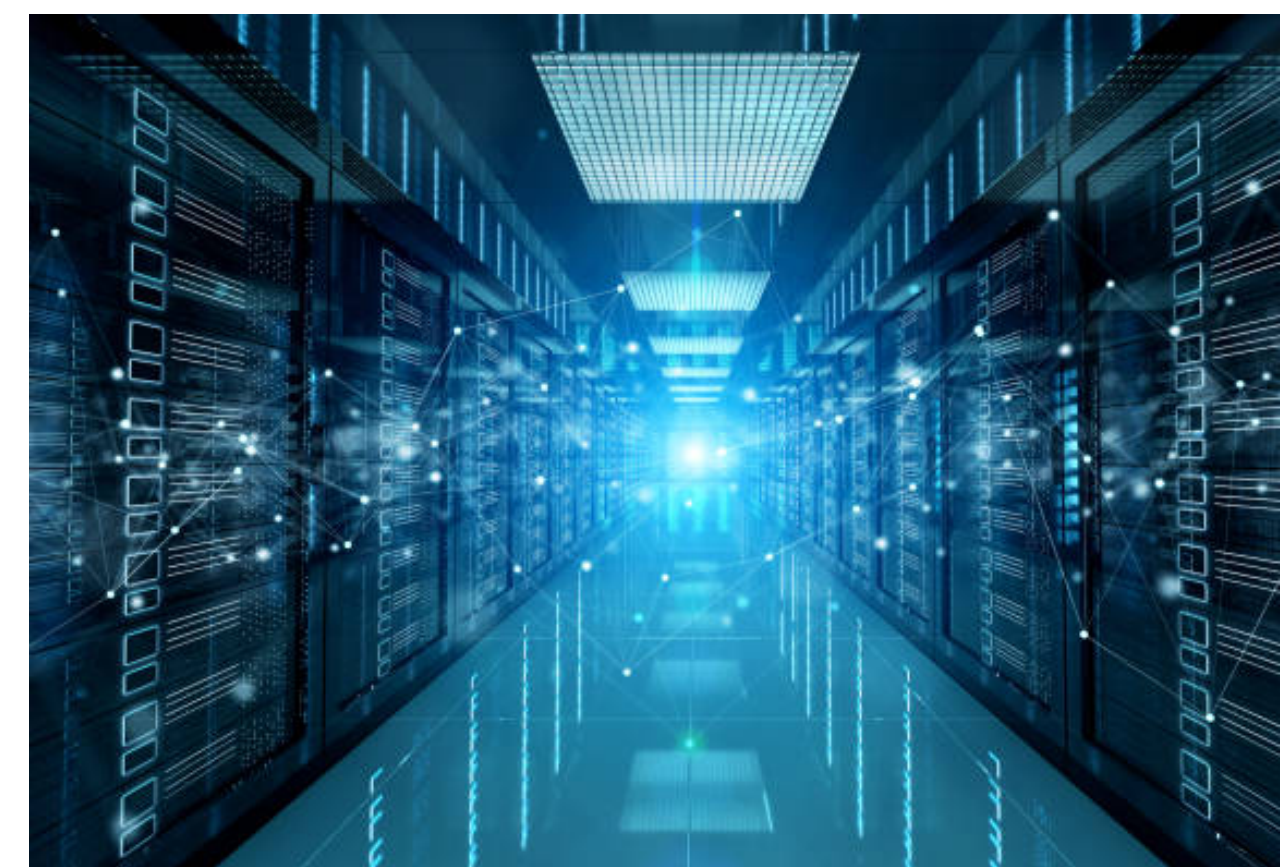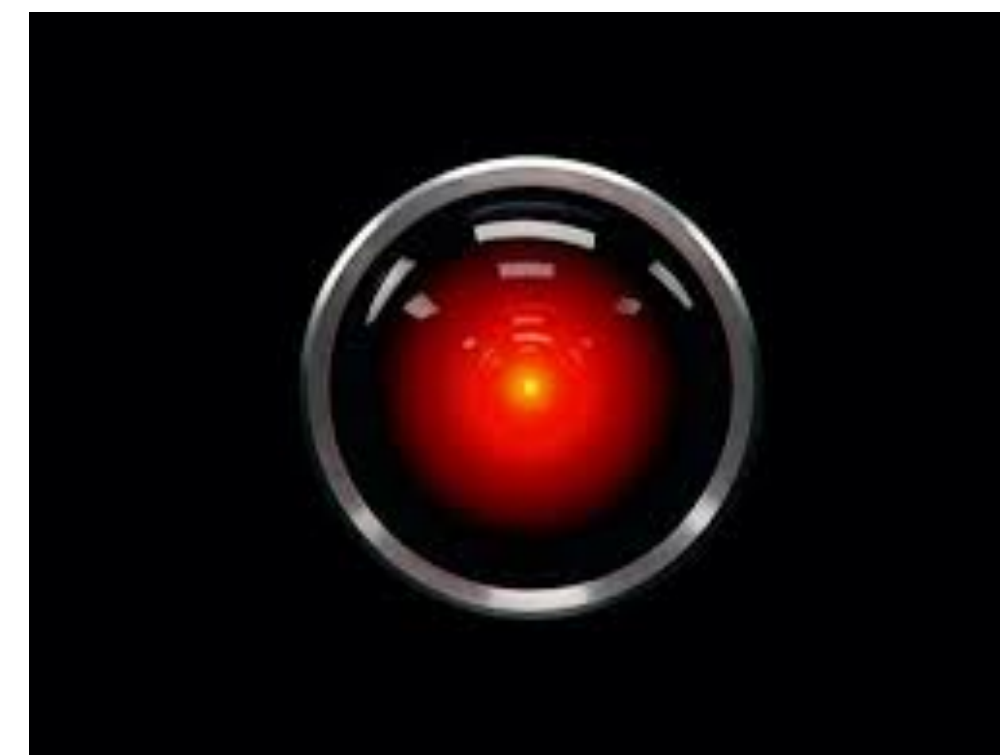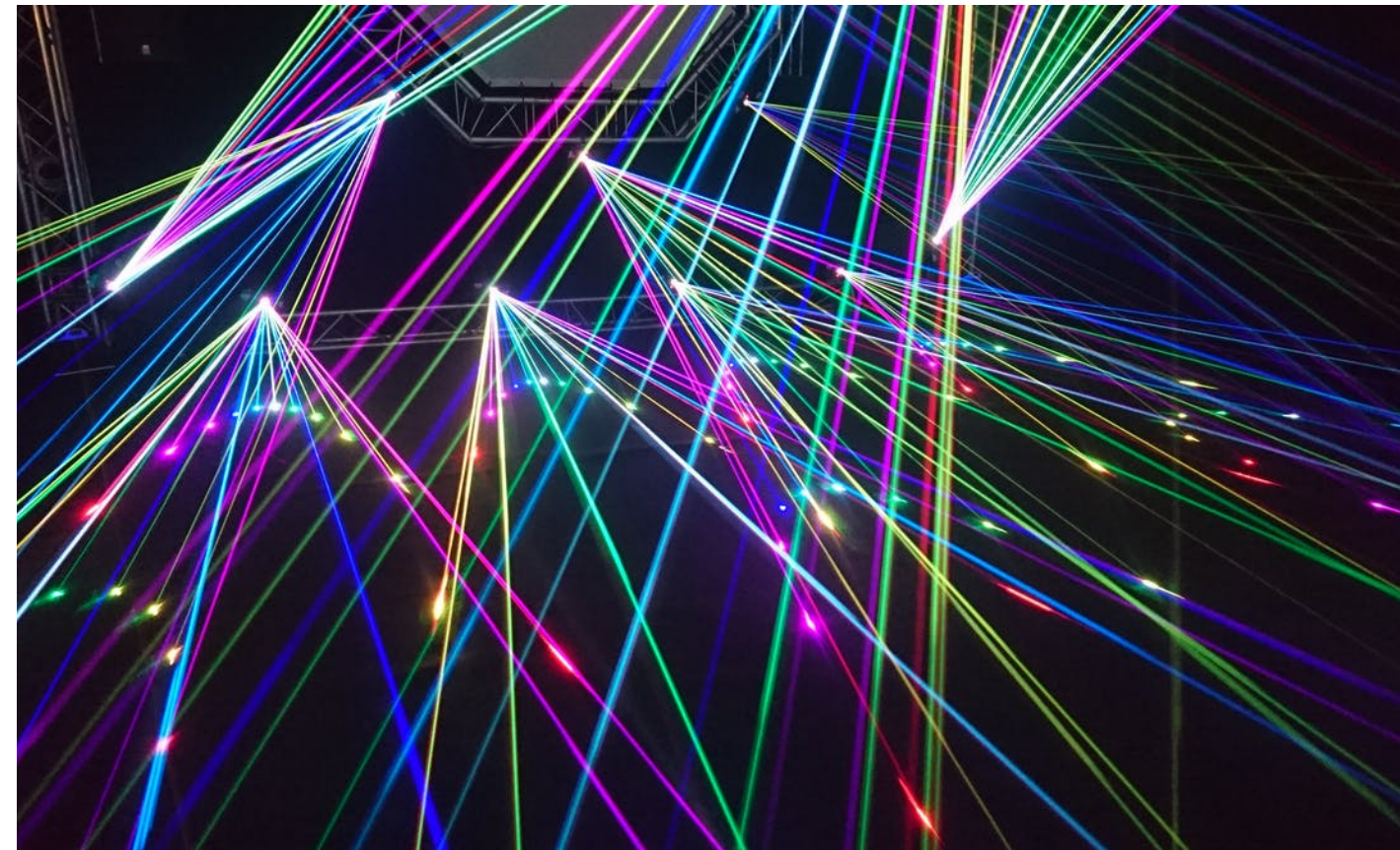# Deep Learning for X-ray Applications

Denver X-ray Conference 2022

Dennis Trujillo

Tutorial goals…

- Demonstrate how to simulate a coherent diffractive imaging dataset via numpy, scipy

- Utilize the Pytorch research model repository to load an existing CNN architecture

  - Data augmentation

    - Numpy object -> Pytorch objects

    - Rotation, horizontal/vertical flips

- Evaluate model performance

  - Accuracy scores

  - Confusion matrix

What is Coherent Diffractive Imaging?

A lensless imaging technique in which a diffraction image is produced from a test object and the object amplitude is recorded on a CCD. The phase is determined via an iterative phase retrieval algorithm.