\documentclass[a4paper]{article}

\usepackage{fourier}

\usepackage[margin=1in]{geometry}

\usepackage{float}

\usepackage{wrapfig}

\usepackage{subfig}

\usepackage{graphicx}

\usepackage{amssymb, amsmath}

\usepackage{lipsum}

\usepackage[]{mcode}

\usepackage[parfill]{parskip}

\usepackage{fancyhdr}

\pagestyle{fancy}

\fancyhf{}

\rhead{Kartiksinh K. Gohil - CID: 00692607}

\lhead{Final Year Project - Interim Report 2015}

\cfoot{\thepage}

\renewcommand

\lstlistingname{Code}

\title{\vspace{-20pt}}

\author{\vspace{-20pt}}

\date{\vspace{-20pt}}

\begin{document}

%\input{latex-coversheet.tex}

\maketitle

\large

\begin{tabular}{|l}

Imperial College London\\

Department of Electrical and Electronic Engineering\\~\\

Final Year Project - Interim Report 2015

\end{tabular}

\vspace{60 pt}

{

\centering

\huge PAWS\\

\LARGE Programmable And Wearable Sound \\

}

\vspace{30 pt}

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\section\*{Abstract} \label{Abstract}

\textbf{The project specification should state clearly what the project is intended to deliver, including all hardware, software, simulation, and analytical work, and provide some motivation.}

\textit{'The development and evaluation of a novel and unusual musical instrument to be constructed using a 3D printer.'}

This final year project has a short brief (shown in italics above) and is open-ended, relying more on a creative musically-oriented approach rather than the usual best-fit engineering solution.

The definition of a 'musical instrument' has evolved drastically over the years, ranging from traditional acoustic instruments (\textit{piano, violin}) to electrical (\textit{guitars, keyboards}), electronic (\textit{synthesisers, Theremin}), and even virtual instruments that only exist as software models in audio production software.

The aim of this project is to research the current market and design a new 'instrument' that integrates its traditional definition of being able create sounds with modern production methods and technological trends such as sampling, synthesis, and motion capture, in an effort to increase functionality while maintaining musical expression.

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\begin{tabular}{|l l}

Project Title & A Novel \& Unusual Musical Instrument \\

Student & Kartiksinh K. Gohil \\

CID & 00692607 \\

Project Supervisor & Prof Robert Spence, Dr Mark Witkowski \\

Second Marker & Dr Christos Papavassiliou

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\tableofcontents

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\section{Background} \label{Background}

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\section{Product Concept} \label{Product Concept}

this section should have my idea of what my product should do. include diagrams and stuff. deep discussion on what this musical instrument ACTUALLY IS.

can include concept interface.

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\section{Objectives \& Specifications} \label{Objectives & Specifications}

AND REQUIREMENTS

list of things this instrument should be able to do, might be able to do, and could potentially do by the end of the project

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\section{Product Design} \label{Product Design}

human-level design of product: wearable sensors + phone/laptop interface

\begin{figure}[H]

\centering

\includegraphics{Images/UserLevelDia}

\caption{PAWS: User Level Design}

\label{fig:userlvl}

\end{figure}

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\section{System Design} \label{System Design}

block diagrams of sensors and interface in terms of functions, still very high level

\begin{figure}[H]

\centering

\includegraphics{Images/SystemLevelHi}

\caption{PAWS: System Design - High Level}

\label{fig:syslvlhi}

\end{figure}

\begin{figure}[H]

\centering

\includegraphics{Images/SystemLevelLo}

\caption{PAWS: System Design - Low Level}

\label{fig:syslvllo}

\end{figure}

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\section{Hardware Design} \label{Hardware Design}

OVERALL HARDWARE DESIGN

block diagrams of sensor boards and their components, what they should do, and how they should work

SUBSECTIONS OPTIONAL BASED ON TIME!! CAN SHOW PROTOTYPE 1.01 CIRCUITS

%%%%%%%%%%%%%%%%%%%%

\subsection{Microphone Circuit} \label{Microphone Circuit}

circuit diagrams, connected to arduino. how it works, what it outputs.

%%%%%%%%%%%%%%%%%%%%

\subsection{Bluetooth Circuit} \label{Bluetooth Circuit}

circuit diagrams, connected to arduino. how it works. what it does.

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\section{Software Design} \label{Software Design}

OVERALL SOFTWARE DESIGN

what the interface should be able to do. what it should look like. how it connects to hardware and what it outputs, and how the user can interface with it.

THESE SECTIONS OPTIONAL - MAYBE REPLACE WITH PYTHON PROTOTYPE 1.01 CODE

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\subsection{Real-Time Data Read - Matlab} \label{Real-Time Data Read - Matlab}

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\subsection{Sample Triggering - Matlab} \label{Sample Triggering - Matlab}

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\section{Project Timeline} \label{Project Timeline}

EXPECTED DELIVERABLES with times, including reports and presentation

\subsection{Implementation Plan}

\subsection{Evaluation Plan}

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\section{Finances} \label{Finances}

how much spent already. how expensive the final hardware would be (expected) depending on the types of components it requires.

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\section{References} \label{References}

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\section{Appendix} \label{Appendix}

LOADS OF EXTRA DIAGRAMS/CODE IF HAVE

\end{document}