



## Reliving History: Bringing Historical Stories to Life through Digital Avatars and AI Technology

Mary Seacole has become widely recognised as a healthcare pioneer and someone we would today call a nurse practitioner. Born in 1806, Mary was a Jamaican immigrant who moved to England aged twelve and practised European and traditional Caribbean methods of medicine.

Following the tragic death of her husband and mother, Mary travelled all over the world and became famous for treating patients suffering from Cholera and Yellow fever. Mary treated fallen soldiers of the Crimean War, a military conflict fought from October 1853 to February 1856. Mary passed in 1881. However, through the power of AI and digital tools paired with historical accounts and modern performing arts, a new generation of changemakers can engage in conversation with a virtual avatar of Mary.

Utilising digital technologies such as Epic Games MetaHumans, or bespoke photogrammetry (mesh to MetaHuman), AI, image detection and mesh generation, a life-like virtual character is created, which opens up opportunities for several sectors and industries, including heritage organisations for engaging with emerging technologies and performers. Having a virtual character provides more flexibility for public interaction and can further support visitor engagement.

When historical records and imagery are limited, modern technology can be a valuable tool for enhancing and recreating past materials. An innovative approach involves using facial tracking and virtual avatars to integrate performances within the virtual world. This can be achieved through pre-recorded sessions or live tracking, producing a dynamic and interactive experience for the viewer.

Bea Freeman, an Independent Film Producer, introduced the VEC to local Musical Director Jennifer John to offer a realistic voice-over to accompany the virtual avatar, giving Mary an authentic voice for drawing in audiences to her story and experiences.

Combining AI integration and a vector database trained with historical data about Mary Seacole increases the accuracy of the responses and opens up the potential for further expanding the character's knowledge base. Verbal cues can become enabled for realistic conversations as humans can ask the avatar questions about her life experiences, and the virtual character will respond with accurate and detailed accounts in real-time.



## Mary Seacole

Hello, I'm Mary Seacole, a Jamaican-Scottish nurse and businesswoman. I was born in Kingston, Jamaica in 1805. I gained recognition for my work during the Crimean War, where I set up a hotel and provided care for wounded soldiers. I'm proud to have served and supported those in need.

The VEC teams have added multiple camera angles to heighten realism whilst including functionality for typing questions to Mary, increasing accessibility and inclusivity. Motion capture methods have been used to accurately capture details and expressions from the faces of the VEC teams, later transferring these different expressions onto the avatar. This enables the model to show various emotions through changing facial expressions based on which emotional subjects she discusses.

The model was demonstrated at St George's Hall for the UK's first Digital Heritage Symposium in April 2022 and has since been part of an educational tour in 2023 to celebrate Black History Month. Here, the VEC assisted children and school groups in engaging directly with the model, becoming immersed in their learning experience.

The VEC are keen to explore how conversational avatars can be applied within the psychology and healthcare sectors, particularly from a medical perspective. Conversational avatars can bring the benefits of face-to-face communication but also hold a breadth of internal and accessible knowledge to support questioning and offer support to those who need it. This emerging technology could also enable psychologists to assess the body language of individuals in a less intrusive manner, which may determine different outcomes and findings.

Further improvements and expansion of the current Mary Seacole avatar can see the recreation of other significant historical figures, whilst placing these into virtual environments from the past, bringing historical scenes to life as we create an even more immersive learning experience.