

Leveraging virtual containers for high-powered, collaborative AI research in radiology.

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Numerous obstacles confront researchers engaged in the advancement of artificial intelligence (AI) models within the field of radiology. The divergence in hardware and software specifications among different researchers poses a substantial hindrance to effective collaboration. Model development within the same lab may also be challenging due to differences in platforms and hardware/software between lab members. Additionally, remotely harnessing the power of GPU-equipped computer servers can lead to compatibility issues and add to these inter-user challenges. Finally, the dissemination of AI models and the ability to download pre-existing AI models are not simple tasks due to the size and complexity of most programs.

Virtual containers offer a solution to such compatibility issues and are integral to the way modern AI development takes place. Virtual containers are software tools that bundle code, required programs, and necessary software packages to ensure that a program runs identically for all users, regardless of their native computing environment. This article outlines the features of virtual containers (compatibility, versatility, and portability) and highlights an applied use-case for virtual containers in the development of an AI model. Although the use-case offered here is specific to AI within radiology, the applications of virtual containers are vast and such tools are becoming increasingly necessary in the world of data science and AI across all fields of research.

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