open-source projects like ARDUBLOCK and Google's Blockly.
- Conducted robotics workshops across various laboratories and centers.
- Led the design and development of innovative robotics learning kits.

October 2018 – April 2019	**Grainpad Pvt. Ltd.,** Robotics Engineer

- Led the development of prototype 3D models for autonomous navigation robot.
- Trained and tested navigation algorithms using the Gazebo simulator.
- Processed sensor data for SLAM operations.

August 2018 – September 2018	**Grainpad Pvt. Ltd.,** Mechatronics Intern

- Improved the efficiency of ROS based platform for machine control.
- Integrated sensors such as cameras, LiDAR, and ultrasonic sensors into the existing ROS framework.

Education

2020 – present
Dublin, Ireland

Ph.D. in Computer Science, Trinity College Dublin

Supervisor: Carol O'Sullivan
Topic: Variation in Locomotion of VR Avatars Based on Body Shape

CLIPE ⊘ - Marie Skłodowska-Curie Actions ITN European Project

2019 – 2020
Dublin, Ireland

M.Sc. in Computer Science (Virtual & Augmented Reality),
Trinity College Dublin

2014 – 2018
Delhi, India

Bachelor of Technology (Mechanical & Automation Engineering),
GGS Indraprastha University

Publications

Exploring the Perception of Center of Mass changes for VR Avatars, Bharat Vyas, Ludovic Hoyet, Carol O'Sullivan. ICAT-EGVE 2023 - International Conference on Artificial Reality and Telexistence & Eurographics Symposium on Virtual Environments, Dec 2023, Dublin ⊘

   Best Paper Award

ShapeVerse: Physics-based Characters with Varied Body Shapes,
Bharat Vyas, Carol O'Sullivan. Eurographics 2024 Poster Papers, Apr 2024, Cyprus ⊘

Programming Skills

C++	Python
C#	R Programming
GLSL	

Tools & Frameworks

- **ML frameworks**
  TensorFlow, PyTorch

- **3D Game Engine**
  Unity 3D

- **Packages & Tools**
  NumPy, Scikit-Learn, Pandas, Jupyter
  Notebook, AWS SageMaker, EC2, S3

- **Motion Capture System**
  Vicon, Xsens, Noitom

Teaching Work

Performed demonstrator duties in the practical lab of following modules:

- **Computer Graphics - CS7GV6 (2020, 2021, 2022)** 🔗

- **Real-Time Rendering - CS7GV3 (2021)** 🔗

- **Real-Time Animation - CS7GV5 (2021)** 🔗

- **Computer Engineering - CSU11E03 (2023)** 🔗

References

1.) Prof. Carol O'Sullivan

Professor of Visual Computing

School of Computer Science & Statistics

Trinity College Dublin

Ireland

Email: carol.osullivan@tcd.ie

2.) Dr. Ludovic Hoyet

Chargé de Recherche INRIA

(Full-time INRIA Researcher)

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