

# AI-Powered Virtual Reality

*How Artificial Intelligence, Virtual Reality, and Privacy Intersect*

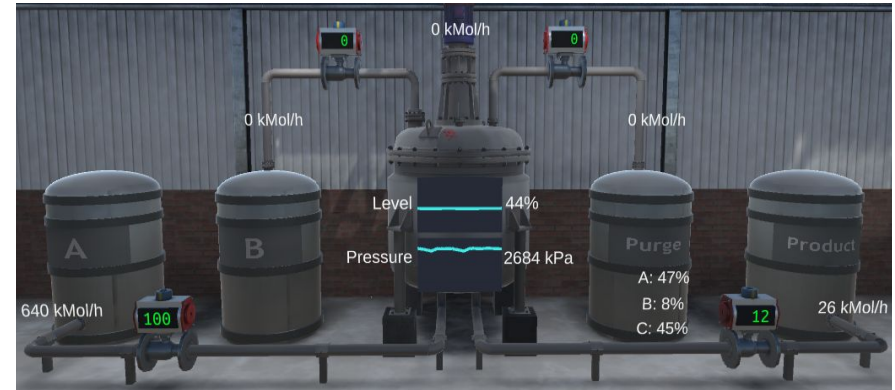
Presented by: Atit Kharel

# VR in Training and Education

- Education, industrial safety, medical training
- Safe, repeatable simulations
- Performance feedback



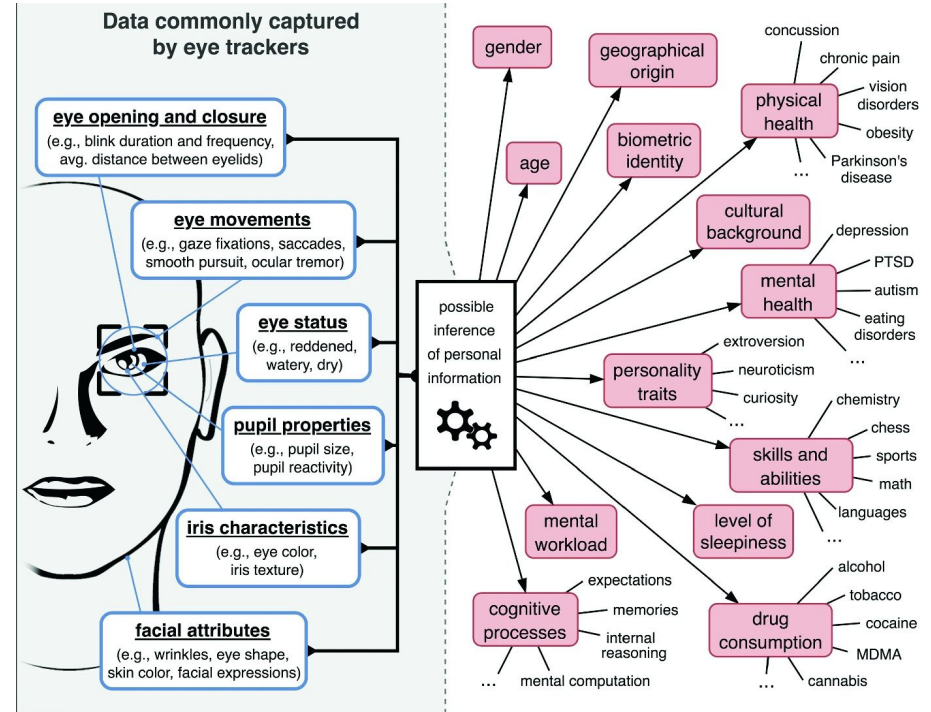
[Smartek Solutions]



[Fortiphyd/GRF/CSv2]

# The Problem

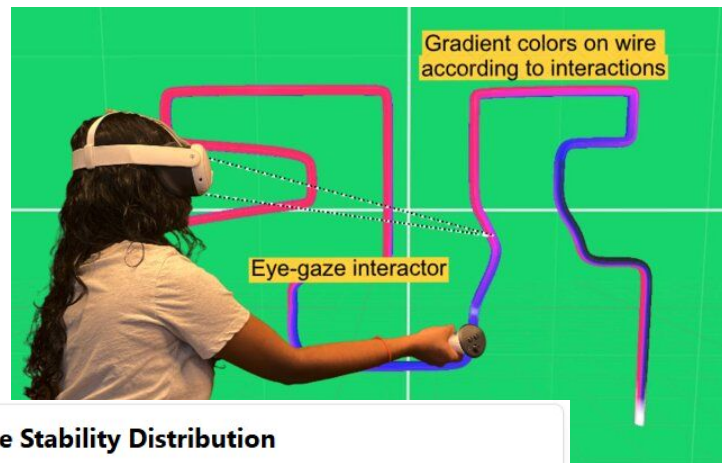
- VR generates valuable data
- Unused or forgotten
- Storing raises privacy concerns



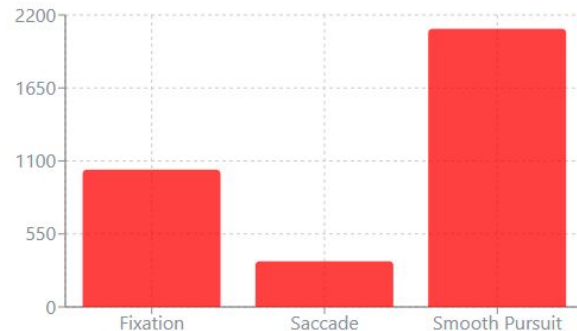
[Kröger et al. 2020]

# Making VR Reflective

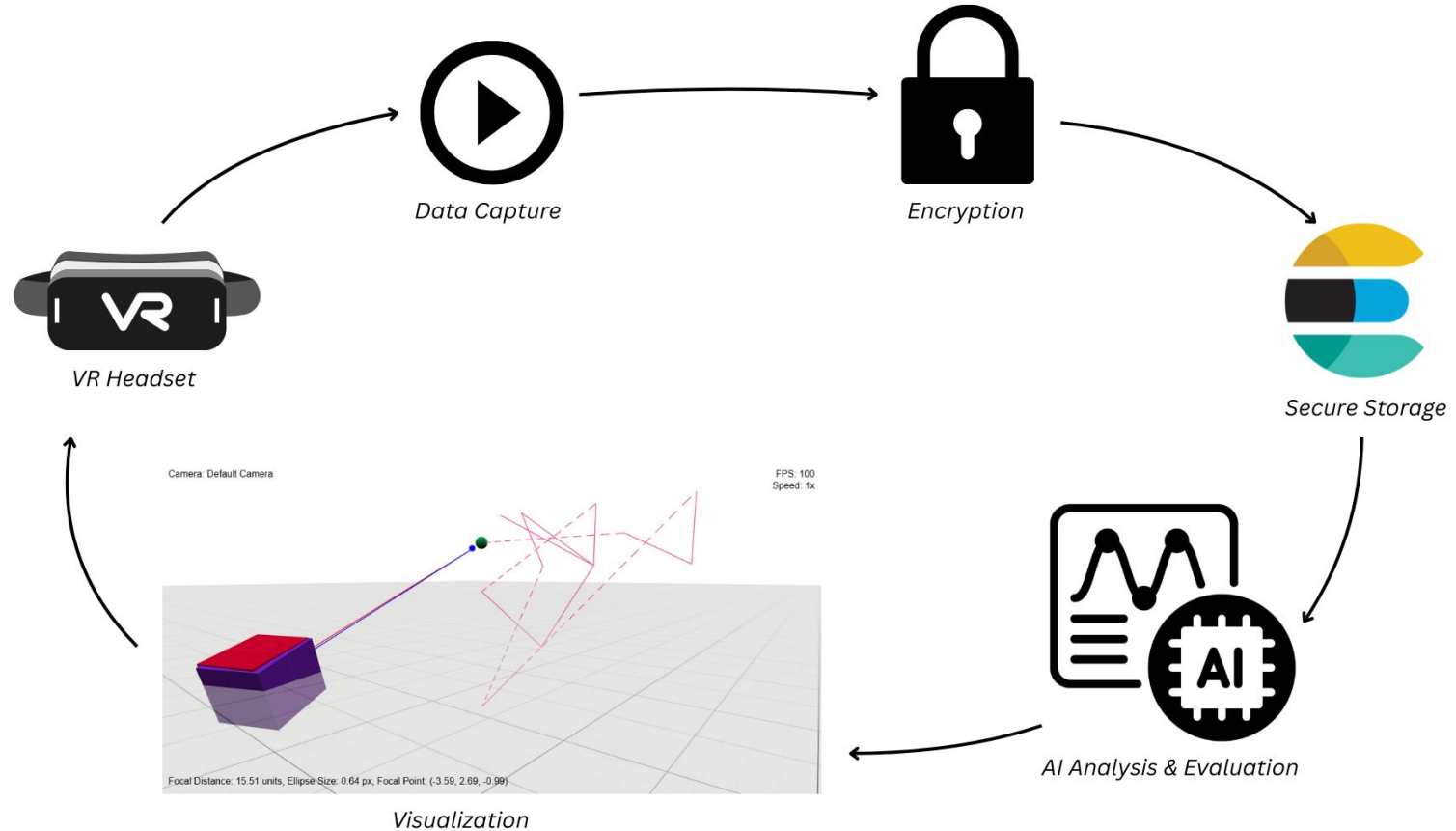
- Systematically **record** and store
- **Recognize** behavioral patterns
- **Feedback** and visualizations
- **Enhance** learning and performance



👁️ Gaze Stability Distribution

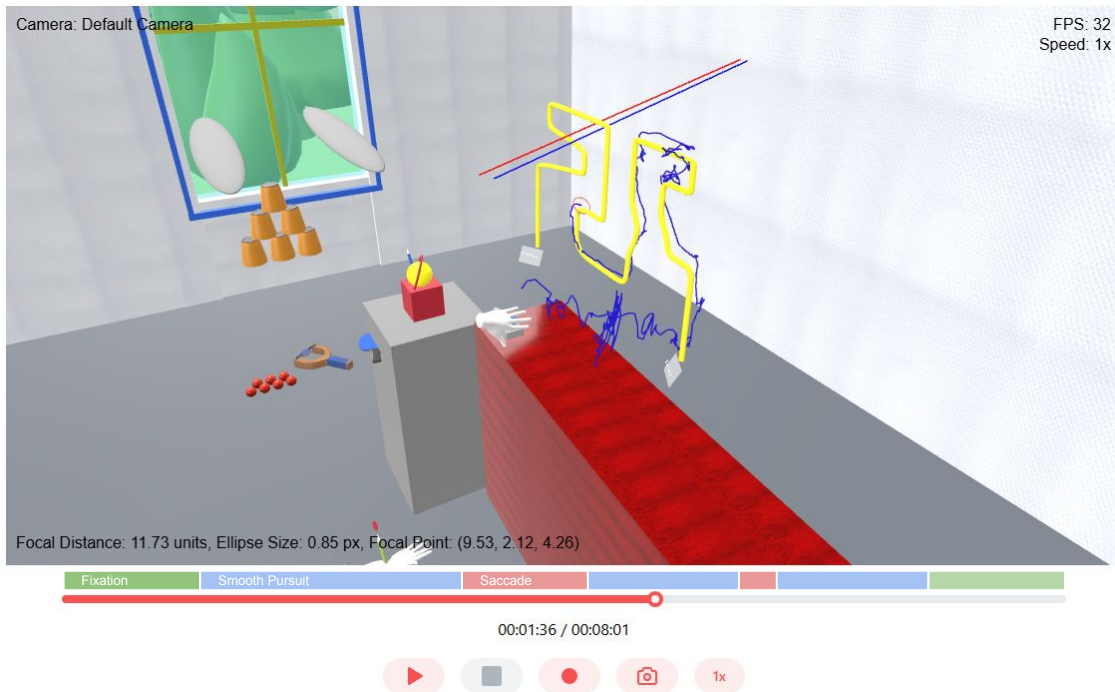


# How the Data Moves



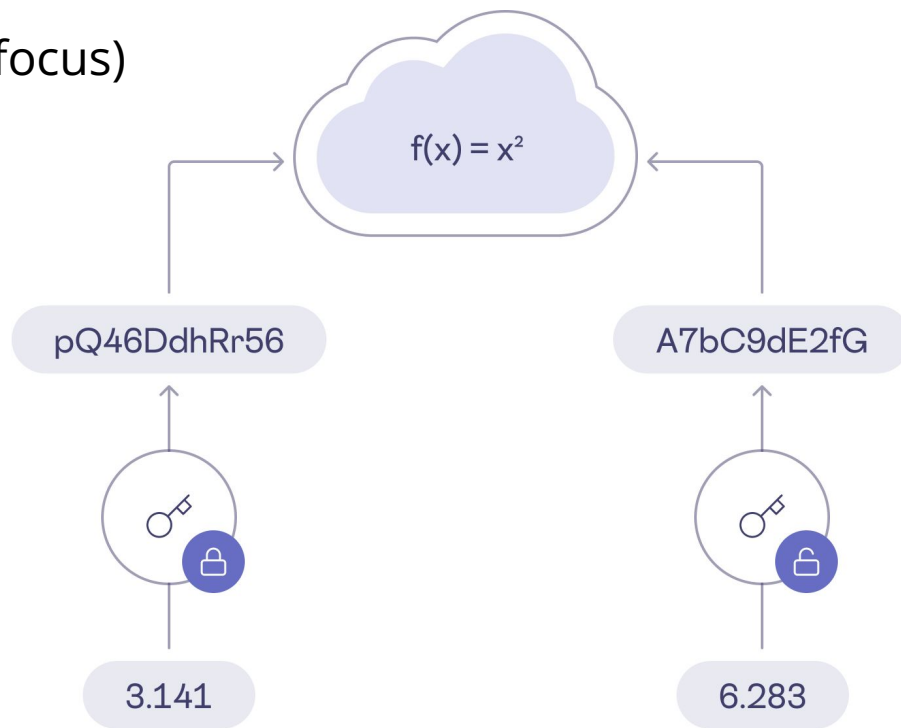
# Smarter Insights with AI

- Identify patterns
- Highlight key events
- Data-driven feedback
- Adaptive systems

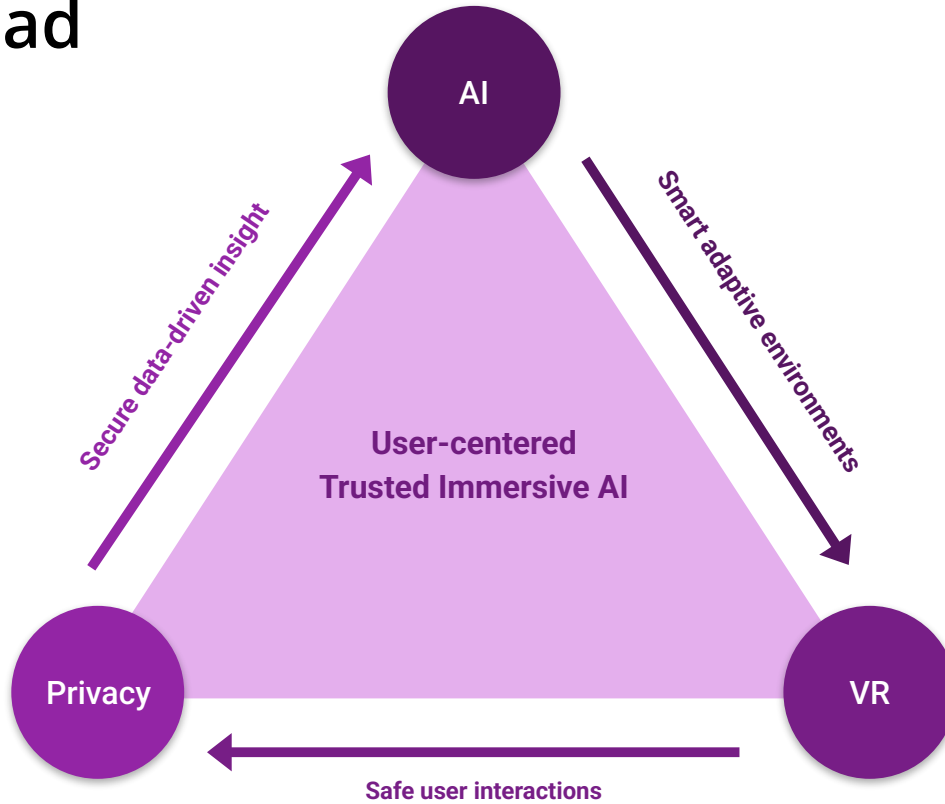


# Privacy Matters

- Highly personal data (e.g., gaze, focus)
- **Homomorphic Encryption**
- Allow safe processing
- Utility without identity



# Looking Ahead



Where intelligence, immersion, and ethics align



# Thank You

# References

- **M.J.M. Sunny, J.S.N. Guthula, A. Kharel, H. Rashid, M.N. Shraboni, P. Bhandari, J.P. Springer and A. Basu [2024].** “Gaze Insights in XR: Real-Time Eye-Tracking Analytics with Elasticsearch.” *2nd Workshop on Gaze and Eye Movement in Interaction in XR (GEMINI) 2025*
- **Kröger, J.L., Lutz, O.HM., Müller, F. [2020].** “What Does Your Gaze Reveal About You? On the Privacy Implications of Eye Tracking.” *Privacy and Identity Management. Data for Better Living: AI and Privacy. Privacy and Identity 2019. IFIP Advances in Information and Communication Technology()*, vol 576. DOI: [10.1007/978-3-030-42504-3\\_15](https://doi.org/10.1007/978-3-030-42504-3_15)