

# **Fast response MPPT switched charger for the Solar Boat Technician**

**Afonso Daniel Guerreiro Coelho**

Introduction to the Research in  
**Electrical and Computer Engineering**

Supervisors: Gonalo Nuno Gomes Tavares  
Pedro Rafael Bonifacio Vitor

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# Abstract

Resumo do trabalho

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# Acronyms

<b>IST</b>	Instituto Superior Técnico
<b>TSB</b>	Técnico Solar Boat
<b>MPPT</b>	Maximum Power Point Tracker
<b>MPP</b>	Maximum Power Point
<b>PCB</b>	Printed Circuit Board
<b>CAN</b>	Controller Area Network
<b>USB</b>	Universal Serial Bus
<b>GUI</b>	Graphical User Interface



# 1

## Introduction

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## **1.1 Motivation**

Explicar o contexto do TSB, paineis solares, sua falta de eficiencia, e MPPTs

## **1.2 background**

de maneira a complementar o cap 1.1 vou explicar alguns conceitos basicos sobre paines solares, MPPTs e o projeto TSB

### **1.2.1 Solar Panels**

### **1.2.2 MPPTs**

### **1.2.3 TSB Project**

## **1.3 Objectives**

Explicar os objetivos do projeto com bulet points.

## **1.4 Outline**

Explain how the work is organized by chapters.



# 2

## State-of-the-Art

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Intro if needed

## **2.1 mppt! algorithms**

Escolher algumas para falar

### **2.1.1 Constant Voltage (CV)**

### **2.1.2 Fractional Open Circuit Voltage (FOCV)**

### **2.1.3 Fractional Short Circuit Current (FSCC)**

### **2.1.4 Perturb and Observe (P&O)**

### **2.1.5 Incremental Conductance (IncCond)**

### **2.1.6 Method beta**

### **2.1.7 Method based on temperature**

## **2.2 MPPT converter topology**

Intro..

Escolher algumas para falar

### **2.2.1 Buck Converters**

### **2.2.2 Boost Converters**

### **2.2.3 Buck-Boost Converters**

## **2.3 Comercial mppt!s**

Table with comercial MPPTs and some of their carateristics.

## **2.4 Battery charging unit**

## **2.5 Protection circuits**

# 3

## Solucion Proposal

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### **3.1 Microntroller**

Explicar a escolha do microcontrolador, o que ele faz, etc

### **3.2 Communication**

sensors, CAN, USB, GUI

### **3.3 Current and Voltage Sensing**

pq que é necessarion, e o que é que escolhi

### **3.4 Power electronics**

Topologia escolhida, pq, vantagens e componentes

# 4

## **Preliminary Work**



# 5

## **Planning and Scheduling**

Fazer um planeamento com um gantt chart e explicar as decisoes



# Bibliography



## **Appendix Name**