**Objective:**

1. To design a method to extract data from TCAD profiles
2. To create an equivalent segment design on the extracted TCAD profile

**Problem Statement:**

**Methodology:**

**Conclusion:**

In summary, this progress report provides an overview of the advancements made on our semester project. As of this stage, we have successfully achieved accurate segmentation of the profiles and reference colour map. While progress is on track, we have encountered problems in value assignment based on colour proximity.

Moving forward, we plan to [describe next steps or focus areas, such as finalizing specific components, conducting more detailed analysis, or testing]. With continued effort and adherence to our timeline, we are confident in meeting the project’s objectives and delivering comprehensive results by the end of the semester.

**Introduction**

Technology Computer-Aided Design (TCAD) uses simulation software to advance semiconductor process and device development, helping reduce costs and accelerate R&D(TCAD|Synopsys, Sentaurus Tutorial). TCAD tools monitor, analyze, and optimize IC processes, assess process variations, model technology nodes, and support device analysis for technologies like TFET, HEMT, and FINFET(M.Nizam et al.).

Image segmentation partitions an image into meaningful regions, aiding in applications like object detection and scene analysis. Many algorithms, including SLIC superpixels (Achanta et al., 2012) and interactive random walks (Grady, 2006), balance segmentation accuracy and computational speed. Mean-shift (Cheng et al., 2010) and medoid-shift (Vedaldi & Soatto, 2008) clustering approaches perform well on diverse image structures, while region adjacency graphs allow flexible color-based segmentation (Loza et al., 2010). For this project, the Felzenszwalb and Huttenlocher method (2004) was selected due to its color accuracy, while a grid-based segmentation was used on the reference color map for consistent results across complex gradients.