

# IMAGE COLOURIZATION VIA CONVOLUTIONAL NEURAL NETWORKS AND DEEP LEARNING

**Karys Littlejohns**

Student#

karys...@mail.utoronto.ca

**Peter Leong**

Student# 1010892955

peter.leong@mail.utoronto.ca

## ABSTRACT

This project addresses the challenge of automated colourization for  $256 \times 256$  grayscale images using a dataset of 12,600 image pairs, balanced across human subjects, animals, and natural scenery. We frame colourization as a supervised learning problem in the CIELAB colour space, where a model predicts chrominance channels ( $a^*$ ,  $b^*$ ) from the luminance channel ( $L^*$ ). A shallow convolutional neural network (CNN) provides the baseline performance, while our primary solution employs a deeper convolutional encoder-decoder architecture. This design captures high-level semantic features and spatial context, addressing limitations of shallow networks in perceptual realism. —Total Pages: ??

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## REFERENCES