UiO Department of Mathematics
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Title

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Abstract

As any dedicated reader can clearly see, the Ideal of practical reason is a representation of, as far as I know, the things in themselves; as I have shown elsewhere, the phenomena should only be used as a canon for our understanding. The paralogisms of practical reason are what first give rise to the architectonic of practical reason. As will easily be shown in the next section, reason would thereby be made to contradict, in view of these considerations, the Ideal of practical reason, yet the manifold depends on the phenomena. Necessity depends on, when thus treated as the practical employment of the never-ending regress in the series of empirical conditions, time. Human reason depends on our sense perceptions, by means of analytic unity. There can be no doubt that the objects in space and time are what first give rise to human reason.

Add new section about results in ??.

Acknowledgements

Let us suppose that the noumena have nothing to do with necessity, since knowledge of the Categories is a posteriori. Hume tells us that the transcendental unity of apperception can not take account of the discipline of natural reason, by means of analytic unity. As is proven in the ontological manuals, it is obvious that the transcendental unity of apperception proves the validity of the Antinomies; what we have alone been able to show is that, our understanding depends on the Categories. It remains a mystery why the Ideal stands in need of reason. It must not be supposed that our faculties have lying before them, in the case of the Ideal, the Antinomies; so, the transcendental aesthetic is just as necessary as our experience. By means of the Ideal, our sense perceptions are by their very nature contradictory.

Rewrite this.

As is shown in the writings of Aristotle, the things in themselves (and it remains a mystery why this is the case) are a representation of time. Our concepts have lying before them the paralogisms of natural reason, but our a posteriori concepts have lying before them the practical employment of our experience. Because of our necessary ignorance of the conditions, the paralogisms would thereby be made to contradict, indeed, space; for these reasons, the Transcendental Deduction has lying before it our sense perceptions. (Our a posteriori knowledge can never furnish a true and demonstrated science, because, like time, it depends on analytic principles.) So, it must not be supposed that our experience depends on, so, our sense perceptions, by means of analysis. Space constitutes the whole content for our sense perceptions, and time occupies part of the sphere of the Ideal concerning the existence of the objects in space and time in general.

Contents

List of Figures

CHAPTER 1

Introduction

sec:intro

Write introduction here.

Outline

The rest of the text is organised as follows:

?? is second to none, with the notable exception of Chapter 1. The main tool introduced here is the employment of unintelligible sentences.

?? asserts the basic properties of being the third chapter of a text. This section reveals the shocking truth of filler content.

?? demonstrates how easily one can get to four chapters by simply using the `kantlipsum` package to generate dummy words.

?? features additional material for the specially interested.

?? consists of results best relegated to the back of the document, ensuring that nobody will ever read it.

CHAPTER 2

Compressive Sensing

This chapter is introduces the reader to the terminology and concepts needed to formulate the Robust Null Space Property (rNSP) of a a matrix or map.

2.1 Terminology

1. The support of a vector x is the index set of its nonzero entries denoted supp(x).

2. A vector x is called s-sparse if at most s of its entries are nonzero ie. card(supp(x)) $\leq$ s.

The compressive sensing problem consists in reconstructing an s-sparse vector $x \in \mathbb{C}^N$ from $y = Ax$ where $A \in \mathbb{C}^{m \times N}$ is the so-called measurement matrix. With $m < N$, this system of linear equations is underdetermined, but the sparsity assumption hopefully helps in identifying the original vector x.

2.2 Theorem 2.1

1. Every s-sparse vector x is the unique s-sparse solution of $Az = Ax$, that is , if $Az = Ax$ and both x and z are s-sparse, then x=z.

2. $ker(A)$ does not contain any 2s-sparse vector other than the zero vector, that is, $ker(A) \cap \{z \leq 2s\} = \{0\}$

3. (ta eventuelt med 3. og 4. punk også???)

Next we introduce the null space property and prove that it is a necessary and sufficient condition for exact recovery of sparse vectors via basis pursuit(BP).

2.3 Definition 2.2: Null Space Property

A matrix A is said to satisfy the *nullspaceproperty* relative to a set S N] if v$_s < v_s kompl$ (2.1)

It is said to satisfy the null space property of order s if it satisfies null space relative to any set with $card(S) \leq s$.

However, this is an idealised situation, and real world properties like noise and imprecise measurements must be accounted for, hence follows the definition and a theorem about rNSP.

2.4 Definition 2.3: (Robust Null Space Property)

A matrix A satisfies the rNPS with constants 0<p<1 and t $>$ 0 of order s if

v$_s < v_s kompl + ++$????? (2.2)

2.5 Theorem 2.4: rNSP implies stable and robust recovery

A matrix A satisfies the rNPS with constants 0<p<1 and t $>$ 0 of order s if .....

v$_s < v_s kompl + ++$????? (2.3)

Appendices