Final-Project-3-Proposal

- **What problem did you select and why did you select it?**

  Enhancing thermal images through super-resolution. We chose this because it is challenging due to the low quality and noise issues associated with thermal imaging making it harder to achieve high-resolution outputs compared to RGB images. It also aligns with our interest in computer vision and image processing.
- **What database/dataset will you use? Is it large enough to train a deep network?**

  Perception Beyond the Visible Spectrum (PBVS) competition dataset from 2025 and previous years. One of the datasets we can use is: PBVS Competition Dataset 2025 *We do believe it is large enough as it was used for a competition.*
- **What deep network will you use? Will it be a standard form of the network, or will you have to customize it?**

  We are still deciding but the top papers are using Convolutional, NAFNET, Transformer, Diffusion, GAN, and other combinations of Deep Networks to achieve the best results.
- **What framework will you use to implement the network? Why?**

  PyTorch. Because every paper uses PyTorch.
- **What reference materials will you use to obtain sufficient background on applying the chosen network to the specific problem that you selected?**

  Papers with code has many different models that we can use. In addition, there is a competition each year hosted with results posted by Perception Beyond the Visible Spectrum (PBVS) that we can use as a reference. https://pbvs-workshop.github.io/
- **How will you judge the performance of the network? What metrics will you use?**

  PSNR and SSIM are the main widely used metrics for image quality in super resolution.
- **Provide a rough schedule for completing the project.**

  Here is our rough timeline