OFFICE COLLABORATION

Electronics and Communication Engineering

Project : **Capstone**
Mentor : **Dr. V. Udaya Shankar**
Group : **ECE & CSE**

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Unveiling a New Dimension of Virtual Experiences and Applications

SUBMITTED BY :

Student Name : P. PRUDHVI KRISHNA
P. N. B. S. ESWAR

Registration Number : AP20110020021
AP20110010011

Branch and Section : ECE – A
CSE – A

College /University : SRM University – AP

Augmented Reality and Virtual Reality, Metaverse

MOTIVATION

- Connectivity, Virtual Interaction, Community Building.
- Education and Training, Healthcare.
- Environmental Sustainability.
- Shared Infrastructure, Infrastructure Efficiency.
- Reduced Real Estate Costs, Land Conservation.

LITERATURE SURVEY

Reference number	Publication /patent title	Advantages	Disadvantages
[1]	**The Future of Work**: Do We Need Interactive Collaborative Offices? The Most Interesting Survey in a Post-Covid World	• Response to Pandemic Challenges. • Utilization of Theoretical Frameworks	• Network Efficiency, Latency.
[2]	**Virtual Realities for Remote Working**: Exploring employee's attitudes toward the use of Metaverse for remote working	• Expanding Application of Virtual Realities. • Potential for Positive Work Environment.	• Complex Attitudes towards Virtual Realities. • Management Consideration Complexity.
[3]	A Review of Metaverse's Definitions, Architecture, Applications, Challenges, Issues, Solutions, and Future Trends	• Cross-Disciplinary Research Opportunities. • Scalability, Technological Requirements.	• Privacy Concerns. • Technical complexities, Design considerations.

What is Metaverse ?

The metaverse, a conceptual space where digital and physical realities converge, has emerged as a transformative paradigm in the realm of virtual experiences and applications. This study delves into the multifaceted dimensions of the metaverse, aiming to unravel its underlying technologies, implications, and diverse applications across various domains.

The metaverse concept:

Metaverse also called "WEB 3.0"

i. Web 1.0 → WWW (World Wide Web)
ii. Web 2.0 → Social Media

Applications in Metaverse

Health care

Office Collaboration

Manufacturing

Gaming, Autonomous driving, etc.

Tools /Components Required

1. Nvidia Omniverse Platform
2. AWS (Amazon Web Services)
3. Oculus (AR /VR Headsets)
4. Python (Colab /Jupiter Notebooks)
5. System with i9 processor and graphic card (6gb)

NVIDIA OMNIVERSE

OMNIVERSE

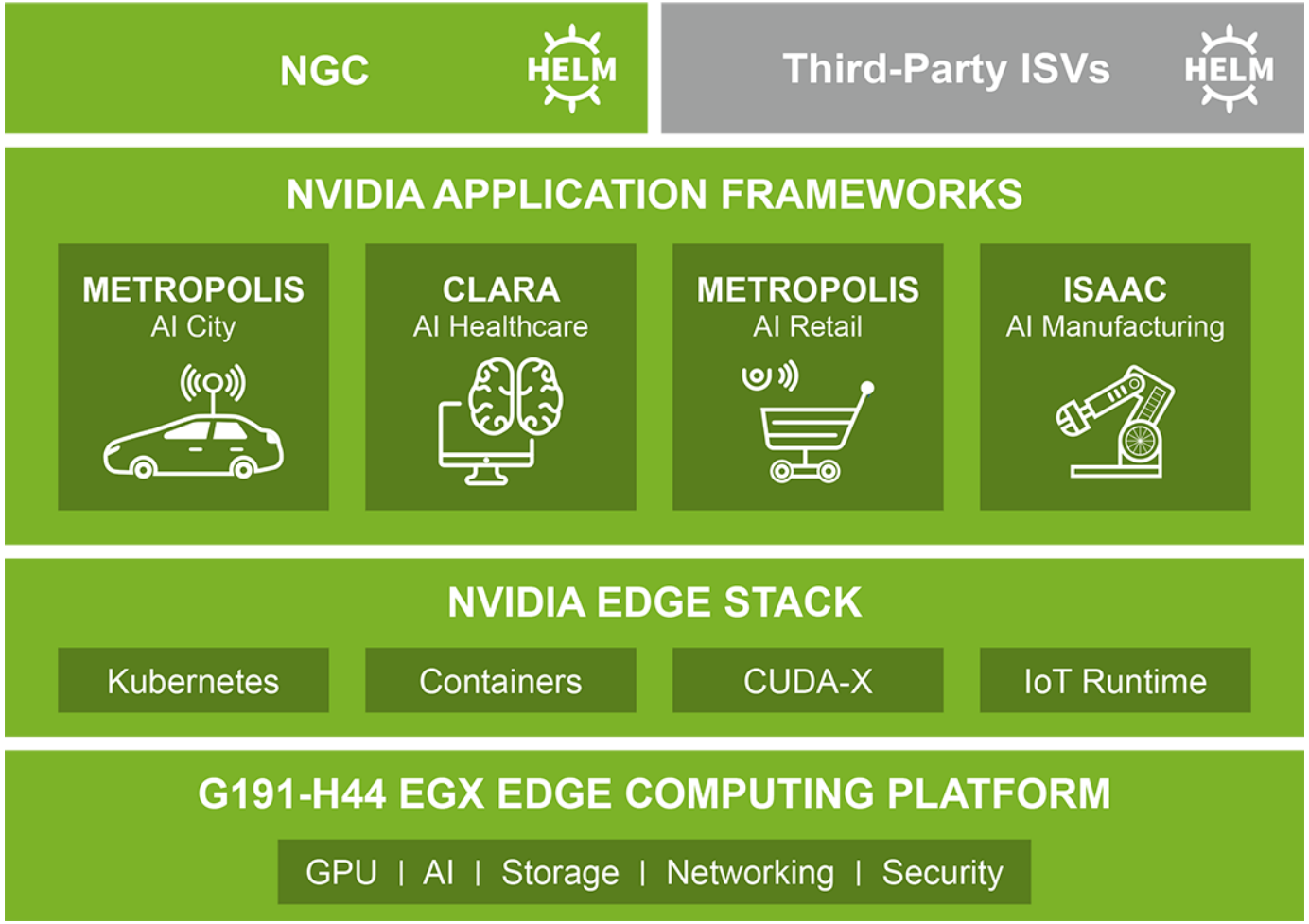
Omniverse refers to **NVIDIA Omniverse**, a platform developed by NVIDIA, a technology company known for its graphics processing units (GPUs) and artificial intelligence (AI) technologies. NVIDIA Omniverse is an ambitious and cutting-edge platform designed to revolutionize the way content is created, simulated, and experienced in the fields of 3D content creation, virtual production, and collaborative workflows.

NVIDIA Omniverse and the metaverse are related in the sense that both concepts revolve around creating immersive, interconnected, and collaborative virtual experiences. However, it's essential to understand that **NVIDIA Omniverse and the metaverse are not the same thing.**

Omniverse is a platform for collaboration and simulation

Connect	Nucleus	Kit	Simulation	RTX Renderer
• Connection SDK • Plugins	• Core services • Cloud • On-Prem	• Viewer • Editor • Framework	• PhsyX • AI • Animation • Behavior	• Real-time • Scalable • Accurate • MDL

Frame Works


NGC
HELM
Third-Party ISVs
HELM
NVIDIA APPLICATION FRAMEWORKS
METROPOLIS
AI City
CLARA
AI Healthcare
METROPOLIS
AI Retail
ISAAC
AI Manufacturing
NVIDIA EDGE STACK
Kubernetes
Containers
CUDA-X
IoT Runtime
G191-H44 EGX EDGE COMPUTING PLATFORM
GPU | AI | Storage | Networking | Security

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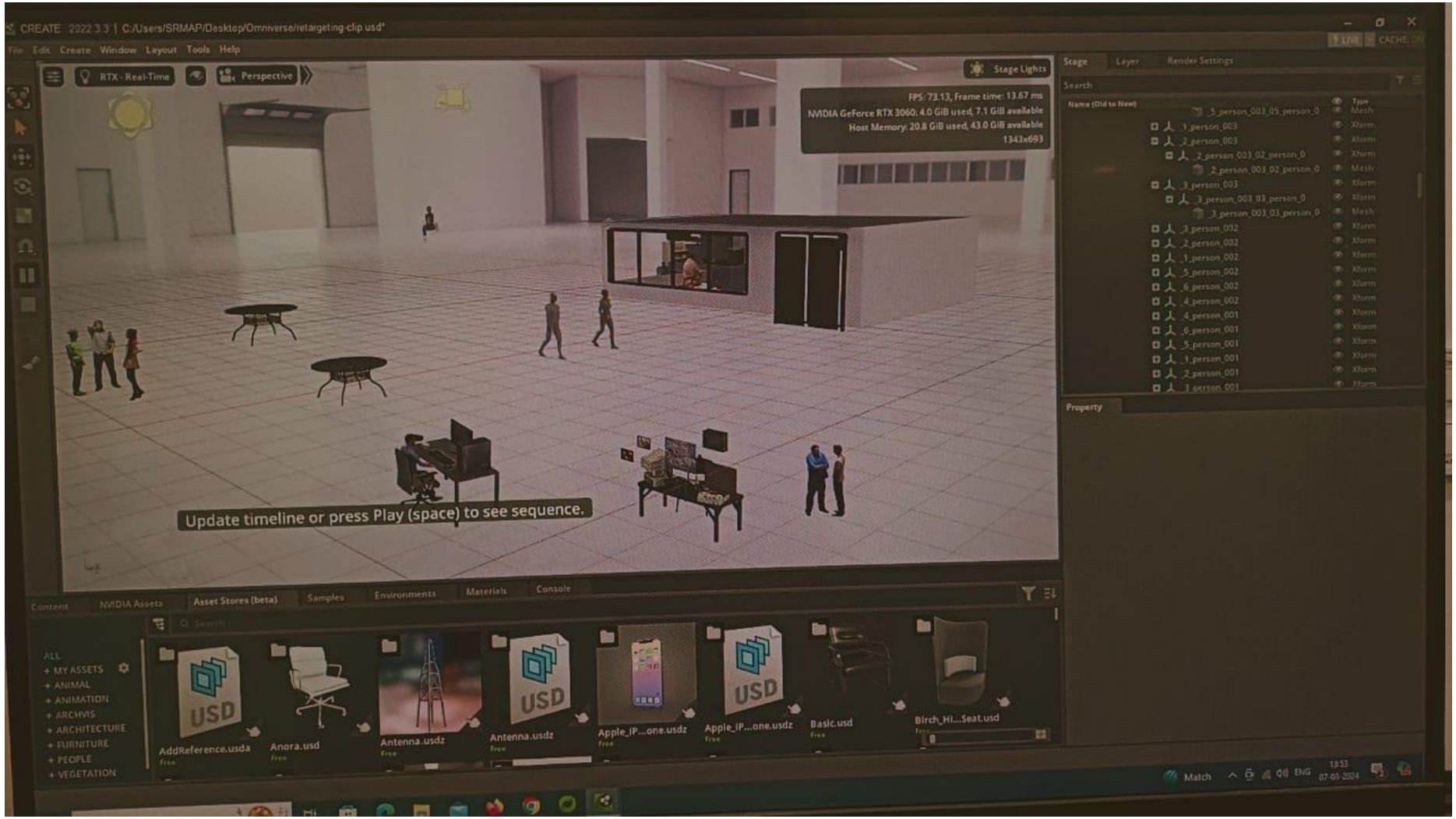

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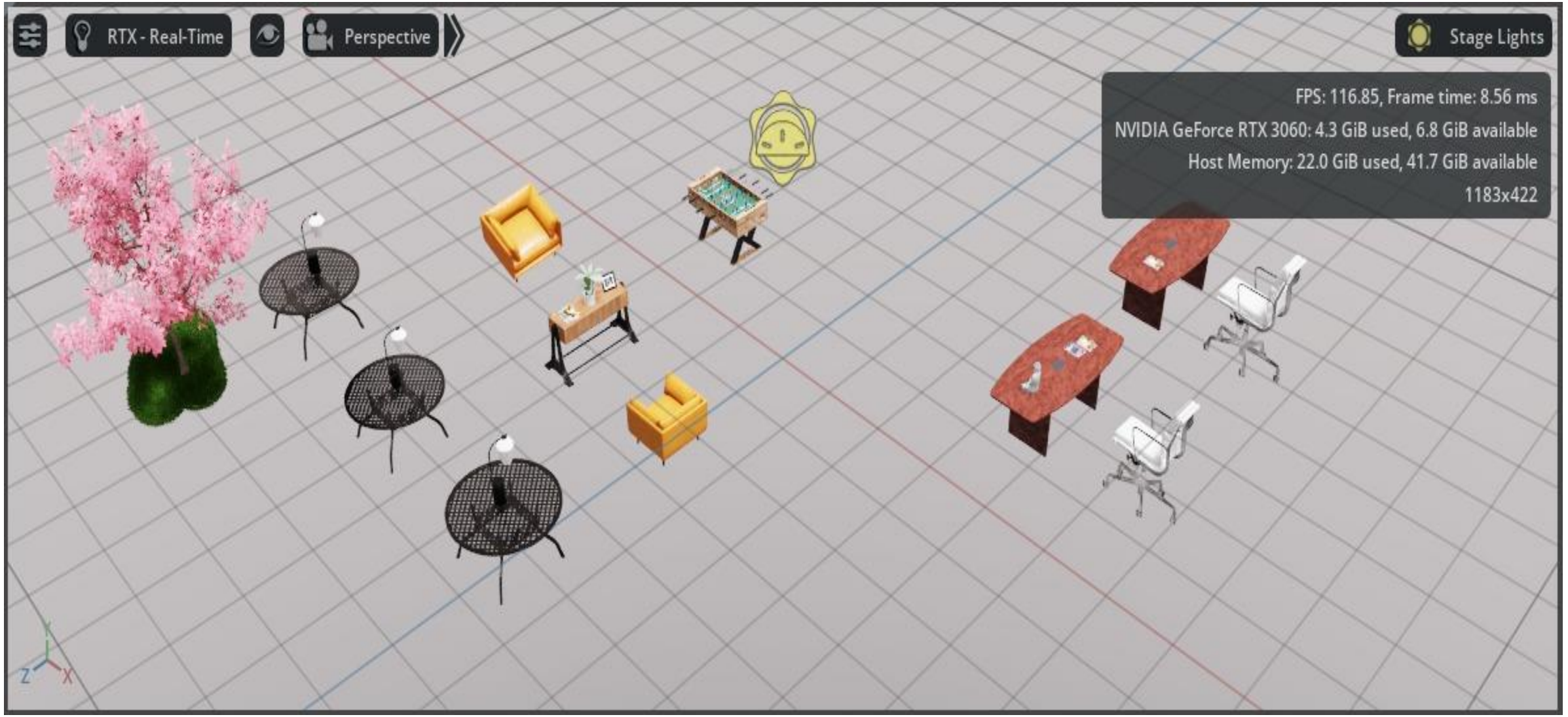

References

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[2] L. Karlsson and M. Shamoun, 'Virtual Realities for Remote Working : Exploring employee's attitudes toward the use of Metaverse for remote working', Dissertation, 2022.

[3] A. M. Al-Ghaili et al., "A Review of Metaverse's Definitions, Architecture, Applications, Challenges, Issues, Solutions, and Future Trends," in IEEE Access, vol. 10, pp. 125835-125866, 2022, doi: 10.1109/ACCESS.2022.3225638.

[4] Davis, Alanah; Murphy, John; Owens, Dawn; Khazanchi, Deepak; and Zigurs, Ilze (2009) "Avatars, People, and Virtual Worlds: Foundations for Research in Metaverses," Journal of the Association for Information Systems, 10(2), .DOI: 10.17705/1jais.00183

[5] Sin-nosuke Suzuki, Hideyuki Kanematsu, Dana M. Barry, Nobuyuki Ogawa, Kuniaki Yajima, Katsuko T Nakahira, Tatsuya Shirai, Masashi Kawaguchi, Toshiro Kobayashi, Michiko Yoshitake, Virtual Experiments in Metaverse and their Applications to Collaborative Projects: The framework and its significance, Procedia Computer Science, Volume 176, 2020, Pages 2125-2132, ISSN 1877-0509, https://doi.org/10.1016/j.procs.2020.09.249.

THANK YOU

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- Any queries