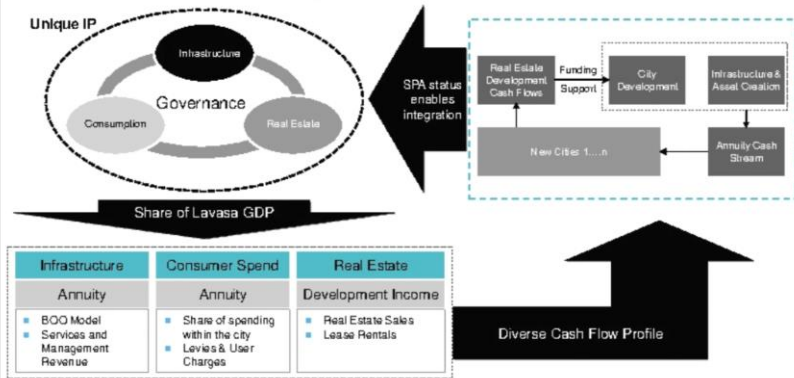


SPaSe – Multi-Label Page Segmentation for Presentation Slides

Monica Haurilet, Ziad Al-Halah, Rainer Stiefelhagen

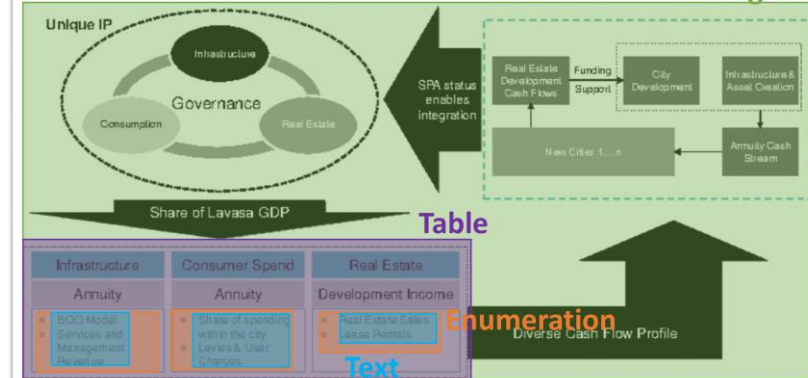
KIT - Computer Vision for Human Computer Interaction Lab

Lavasa Model – Comprehensive Value Capture



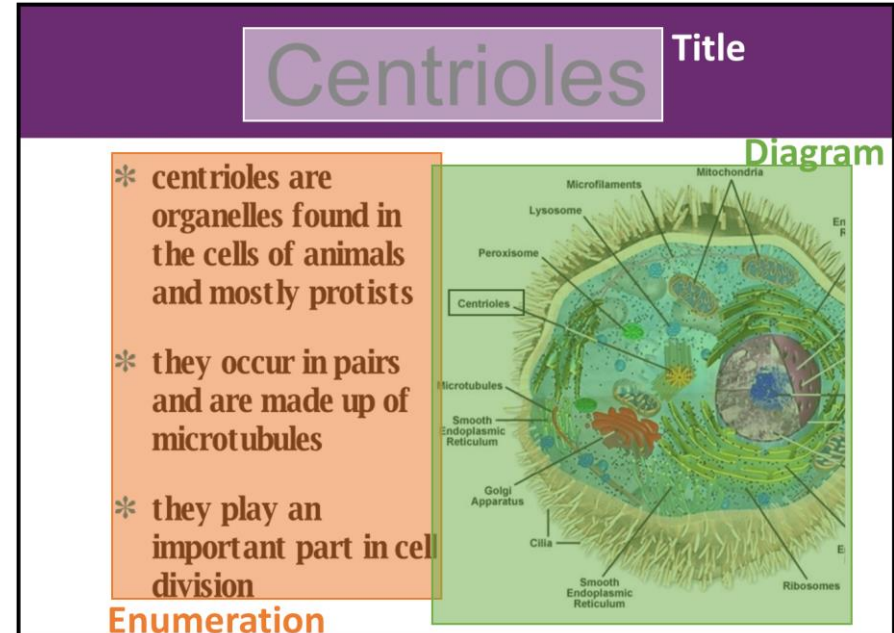
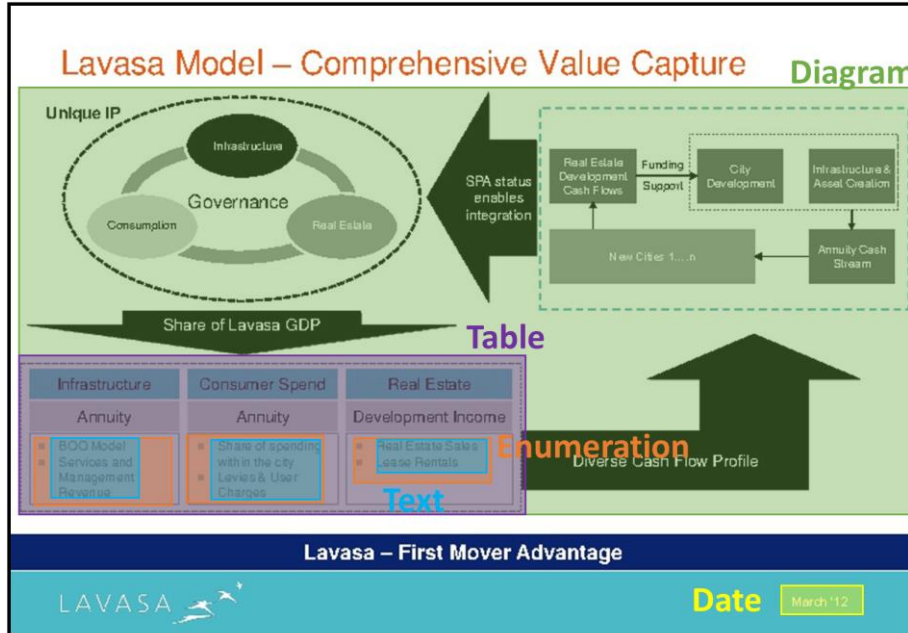
Lavasa – First Mover Advantage

Lavasa Model – Comprehensive Value Capture Diagram



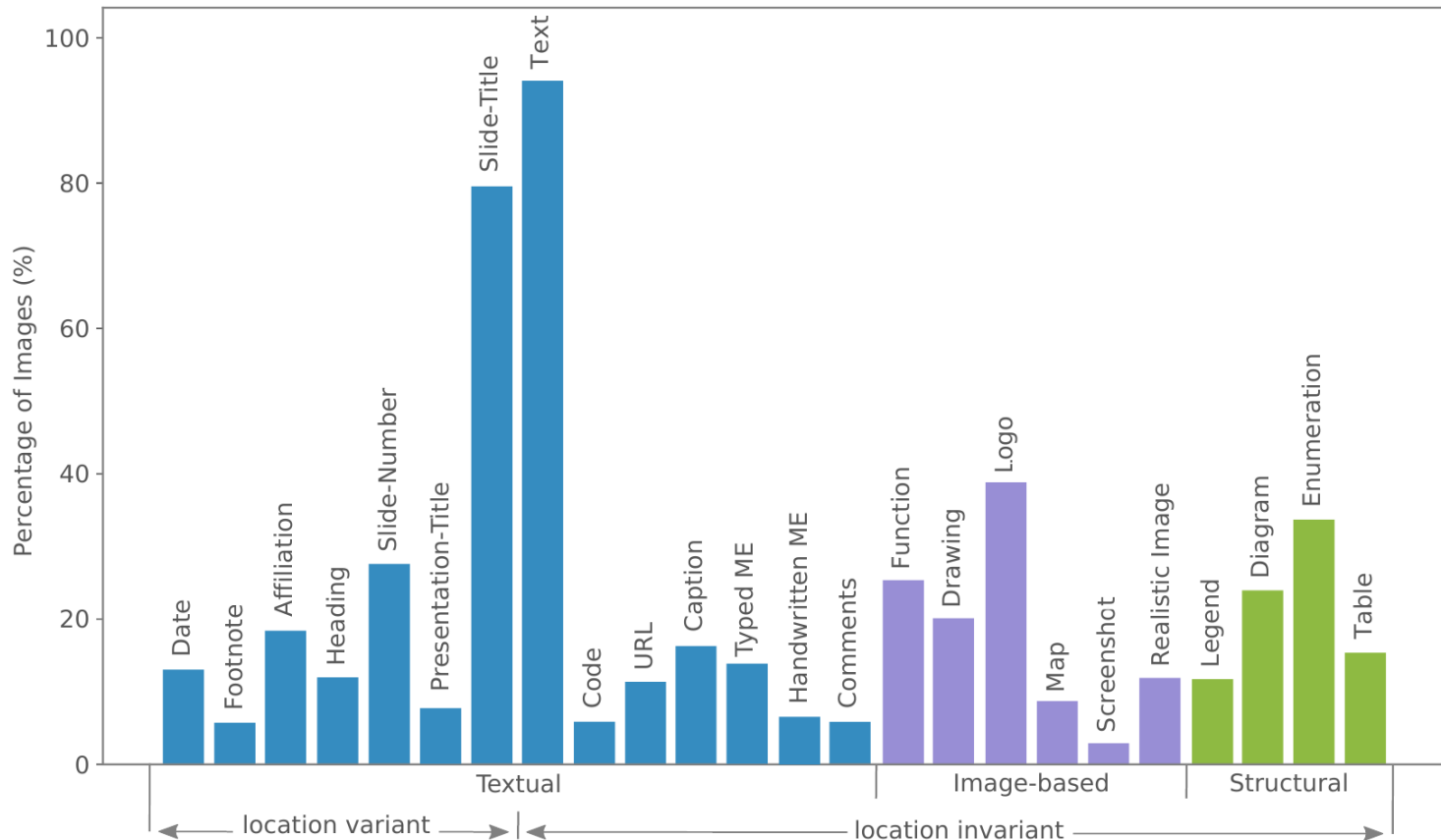
Lavasa – First Mover Advantage

Slide Layout



SPaSe – Slide Page Segmentation Dataset

- Pixel-wise annotations of 2000 slides
- Overlapping regions of 25 semantic classes



Comparison to other Page Segmentation Datasets

| Type | Dataset | #Pages | #Text Cls. | #Img Cls. | #Struc. Cls. | Overlapp |
|-----------|-----------|--------|------------|-----------|--------------|----------|
| Magazines | RDCL17 | 70 | 8 | 2 | 0 | X |
| E-Books | CM | 244 | 12 | 1 | 2 | X |
| Papers | CS-150 | 150 | 2 | 2 | 0 | X |
| | DSSE-200 | 200 | 2 | 1 | 2 | X |
| | SectLabel | 347 | 20 | 1 | 2 | X |
| | CS-Large | 3100 | 2 | 2 | 0 | X |
| Slides | SPaSe | 2000 | 14 | 6 | 4 | ✓ |

Slide Segmentation Results

| Model | mIOU | pAcc | pIOU | mbAcc |
|-------------|-------------|-------------|-------------|-------------|
| Uniform | 1.1 | 3.4 | 4.0 | 50.0 |
| Background | 2.5 | 61.6 | 61.6 | 50.0 |
| FCN-8s | 20.0 | 66.2 | 73.5 | 62.0 |
| FRRN | 30.9 | 71.2 | 75.3 | 68.5 |
| DeepLab | 34.1 | 76.5 | 80.3 | 71.2 |
| DeepLab+Loc | 35.8 | 77.4 | 81.2 | 72.6 |

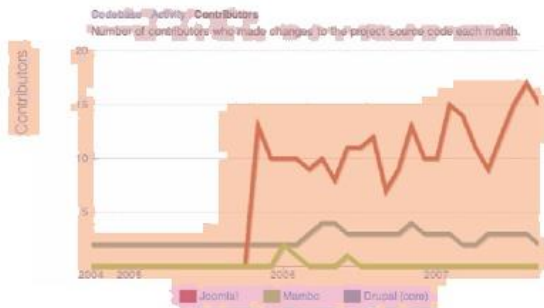
Example Predictions

Our Annotations

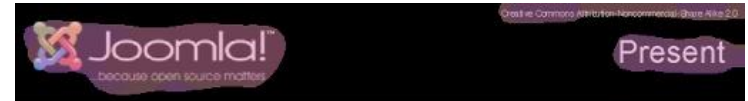


Joomla! development in numbers

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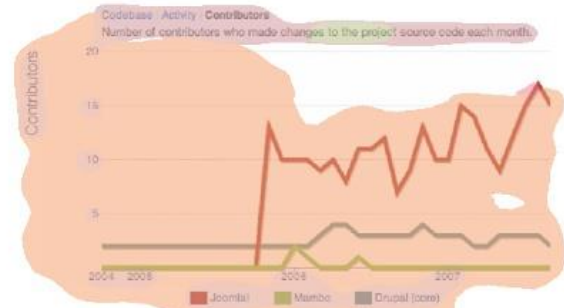


Predictions



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UPS Asia

- Intra Asia Trade
- Targeted Emerging Markets
- Import/export service to every non-embargoed country
- Contractual Domestic Service
 - China
 - Hong Kong
 - Japan
 - Australia
 - Malaysia
 - Singapore

■ Import/export + Domestic
■ Import/export only
■ Embargoed countries

Almost 20% of international revenue originates in Asia Region

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<https://cvhci.anthropomatik.kit.edu/data/SPaSe>

