Recap

TRANSLUE

Hochschule für
Wirtschaft und Recht Berlin
Berlin School of Economics and Law

- Research Topics
- Concepts
- Implementation

Research Topics

- Competitor Analysis
  - Comparing features with Translue Goals
- Different Approaches on AI Text Recognition
  - Research best fitting methods for Translue‘s use case
- How to build an AI – Constructing a pipeline:
  - Gathering useful technologies to build a toolkit for a tech-stack on mobile
  - Cutting-edge research
  - Element Identification
  - Tracking Technology

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Concepts

- Contextual Segmentation:
  - Grouping and arranging detected integral texts in reading order to produce contextual text blocks
- Image Scaler:
  - Resizing or cropping images to have uniform dimensions
- Feature Extraction Unit:
  - Convolutional neutral network to locate image patches with text
- Integral Embedding Extractor:
  - Learning visual and contextual Feature embeddings for each detected integral text unit
- Character Classification Unit:
  - Convolutional neutral network to find characters in obtained image patches

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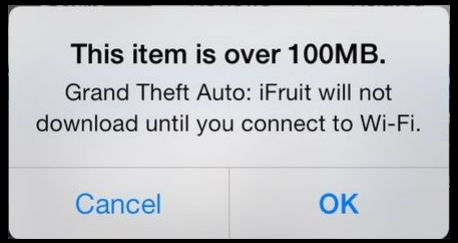
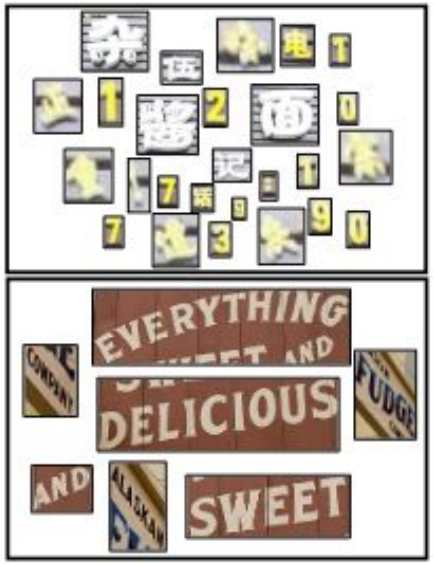
Implementation - First Review

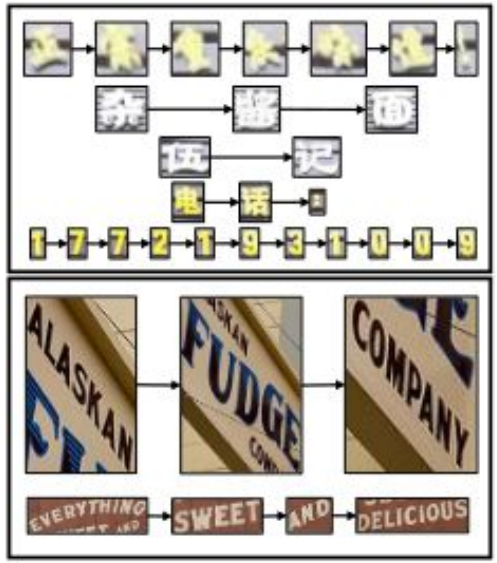
Implementation

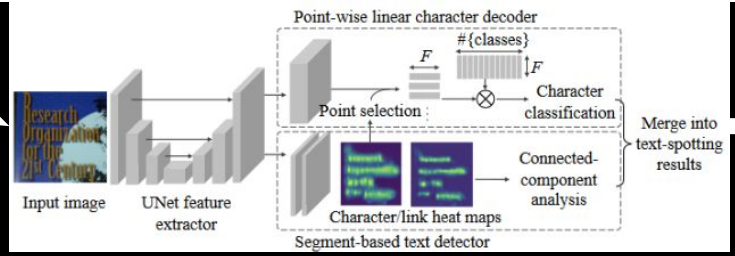
- Training AI:
  -> Supervised Learning
  -> Running through dataset (ICDAR) with reshuffled 461 images
- Pruning and Quantization:
  -> Significantly and effectively reducing the number of parameters
  -> Lowering memory demands
  -> Raising Performance all while maintaining accuracy



Implementation - Possible improvements







More Papers!

- Our decisions were largely driven by recent advances in ML/AI
  - Model Compression and Hardware Acceleration for Neural Networks: A Comprehensive Survey [Deng et al., IEEE 2020]
  - You Only Look Once: Unified, Real-Time Object Detection [Redmon et al., IEEE 2015]
  - Learning Both Weights and Connections for Efficient Neural Network [Han et al., NeurIPS 2015]

  And more! All referenced in ClickUp!

  Also interesting, yet too recent:

  - RGB no more: Minimally-decoded JPEG Vision Transformers [Park et al., NeurIPS 2022 (November 29th)]

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Thank You!