SOME CLEVER TITLE

by

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SOME CLEVER TITLE

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ABSTRACT

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ABBREVIATIONS AND NOTATION

.1 Abbreviations

.2 Mathematical Notation

.2.1 General Notation

x	italicized, Roman or Greek letter, denotes scalar values
$\boldsymbol{x}$	italicized, bold, lowercase Roman or Greek letter, denotes a column vector
$\boldsymbol{X}$	italicized, bold, uppercase Roman or Greek letter, denotes a matrix
$\boldsymbol{X}_{ij}$	denotes the component of matrix $\boldsymbol{X}$ occupying row i and column j
$x \in (a, b)$	the value x is within the interval such that $a < x < b$
$x \in (a, b]$	the value x is within the interval such that $a < x \leq b$
$x \in [a, b)$	the value x is within the interval such that $a \leq x < b$
$x \in [a, b]$	the value x is within the interval such that $a \leq x \leq b$
$1_A(x)$	the indicator function, $1_A(x) = \begin{cases} 1 & x \in A \\ 0 & x \notin A \end{cases}$.
$\mathbf{1}_n$	an column vector of n 1s
$\boldsymbol{I}$	the identity matrix
$\boldsymbol{I}_n$	the $n \times n$ identity matrix
$\boldsymbol{X}^{-1}$	the inverse matrix, i.e., the operator satisfying $\boldsymbol{X}^{-1}\boldsymbol{X} = \boldsymbol{X}\boldsymbol{X}^{-1} = \boldsymbol{I}$.
$\boldsymbol{X}^{\top T}$	transpose, i.e. the operator satisfying $X_{i,j} = X_{j,i}\ \forall\ i, j \in \mathbb{N}$
$\otimes$	Kronecker product

$\odot$	element-wise multiplication

.2.2 Sets

$\{x, y, z, \ldots\}$	the set comprising the elements of x, y, z, ...
$\{x, y, z\} \setminus x$	the set comprising the elements of y and z[1]
$\{x_i\}_{i=1}^{n}$	the set comprising the elements of $x_1, x_2, x_3, \ldots, x_n$
$\mathbb{R}$	set of real numbers
$\mathbb{N}$	set of natural numbers
$\boldsymbol{x} \in \mathbb{R}^n$	$\boldsymbol{x}$ is a vector with n elements, all of which are real numbers

.2.3 Statistical Distributions

$\mathcal{N}\left(\mu, \sigma^2\right)$	the uni-variable Gaussian distribution with mean μ and variance σ^2
$\mathcal{N}\left(\boldsymbol{\mu}, \boldsymbol{\Sigma}\right)$	the multi-variable Gaussian distribution with mean vector $\boldsymbol{\mu}$ and variance-covariance matrix $\boldsymbol{\Sigma}$
$\phi(x)$	the standard Gaussian density function

.2.4 Specialized Notation

This notation refers to values defined explicitly in the context of this thesis.

- $\mathcal{M}$ a model that takes input parameters to an (observable) state space
- u an observable state space from which data is to be collected
- λ a (model) parameter into model $\mathcal{M}$
- $\boldsymbol{o}$ a Parameter-to-Observables (PtO) map, also denoted $\boldsymbol{o}(u(\lambda))$ or $\boldsymbol{o}(\lambda)$, each component of which is a functional $\boldsymbol{o}_i : u(\lambda) \to \mathbb{R}$ on the observable state[2]

[1] In other words, the backslash removes an element (or a subset) from the original set.

[2] This map represents performing an individual experiment, which may consist of one or more observations (either in space or time). Arranging observational data into a vector defines the map.

- Q a Quantity of Interest (QoI) map, also denoted $Q(\lambda)$, which acts on observable data to transform the data into a scalar or vector quantity[3]

- $\boldsymbol{d}$ data representing an individual output of a (possibly vector-valued) QoI map for a particular parameter λ, i.e. $Q(\lambda) = \boldsymbol{d}$

[TK - add Measure-Theory notation into this section, based on what you have in your newcommands.tex file]

The form and content of this abstract are approved. I recommend its publication.

Approved: Dr. One One

[3]For example, it may be the average of measurements encompassed in $\boldsymbol{o}$. Technically, this map encompasses the following set of compositions: $Q(\boldsymbol{o}(u(\lambda)))$.

DEDICATION

ACKNOWLEDGEMENTS

Thanks.

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FIRST CHAPTER

I.1 First Section

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

I.2 Second Section

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I.2.1 A Subsection

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CHAPTER II
SECOND CHAPTER

II.1 First Section

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II.2 Second Section

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II.2.1 A Subsection

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

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