Purpose of the Research/ Previous Research:

- The goal of this research is to create an efficient and effective data pipeline tool to segment high volumes of video data in order to assist other researchers.
- This helps contribute to the purpose of CyVerse as well as the Data Science Institute of providing scientists and researchers with the tools needed for data-driven discovery.
- Research in this field has been done previously such as finding methods and creating software for effective video segmentation (such as DeepLabCut). Some pipelines have also been developed, such as the fully automated 2D and 3D convolutional neural networks pipeline for video segmentation and myocardial infarction detection in echocardiography, however these pipelines are very specific and can not be used by researchers in general simply because they are built to cater to a specific issue.

Hamila, O., Ramanna, S., Henry, C. J., Kiranyaz, S., Hamila, R., Mazhar, R., & Hamid, T. (2022, August 3). *Fully automated 2D and 3D Convolutional Neural Networks Pipeline for video segmentation and Myocardial Infarction Detection in echocardiography*. arXiv.org. https://arxiv.org/abs/2103.14734

Mathis, A., Mamidanna, P., Cury, K. M., Abe, T., Murthy, V. N., Mathis, M. W., & Bethge, M. (2018, August 20). *Deeplabcut: Markerless pose estimation of user-defined body parts with deep learning*. Nature News. https://www.nature.com/articles/s41593-018-0209-y/

Need for the Study/ Problem Statement:

- The need for this study is that video segmentation is a powerful method that many researchers can use to their advantage. However, there isn't an easy and efficient way to use this method and implement it in research. This will help expand the knowledge of video segmentation as a tool as well as expand its use since it will become much easier to implement as well.
- Can a tool be created in order to effectively and efficiently segment humans in videos in order to allow the scientific community to analyze data in a new and effective way.

Introduction:

- (Picture of normal shot from video)(Picture of segmented shot from video)
- Need for tool, data-drive discovery, new way of analysis
- Create by (methods), deep learning, containerization, using python
- Ended with (results), with an accuracy of, and (UI)

Images:

- None yet, will start to insert some research images soon