Yonas Tefera

Curriculum Vitae

3 Via Castelluccio
Italy, Genova 16159
(+39) , 3512457776, 3518739978
yonas.tefera@iit.it
www.linkedin.com

I am a Post Doc at Istituto Italiano di Tecnologia (IIT) and University of Verona (UNIVR), Italy. My research interests include Telepresence, Telerobotics, Dynamic 3D reconstruction, Augmented/Virtual/Mixed/ Reality (AR/VR/MR), gaze-contingent rendering, and point cloud compression: For further details, please visit my personal website: https://yonasteodros.github.io/.

Education

2019–2022 **PhD in Computer Science**, *University of Verona and Istituto Italiano di Tecnologia*, Verona & Genova - Italy, *In the fields of Computer Vision and Robotics* .
Title: Perception-Driven Approaches To Real-Time Remote Immersive Visualization.

2016–2017 **Masters of Science**, *Telecommunications Engineering*, Trento - Italy, *In the field of computer vision and signal processing*.
Title: Motion Detection and Video Tracking In H.264 Compressed Domain.

2008–2013 **Bachelor of Engineering**, *Electrical and computer Engineering*, BahirDar - Ethiopia, *Specialized in Computer Engineering* .
Title: Electronic Vision For Visually Impaired People.

Professional Experience

2022–2023 **PostDoc in Telerobotics**, *Istituto Italiano di Tecnologia*, Verona & Genova - Italy, *In the fields of Computer Vision and Robotics* .

2018–2022 **PhD Research Fellow**, Istituto Italiano di Tecnologia, Genova, Italy.
Worked in VICARIOS Mixed Reality and Telerobotics Lab in Advanced Robotics at Istituto Italiano di Tecnologia.

Designing novel VR, AR, MR interaction technologies for an immersive telerobotics project called "Robot Teleoperativo.": an advanced collaborative telerobotics system for operating in hazard-prone industries.
Key Responsibility:

- **Perception & Localization**: Designing real-time dynamic dense 3D reconstruction and scene understanding system via RGB-D camera to create maps and locations in the world.
- **Visualization**: Designing Immersive 3D Tele-robotics/ Tele-presence interfaces using 3D reconstructed scenes with modern virtual reality (VR) interfaces.
- **Compression**: Design, study and integration of Point Cloud Compression (PCC) techniques: G-PCC and V-PCC.
- **Point Cloud Streaming:** Design novel perception driven Point Cloud streaming and rendering pipeline in OpenGL and Unreal Engine.
- **Quality Metric**: Developed quality metric and tradeoff between different immersive formats.

Video Link, Project Link

2017–2018 **Research Intern**, Fondazione Bruno Kessler - FBK, Trento, Italy.

To design a web-based 3D reconstruction pipeline, namely 3Dnow, that anyone can use without installing additional software other than a browser. By uploading a set of images through the web interface, 3Dnow can generate sparse and dense point clouds and mesh models.

Key Responsibility

- Developed Web based 3D reconstruction pipeline.
- Evaluate different open source SFM softwares (COLMAP, THEIA, BUNDLER, OpenSfM).
- Integrate COLMAP , POTREE and Three js to a web server Api using the Flask.
- Process (filter, sample and stream) images, point clouds, and textured meshes.
- Code in Python , OpenCV , c++, Java-script, Html and Css .
- Publish and review scientific papers.

2014–2015 **Computer Vision Software Engineer**, Pestos Tech, Bahir Dar, Ethiopia.

To develop a home automation software that facilitates the control of common appliances found in a home, office, or commercial office.

Key Responsibility

- Design object detection and tracking systems for CCTV Cameras.
- Design Low latency video streaming server.

2013–2015 **Research Assistant**, Bahir Dar University, Bahir Dar, Ethiopia.

To give review lessons or lectures with students and supervise students in lecture and tutorial classes.

Course I supervised:

- Digital Signal Processing(DSP).
- Image processing and machine learning.
- Computer architecture.

Publications in peer-reviewed international conferences

2023 Towards Gaze-contingent Visualization of Real-time 3D Reconstructed Remote Scenes in Mixed Reality.
AIR 2023 - Advances in Robotics, 6th International Conference of the Robotics Society, Jul 5–8, 2023, Tefera, Y. T., et al.

2022 FoReCast: Real-time Foveated Rendering and Unicasting for Immersive Remote Telepresence.
ICAT-EGVE 2022 - International Conference on Artificial Reality and Telexistence and Eurographics Symposium on Virtual Environments, Tefera, Y. T., et al.

2022 A Perception-Driven Approach To Immersive Remote Telerobotics.
,in First XR-ROB Workshop @ IEEE/RSJ IROS, Oct. 20, 2022, Kyoto, Japan, Tefera, Y. T., et al.

2022 Towards Foveated Rendering For Immersive Remote Telerobotics.
The International Workshop on Virtual, Augmented, and Mixed-Reality for Human-Robot Interactions at HRI 2022, Tefera, Y. T., et al.

2018 3DNOW: Image-based 3D reconstruction and modeling via WEB.
International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Tefera, Yonas T., et al.

2017 3D reconstruction with a collaborative approach based on smartphones and a cloud-based server.
International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Nocerino, Erica, et al

2017 Real-time moving object detection and segmentation in H.264 video streams.
IEEE International Symposium on Broadband Multimedia Systems and Broadcasting (BMSB), Konda, K. R., Tefera, Y. T., Conci, N., & De Natale, F. G.

Publications in peer-reviewed international journals

2021 The Vicarios Virtual Reality Interface for Remote Robotic Teleoperation.
Journal of Intelligent & Robotic Systems, Naceri, Abdeldjallil, et al.

Computer skills

Skills C++, PyTorch (main DL framework), OpenMP, OpenCV, Matlab, OpenGL Shading Language (GLSL), Unreal Engine 4, Unity, CUDA, Visual SLAM.

Languages

English **Proficient**
Italian **Intermediate** *Lived in Italy*
Amharic **Mother-tongue**

Interests

- Piano
- Cooking
- Running
- Climbing
- Swimming
- Reading