

PROTOTYPE DESIGN COLLECTION

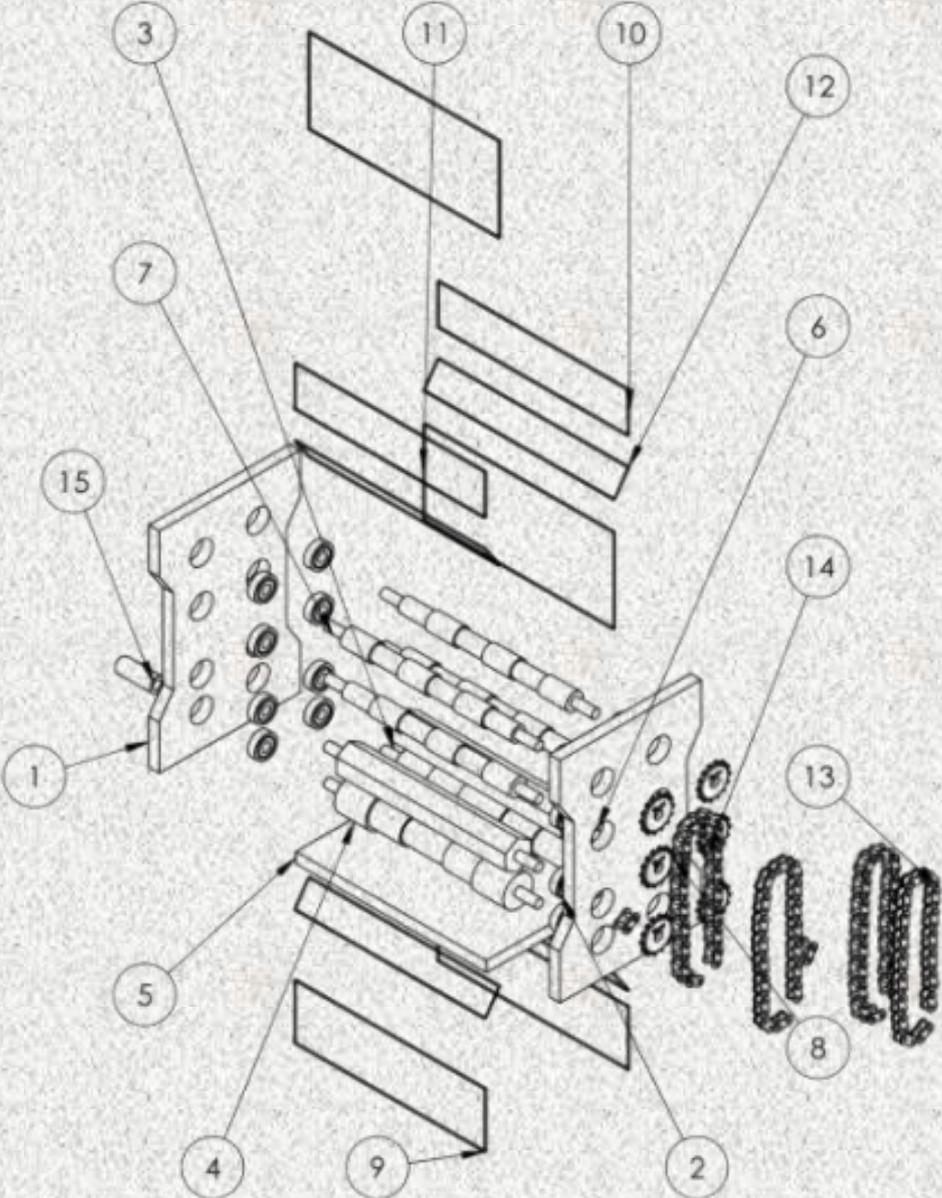
SERIES 4



Universiti Teknologi MARA
Pasir Gudang Campus

Prototype Design Collection

Series 4



Ahmad Najmie Rusli

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FOREWORD

This digital book on Prototype Design Collection Series 4 (PDC Series 4) is published as a reference design for mechanical engineering students. The designs presented experience a few phases of analysis before fabrication of prototype. Each project summarises the project description, prototype, figures, and design parameter. The design products vary in tools or equipment for household, workshop, entrepreneur, etc. Suggested material and detail of prototype dimension are also mentioned in this book.

It is hoped that this book will assist the students to have more ideas on innovation design products in the future.

Table of Contents

CHAPTER 1	1
Design and Fabrication of a Multipurpose Baby Cot	1
Nabil Qayyum Bin Roslan ¹ and Miqdad Bin Khairulmaini ^{2*}	1
CHAPTER 2	3
Design and Fabrication of a Weather Sensing Cloth Drying Rack	3
Mustaqim Syah Bin Kamarul Zaman ¹ and Miqdad Bin Khairulmaini ^{2*}	3
CHAPTER 3	5
Design and Fabrication of a Patient Transfer Aid for Seamless Bed to Wheelchair Mobility ..	5
Fateen Aqela Binti Azzaidi ¹ and Miqdad Bin Khairulmaini ^{2*}	5
CHAPTER 4	7
Prototype of a Donut Topping Machine	7
Nurul Athirah Binti Ramizan Nassir ¹ and Ahmad Najmie Rusli ^{2*}	7
CHAPTER 5	9
Prototype of a PLA Filament Extruder	9
Abdul Harith Hazim Bin Abd Rashid ¹ and Ahmad Najmie Rusli ^{2*}	9
CHAPTER 6	11
Prototype of a Candy Sorting Machine	11
Hairul Ikhwan Bin Hazizan ¹ and Ahmad Najmie Rusli ^{2*}	11
CHAPTER 7	13
Prototype of a 3D Printing Scrap Recycling Machine	13
Raziq Amir Bin Rosdi ¹ and Ahmad Najmie Rusli ^{2*}	13
CHAPTER 8	15
Manual Compaction Machine for Casting	15
Muhammad Hazim Md Azli ¹ , Najibah Ab Latif ^{2*} and Ainaa Maya Munira Ismail ³	15
CHAPTER 9	17
Convertible Cart-Ladder	17
Mohamad Aimi Zuhairi Fikri Mohd Aimi Zamani ¹ , Najibah Ab Latif ^{2*} and Ainaa Maya Munira Ismail ³	17
CHAPTER 10	19
Design and Fabrication of Mini Firefighting Device	19
Adam Faris Bin Ahmad Zaidy ¹ and Muhamad Faris Syafiq Bin Khalid ^{2*}	19
CHAPTER 11	21
Design and Fabrication of Shuttlecock Launcher Machine	21

CHAPTER 11

Design and Fabrication of Shuttlecock Launcher Machine

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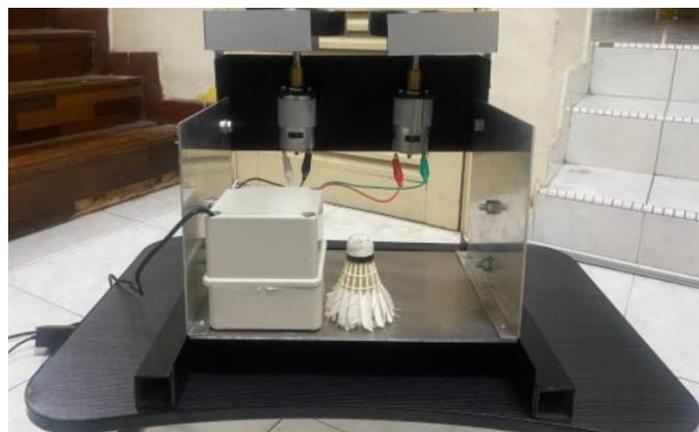
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PROJECT DESCRIPTION

This project focuses on the design and fabrication of a shuttlecock launcher specifically developed to enhance badminton training without reliance on a playing partner. Conventional practice methods often depend on the skill and consistency of a training partner, limiting practice opportunities and reducing training efficiency. To address this limitation, a compact and efficient shuttlecock launching machine is developed, utilising DC motor technology to deliver shuttlecocks at adjustable speeds, trajectories, and directions. The system integrates a motor-driven pitching mechanism with a shuttlecock hopper, supported by safety features designed to prevent accidental operation and ensure user protection. The machine's versatility allows players to independently practice a variety of shots, improving technical precision, reaction time, and overall performance. Its user-friendly design ensures accessibility for players of varying skill levels, while its portable structure supports convenient transport and setup. In addition to functionality, the project incorporates sustainability considerations, including energy-efficient operation, responsible material selection, and an environmental impact assessment to reduce the device's ecological footprint. These measures align with sustainable manufacturing and usage practices, reinforcing the project's commitment to environmental responsibility. By combining engineering design principles, sports technology, and sustainable innovation, this project contributes to the advancement of autonomous training tools in badminton. The resulting device offers a practical, safe, and effective solution for skill development, enabling athletes to train more frequently, independently, and efficiently.

Keywords: *Shuttlecock Launcher, Sports Technology*

PROTOTYPE



DESIGN PARAMETER

