

My Standard L^AT_EX Template

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July 15, 2015

Abstract

Here goes the abstract.

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1 Introduction

[Julia](#) is a high-level, high-performance dynamic programming language for technical computing, with syntax that is similar to MATLAB. See Fig. 1 for an illustrative example of a person playing a brass instrument. David Barber has written a textbook on probabilistic inference in graphical models [1]. An MMSE estimate \hat{u}_k of the quantity measured by sensor k can be expressed as the quantized value corresponding to index i_k , which we denote $\tilde{u}(i_k)$, conditioned on the total observation vector \mathbf{y}_1^K ,

$$\begin{aligned}\hat{u}_k &= E\{\tilde{u}(i_k)|\mathbf{y}_1^K\} = \sum_{\forall i \in \mathcal{A}} \tilde{u}(i) \Pr(i_k = i|\mathbf{y}_1^K) \\ &= \frac{1}{p(\mathbf{y}_1^K)} \sum_{\forall i \in \mathcal{A}} \tilde{u}(i) \sum_{\forall \mathbf{i}_1^K \in \mathcal{A}^K: i_k = i} \Pr(\mathbf{i}_1^K) p(\mathbf{y}_1^K|\mathbf{i}_1^K).\end{aligned}\quad (1)$$

Equation (1) follows directly from Bayes' rule.



Figure 1: This picture was photographed by [Ryan McGuire](#) and is free of copyright restrictions.

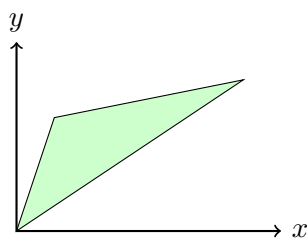


Figure 2: This image was created with the help of [TikZ](#).

References

- [1] D. Barber, *Bayesian Reasoning and Machine Learning*. Cambridge, UK: Cambridge University Press, 2012.