

Weekly Report

Week: 24 November 2025

1. Papers Studied

- **MobileNets: Efficient Convolutional Neural Networks for Mobile Vision Applications**
Introduces lightweight CNNs optimized for mobile devices using depthwise separable convolutions and scaling hyperparameters.
- **InfoColorizer: Interactive Recommendation of Color Palettes for Infographics**
Proposes a VAEAC-based system that generates color palettes conditioned on user preferences and infographic layout structure.

2. Key Learning

- MobileNets provide a strong framework for **efficient, on-device model deployment**, reducing computation by up to 9x with minimal accuracy loss.
- InfoColorizer demonstrates the value of **conditional generative models**, **layout-aware features**, and **interactive user feedback** in design recommendation tasks.
- Together, these papers highlight an opportunity to build **real-time, on-device, user-adaptive recommendation systems**.

3. Research Questions Derived

RQ1:

Can a mobile-optimized generative model (using MobileNet-style lightweight encoding) replace VAEAC to enable **real-time on-device color palette generation**?

RQ2:

How does aggressive model compression (quantization/pruning inspired by MobileNet) affect the **quality and robustness** of layout-aware color recommendation systems like InfoColorizer?

RQ3:

Can **non-uniform, learned scaling** of MobileNet hyperparameters (α, ρ) improve the trade-off between **latency** and **aesthetic output quality** in interactive recommendation tasks?

RQ4:

How can **user preference history** or lightweight personalization modules be added to a compact generative model to improve **adaptive palette recommendations** without increasing model size?

4. Next Steps

- Select one research question to develop into a prototype or experimental design.
- Build a small dataset combining layout structures + color palettes for testing.
- Begin designing a compact conditional generator using a MobileNet encoder.