Sample Title

Sample Subtitle

Author

September 2, 2020

Simple Content

Here we have an `itemize` environment.

- ► First.
- ► Second.
- ► Third.

This is a paragraph. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren.

Here we have an `enumerate` environment.

1. First.
2. Second.
3. Third.

Simple Content

`small`

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- ► First.
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Here we have an `enumerate` environment.

1. First.
2. Second.
3. Third.

$$p(C, \Pi, \Theta, W) = p(\Pi \mid \alpha)p(C \mid \Pi)p(\Theta \mid \beta)p(W \mid C, \Theta)$$

$$= \left(\prod_d^D p(\pi_d \mid \alpha_d) \right) \left(\prod_d^D \prod_i^{I_d} p(c_{di} \mid \pi_d) \right) \left(\prod_d^D \prod_i^{I_d} p(w_{di} \mid c_{di}, \Theta) \right) \left(\prod_k^K p(\theta_k \mid \beta_k) \right)$$

$$= \left(\prod_d^D \mathcal{D}(\pi_d; \alpha_d) \right) \left(\prod_d^D \prod_i^{I_d} \left(\prod_k^K \pi_{dk}^{c_{dik}} \right) \right) \left(\prod_d^D \prod_i^{I_d} \left(\prod_k^K \theta_{kW_{di}}^{c_{dik}} \right) \right) \left(\prod_k^K \mathcal{D}(\theta_k; \beta_k) \right)$$

$$= \left(\prod_d^D \frac{\Gamma(\sum_k \alpha_{dk})}{\prod_k \Gamma(\alpha_{dk})} \prod_k^K \pi_{dk}^{\alpha_{dk}-1+n_{dk\cdot}} \right) \left(\prod_d^D \frac{\Gamma(\sum_v \beta_{kv})}{\prod_v \Gamma(\beta_{kv}))} \prod_v^V \theta_{kv}^{\alpha_{kv}-1+n_{\cdot kv}} \right)$$

This is the joint probability for the Latent Dirichlet Allocation. You can find more information on this topic here (where also this formula is taken from).

Definition (odd integer)

An integer $z \in \mathbb{Z}$ is said to be odd if it is not divisible by two, i.e. there exist no $k \in \mathbb{Z}$ s.t. $z = 2k$.

Theorem (Multiplication of Odd Integers Yields Even Integer)

Let $a, b \in \mathbb{Z}$ be two non-null odd integers. Then $a \cdot b$ is an even integer.

Proof.

Let $k, l \in \mathbb{Z} \backslash \{0\}, a = 2k + 1, b = 2l + 1$. Then

$$a \cdot b = (2k + 1)(2l + 1) = 4kl + 2k + 2l + 2 = 2(2kl + k + l + 1)$$

which is even. □

Algorithmic Content
Bubble Sort

Bubble Sort is an algorithm to sort an array of real numbers.

Algorithm 1: BubbleSort(A)
---
1 $n \leftarrow A.\texttt{length}$
2 **for** $i = 1$ *to* n **do**
3   **for** $j = 0$ *to* $n - i$ **do**
4   **if** $A[j + 1] < A[j]$ **then**
5   exchange values at positions $j + 1$ and j in A
6   **end**
7   **end**
8 **end**
9 **return** A

Blocks and Stripes

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Sometimes there is a need for a special highlighting page to separate different topics in the presentation. Even without a title.