Error creation and detection

Papers read:

1. Welding and allied processes – **Classification** of geometric imperfections in metallic materials **(Part 1 and 2) /** Folder: ISO
2. Welding Fusion - welded joints on steel, nickel, titanium and their alloys (without beam welding) / Folder: ISO / Remark: Detail about the size of classification
3. Welding: Arc welded joints on aluminium and its alloys: Assessment groups of irregularities / Folder: Katarzyna / Remark: Not specifically read as we're only working on steel

Current steps:

1. Going through papers and understanding welding errors. European standard DIN EN ISO 5817
2. Gathering data with web scrapping for the error images
   2.1 Classification (3 or more types)
3. Find error production possibilities
   3.1 GAN
   3.2 OpenCV
   3.3 Other Möglichkeiten
4. Data Preprocessing: Involve two datasets (Web scrapped and company images)
   4.1 Image enhancement
   4.2 Resize images to a fixed size (Normalization)
   4.3 Annotation
   4.4 Data Augmentation
5. Model selection for error production (GAN)
6. Model training for error production (GAN)
7. Producing the errors on available dataset from the company
8. Model selection for object detection
9. Model training for detection of errors

Questions:

1. How can we transfer errors/features from one image, make a model learn about errors, and make a replica or transfer it to another image?
2. Web scraping

   2.1 Can I find a large enough dataset from web scrapping to train a model?

   2.2 Do I need to buy something like a dedicated data centre proxy for IP address rotation?

   2.3 Do you have any preferable source for web scrapping the images? Or any preferable auto scrapper?
3. GAN

   3.1 Do we need GAN?
4. Error production or error replication

   4.1 What would be the ideal size of the accumulated dataset for training?

   4.2 What other available methods do we have to produce the mistake? Ex: OpenCV