

Thomas Day

Head of Innovation | XR & Interactive 3D Software Engineering

📍 Bury, Greater Manchester, United Kingdom 🏠 twday.uk ✉ tday42@gmail.com

Head of Innovation and hands-on software engineer with a PhD in Computer Science and extensive experience building XR, immersive training, and data-driven 3D applications. Established Unity and C# specialist with experience in software architecture, reusable skeletal-data systems, cross-platform delivery, applied research, mentoring, and technical leadership. Skilled at turning research and emerging technology into practical, maintainable products while continuing to design systems and write production code.

Core Expertise

Engineering: Unity, C#, XR, interactive 3D, software architecture, real-time and recorded skeletal data

XR & platforms: Virtual, augmented and mixed reality; standalone/mobile and PC XR; OpenXR, SteamVR, Meta/Oculus, Microsoft HoloLens, MRTK, VRTK

Data & integration: SQLite, WebSockets, REST APIs, data ingestion and pipelines, application state, live and recorded data sources

Delivery: Git, Jenkins, CI/CD, Docker; Windows, Linux, macOS, mobile and WebGL; macOS signing and notarisation

Leadership: Technical planning and direction, mentoring, task and line management, stakeholder and client communication, research and prototyping

Developing: Unreal Engine; Kotlin with Jetpack XR

Professional Experience

Head of Innovation, Rezzil, Greater Manchester, UK

Sep 2023–Present

- Design systems and write production Unity and C# code for XR, immersive training, interactive 3D, and data-driven applications.
- Shape technical direction and software architecture, plan development work, and support maintainable cross-platform delivery.
- Lead and mentor engineers through task and line management, knowledge transfer, and technical decision-making.
- Communicate with clients, technology partners, and technical and non-technical stakeholders; evaluate emerging technologies through hands-on investigation and prototyping.
- Develop reusable systems that transform raw skeletal tracking data into pre-posed 3D representations for consistent use across applications and environments.

Experienced Generalist Coder, Rezzil, Greater Manchester, UK

Dec 2020–Sep 2023

Developed Unity and C# applications spanning standalone/mobile XR, PC XR, Windows, Linux, macOS, mobile, and WebGL, contributing production code and reusable engineering systems.

Freelance Software Developer, Reality Studios, UK

2019–2020

Developed Unity and C# applications for mobile and Oculus platforms.

Post-Doctoral Researcher, Department of Computer Science, University of Chester, UK

Oct 2018–Nov 2020

Developed and validated a VR cognitive-rehabilitation tool for stroke survivors with industrial collaborators and NHS clients.

Demonstrator, Department of Computer Science, University of Chester, UK

Oct 2015–Dec 2018

Supported undergraduate C++ coursework covering programming, data serialisation, and networking.

Intern, Advanced Medical Imaging and Visualization Unit, Bangor University, UK

Jun 2014–Sep 2014

Researched and developed medical applications using virtual environments and haptic technologies with Unity, C#, and Oculus.

Research

VIRTUE – immersive VR cognitive rehabilitation after stroke

May 2017–Aug 2020

Built a configurable activities-of-daily-living system deployed in a hospital and evaluated in a double-blind phase 2b randomised controlled trial with 40 stroke survivors. The study found the system safe and acceptable, with encouraging results supporting a larger trial. Unity, C#, VRTK, SteamVR, and Oculus; developed with the Countess of Chester Hospital NHS Foundation Trust and Cadscan Ltd. Innovate UK funding: £500,000.

ParaVR – haptic VR training for paramedic skills

Nov 2018–Aug 2020

Developed with the Welsh Ambulance Services NHS Trust to support maintenance of rarely performed clinical skills. Combined Oculus Rift with a Novint Falcon haptic device and was adapted for Oculus Go and Google Cardboard. Bevan Commission Welsh Health Hack first-prize funding: £7,500.

Wheelchair-MR – mixed-reality powered-wheelchair training

Oct 2016–Oct 2019

Used Microsoft HoloLens to overlay manoeuvring tasks while participants drove a real powered wheelchair, preserving awareness of the physical environment and addressing cybersickness observed in the preceding VR simulator.

Education

PhD in Computer Science, University of Chester, UK

Oct 2015–May 2019

Thesis: Virtual and Mixed Reality Support for Activities of Daily Living. Focused on VR and MR for training, patient support, and rehabilitation.

BSc (Hons) Computer Science, Bangor University, UK

Sep 2012–Jun 2015

First-class degree on a BCS-accredited programme. Dissertation: *An Immersive Medical Virtual Environment*.

Publications

1. Chatterjee, K., Buchanan, A., Cottrell, K., Hughes, S., **Day, T. W.**, and John, N. W. "Immersive Virtual Reality for the Cognitive Rehabilitation of Stroke Survivors." *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 30, 719–728, 2022. doi:10.1109/TNSRE.2022.3158731.
2. Rees, N., Vaughan, N., **Day, T. W.**, et al. "ParaVR: a virtual reality training simulator for paramedic skills maintenance." *Journal of Paramedic Practice*, 12(12), 478–486, 2020. doi:10.12968/jpar.2020.12.12.478.
3. **Day, T. W.** *Virtual and Mixed Reality Support for Activities of Daily Living*. PhD thesis, University of Chester, 2019.
4. **Day, T. W.** and John, N. W. "Training Powered Wheelchair Manoeuvres in Mixed Reality." *VS-Games*, 2019. doi:10.1109/VS-Games.2019.8864515.
5. John, N. W., Pop, S. R., **Day, T. W.**, Ritsos, P. D., and Headleand, C. J. "The Implementation and Validation of a Virtual Environment for Training Powered Wheelchair Manoeuvres." *IEEE Transactions on Visualization and Computer Graphics*, 2017. doi:10.1109/TVCG.2017.2700273.

Volunteering

Sergeant, 1330 (Warrington) Squadron, RAF Air Cadets

2017–Dec 2021

Supported youth training and encouraged engagement with STEM.

Adult Civilian Volunteer, 1330 (Warrington) Squadron, RAF Air Cadets

2015–2017

Assisted with squadron activities and the training of young people.